Society of Arts.

The BUILDER

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ILLUSTRATED WEEKLY MAGAZINE

FOR THE

ARCHITECT, ENGINEER, ARCHÆOLOGIST, CONSTRUCTOR, SANITARY REFORMER, AND ART-LOVER.

CONDUCTED BY

GEORGE GODWIN, F.R.S., F.S.A.

"Every man's proper mansion-house, and home, being the theater of his hospitality, the seate of selfe-fruition, the comfortablest part of his own life, the noblest of his sonne's inheritance, a kinde of private princedome, nay, to the possessors thereof, an epitome of the whole world, may well deserve, by these attributes, according to the degree of the master, to be decently and delightfully adorned."

"Architecture can want no commendation, where there are noble men, or noble mindes."—Sir Henry Wotton.

"Our English word To Build is the Anglo-Saxon Bylšan, to confirm, to establish, to make firm and sure and fast, to consolidate, to strengthen; and is applicable to all other things as well as to dwelling-places."—Diversions of Purley.

"Art shows us man as he can by no other means be made known. Art gives us 'nobler loves and nobler cares,'—furnishing objects by the contemplation of which we are taught and exalted,—and so are ultimately led to seek beauty in its highest form, which is Goodness."

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INDEX TO VOLUME XLIV.

JANUARY TO JUNE, 1883.

ABATTOIRS wanted, 904
Abbey Church, Bourn, 161
Abbey House, Tewkesbury, 632
Abbeys: Maulbronn, Wurtemburg, 738; Romsey, 843; Westminster, 206, 225, 240, 261, 307
Academy, Royal: architecture at, 25, 207, 273, 596, 656; Chantrey Bequest, 622; election of Associates, 91; pictures at, 626, 660; sculpture at, 661
Academy, Royal Hibernian, 334
Academy, Royal Scottish, 271, 306
Academy of Music, design for a, 568, 636
Academy of St. Luke, Rome, 137
Accounts of builders' work in Record Office, 23, 72
Acquiescence in interruption of light, 102
Acragas, Agrigentum, Girgenti, 338
Acropolis, the, Athens, 734
Actions: Amesbury Union *v.* County of Wilts, maintenance of roads, 411; Angus *v.* Dalton, right of houses to support, 600; Anwell *v.* Everton Burial Board, disputed accounts, 62; Arnold and Morris *v.* Metropolitan and District Railways, compensation, 430; Barbour *v.* Williamson, illicit commissions, 3; Barlow & Esdon *v.* Kensington Vestry, line of front, 357, 374; Belt *v.* Lawes, libel, 24, 59; Bevan *v.* Trow, Employers' Liability Act, 159; Bennet *v.* Parrish, claim for pile-driving, 726; Cook *v.* Elvin, liabilities of house-owners, 655; Curtis *v.* Reep, builder's account, 461; Dee *v.* Dalgairns, plumbers' work, 40; District Surveyor of Clerkenwell *v.* Iron, Building Act case, 903; Dixon *v.* Bleakley, employers' liability, 761; Doughty *v.* Firbank, employer's liability, 369; Field & Co. *v.* Jones & Willis, right of buildings to support, 430; Fletcher *v.* Pinxton Coal Co., Building Act case, 518; French *v.* Gentry, foreman's time, 227; Fulham Board of Works *v.* North-Western Railway Co., What is a new street? 296; Gardner and others *v.* Whiteley, right to light, 94; Glover *v.* Coleman, law of light, 102; Gooch *v.* Metropolitan and District Railways, compensation, 295; Harrington *v.* Victoria Dock Co., illicit commissions, 3; Hesketh *v.* Rollwagen, professional services, 226; Hornby *v.* Liverpool Gas Co., liability for accidents, 364; Ingledew *v.* Ray, surveyors' fees, 830; Julian & Sons *v.* Wesleyan School Committee, Truro, arbitration, 367; Knightley *v.* Eyers, Building Act case, 62; Lamont *v.* Cotes, wrongful delivery of goods, 227; Lawson *v.* Wallasey Local Board: delays with works, and functions of architects and engineers, 654; Lefeuvre and another *v.* the Commissioners of Works, claim for "retention moneys," *re* New Law Courts contract, 903; London and North-Western Railway *v.* Ivens, railway rates for timber, 655; Lowe *v.* Arden, arbitration, 794; Maxwell *v.* Scott, builder's claim for plans, 94; Metropolitan Board of Works *v.* Clark, line of frontage, 333; Metropolitan Board of Works *v.* Gatti, the Adelphi Theatre, 227; Metropolitan Board of Works *v.* Lushington, dangerous structures, 331; Milnes *v.* Mayor of Huddersfield, lead-poisoned water, 271; Mullins *v.* Miller, false representations by agents in regard to the value of property, 733; Ossalinski *v.* Corporation of Manchester, Thirlmere water scheme, 534; Richards *v.* May, architects' certificates, 405; Smart *v.* Lucas & Aird, claim for waiting for wages, 159; Sorby *v.* Smith, illicit commissions, 3; Steven *v.* Richardson, disputed account, 461; Strickland *v.* Kingwell, light and air, 296; Thornton *v.* Walker and others, quantities, 62; Vestry of St. Giles's, Camberwell *v.* East, nuisances removal, 94; Wallen *v.* Cobbett, Building Act case, 759, 794, 830; Wilcoxon *v.* Metropolitan and District Railways, compensation, 726
Administration of Office of Works, 160
Admiralty, proposed new, 567, 587, 699
Ædiles, London, 725
Affectation in art, 92, 157
Africa, South, diamond fields, 689
Age of timber, 458
Agents, false representations by, 733
Agrigentum, 338
Air warming and cooling apparatus, 902
Alan de Walsingham, 529
Alberti and Rimini, 40
Alexandra Dock, Hull, 136
Alexandra Park, 726
Alhambra Theatre, 235, 553, 810
Alnwick, museums at, 4
Altneusynagoge, Prague, 203
Amalgamated Engineers' Society, 761
Amateur house decoration, 585
Amateurs and amateurs, 631
Amber, 480
America, notes from, 827
American: painters, 66; planning and construction, 312; Social Science Association, 161
Amsterdam: drainage, 364; Exhibition, 34, 332, 362, 565, 632, 721, 826
Ancients, telegraphs of the, 393
Anglo-Saxon remains in British Museum, 523
Ankles and wrists, 289
Antiquities: Assyrian, in British Museum, 766, 800; of Cairo, 63; in Cornwall, 720; of Freemasonry, 266; of Ireland, 805; Lycian, 203; Mexican, 552; of Northumberland, 4
Antony and Cleopatra, 68, 106
Apollo and Mars, by Raffaelle, 734
Appeal from art students, 459
Appointments, 2, 8, 272, 303, 399, 520, 602, 617, 622, 623, 649 (see also "Surveyorships")
Approaches to Thames Embankment, 652
Aqueduct, Roman, at Altri, 157
Arabian: architecture, 237, 289; art in Egypt, 412
Arbitration cases, 62, 195, 367, 534, 794
Arbitrators and assessments, 298
Archæological: discoveries (see "Discoveries"); Institute, German, Rome, 632; Research, 349
Archæological societies: Berks, 898; Birmingham and Midland Institute, 898; Bristol and Gloucestershire, 880; British Archæological Association, 229, 296, 457; Coventry, 458; Lancashire and Cheshire Antiquarian Society, 733; London and Middlesex, 496; St. Paul's Ecclesiological Society, 719, 722
Archæologists, honours to, 9 6
Archæology: as bearing on Irish affairs, 303; in Syria, 663; in Yucatan, 272
Architect: career of an unsuccessful, 804, 833, 873; on lawyers, 239, 290, 311, 364; Raffaelle as an, 565
Architect's Department, London School Board, 333, 366
Architects: Birmingham School Board, 827; French, congress of, 863; legal position of, 564
Architects of buildings and authors of designs illustrated:—
Alberti, San Francesco, Rimini, 41, 44
Alexander, J. W., cemetery lodge, Great Ayton, 884
Alexander & Howell, saloon, yacht *Boadicea*, 46
Anderson, R. R., Catholic Apostolic Church, Edinburgh, 16
Archer & Green: shops and premises, Piccadilly, 19; shop in the Strand, 285; premises, 193, Fleet-street, 776
Birch, J., picture-gallery, Broome Hall, 638
Blomfield, A. W., Bagge Memorial, Swaffham, 742
Boreham, F., premises in Oxford-street, 151
Brandon, David, mansion, Blackmore Park, 212, 219
Brewer, H. W., design for organ, 178
Briggs, R. A., design for Academy of Music, 570, 579, 647
Brooks, James: Church of St. Peter, St. Leonard's-on-sea, 606; stables of Marquis of Londonderry, Mayfair, 217
Buxton, Desimus, Wellington Arch, 185
Byrne & Wilmot, House at Windlesham, 387
Clarkson, J. & S. F., Board Schools, St. Albans, 80, 81
Covarrubias, A. de, doorway, San Juan de los Reyes, Toledo, 413
Crossland, W. H., Kirkgate Buildings, Huddersfield, 12
Cuthbert, G., & Wimble, W., Royal Courts of Justice Chambers, 112
Davis, O. W., wall-paper decoration, designed for W. Woollams & Co., 78
Dorè, G., Monument to Alexandre Dumas, Paris, 450
Doubleday, W., coffee tavern, Birmingham, 382
Dunk & Geden, Board Schools, Finchley, 416, 421
Estes, C., & Son, Oxford and Cambridge Mansions, Marylebone, 144, 149
Emden & Co., entrances to St. James's Hall, Piccadilly, 251
Ferguson, C. J., additions at Naworth Castle, 316
Fowler, J., reredos, St. Mary's, Newington, 511
Francis, F. & H., National Liberal Club-house, Charing Cross, 536
Garratt, T., factory at Northampton, 115
Grieve, C., premises, Addison-road, 717
Hansom, J. A., & Son, Church of the Sacred Heart, West Brompton, 538
Hanson, J. S., Episcopal residence for R.C. Bishop of Portsmouth, 778
Hanson, J. T., Orphans' Rest, Dover, 710, 715
Harris, St. Pierre, cottage hospital, Paul's Cray, 852
Hartel, A., & Lipsius, C., St. Peter's Church, Leipzig, 314
Hasse & Oppler, the Marienburg, near Hanover, 506
Hayward & Son, Parish Halls, Jersey, 352, 353
Heffer, E. A., house at Cricklewood, 142
Hellmer & Fellner, Stadttheater, Brünn, 248
Hill, J. A., staircase, New Post-office, Philadelphia, 319
Architects of buildings and authors of designs illustrated (*continued*):—
Hitzig, Baurath, & Lucae, Prof., Polytechnic School, Charlottenburg, 780
Hoskins, G. G., Public Buildings, Middlesbrough, 48
Hoult & Wise, Ashcroft Buildings, Liverpool, 504
Isaacs & Florence, houses, Bell-yard, 253
Johnson, J.: Improvements, Brighton, 604; St. Matthew's Church, Bayswater, 455
Knight, S., headquarters, Bloomsbury Volunteers, 749, 751
Lavers, Westlake, & Co., window in Ledbury Church, 176
Lowzow, F., timber-house, Norway, 712, 713
Lucae, Prof., & Hitzig, Baurath, Polytechnic School, Charlottenburg, 780
McLachlan, H., design for Glasgow Southern Hospital, 821
Marks, E., premises in Oxford street, 502
Morris & Stallwood, Battersea Town-hall, 350
Neufield, W. E., Schools, Romsey, 848
Newell, T., House at Finchley, 245
Nicholson, J. R. Church in South Africa, 446
Ould, E. A., Queen's School, Chester, 812
Perrr, J. T., Sketches from Eden Theatre, Paris, 210
Perry & Reed: Alhambra Theatre, 814, 816; Savoy Schools, 640
Plumbe, R., Art sans' Dwellings at Hornsey, 880, 887, 889
Post, G. B., Mills Building, New York, 318
Robson, E. R., Prince's Hall, Piccadilly Art Galleries, 672
Rösner, C., Djakovar Cathedral, 287
Saville & Son: Design for Market Hall, Newark, 672; Design for St. Pancras Workhouse Extension, 384
Scamell & Colyer, Brewery at Burton-on-Trent, 883, 885
Scott, E. E., Improvements at Brighton: Second Premisted Design, 604
Street, G. E., Christ Church Cathedral, Dublin, 108, 117
Streit, A., Kahlenberg Monument, Vienna, 575
Tait, J., Sunday School Memorial Hall, Leicester, 850
Vaudremer, M., Church of Auteuil, near Paris, 846
Walford, J. T., Châlet Residences, Harrow Park, 282, 883
Waterhouse, A., Plan of Natural History Museum, 683
Weobb, A., House at Bromley, 670
Wimble, W., and Cuthbert G., Royal Courts of Justice Chambers, 112
Wood, W. H., Diagrams of Vaulting, 51
Zetterval, H., Lund University Building, Sweden, 53, 76
Architects': assistants as clerks of works, 296, 333, 429; certificates, 405
Architects' Benevolent Society, 333, 365, 496, 554
Architectural: competitions, Institute's suggestions, 519; competitions, justice in, 703 (see also "Competitions"); design, first principles of, 563; Exhibition, Edinburgh, 6; influence of conquest, 129; metal-work, 530, 587; Museum, 106; restorations, 202; sketching, 701, 703
Architectural Association: Architects' Benevolent Society, 496, 554; Italy, 513; Modern Design, 325; Museums, 633, 650, 685; Notes on Professional Practice, 239; Ornament of the Period, 119; Position of the Choir and Organs in Churches, 165, 193, 203; Rural Sanitary Authorities and their By-laws, 772; Sketching and Sketching Trips, 701, 703; *Soirée*, 584; Theatres, 374, 394; Travelling Studentship, 773; Vaulting, 55
Architectural Association Visits: Bedford Park, 130, 297; Hammersmith Church, 597; Oratory, Brompton, 225; Pandora Theatre, 274; Royal Courts of Justice, Chambers, 753; St. Paul's School, 753
Architectural societies: Birmingham Architectural Association, 258, 274; Bristol and Clifton Junior, 866; Edinburgh Architectural Association, 57, 229, 426, 460, 499, 585, 654, 729, 796; Glasgow Institute of Architects, 293, 585, 829; Hamburg, 410; Leeds Architectural Association, 229, 292, 328, 359, 389; Liverpool, 188, 651; Northern Architectural Association, 240, 869; Oxford, 867; York Architectural Association, 364, 906
Architecture: among the poets, 491, 526, 558, 628, 696, 764; as affected by want of room, 525; as influenced by conquests, 129; Arabian, 237, 289; Babylonian, 489; in Berlin, 101; at Cape Town, 26; colour in, 201, 273; decoration and, 188, 371; desire for a new style, 34, 250; Doric, at Dublin, 799; ecclesiastical, in Russia, 771; Egyptian, 435, 557; first principles of, 563; Freemasonry and, 266; Gothic, in Italy, 395; Greek, 492; Himalayan, 104; and the House of Commons, 699; of houses and hospitals, 805, 893; Indian, 755, 803, 823; influence of natural forms on, 869; iron in, 207; Italian, 513; Italian Renaissance, 723; light on the most ancient, 133; modern Classical, 221; Primæval British, 438; of Rimini, 8, 40; risks and responsibilities of a revived or remodelled style of, 191; at Royal Academy, 25, 207, 273, 536, 656; at the Royal Scottish Academy, 306; Russian, 729, 771; in Syria, 663; timber, 705; in Vienna, 197; in Yucatan, 272
Arlberg tunnel, 826
Armies: health of, 907; industrial, 836
Arnold, Matthew, and architecture, 697
Arsenal of Philo, the, 369
Arsenic in wall-papers, 209
Art: abroad, 234; affectation in, 92, 157; American, 66; Arabian, 412; Assyrian, in British Museum, 766, 800; in Birmingham, 443; Celtic, 654; decorative, 119; Egyptian, 435, 557; Impressionists in, 370; influence of conquest on, 129; ornamental, 119, 391, 409; of the Renaissance, 8, 40, 233; rightness in, 519; at Rimini, 8, 40; of New Vienna, 197; in Whitechapel, 399; the wisdom of Parliament and, 699
Art as decorative, and decorative art, 869
Art-education, system and no system in, 426
Art-foliage, 229
Art-epoch, a neglected, 771
Art-galleries in Piccadilly, new, 568, 623
Art-problems, 794
Art revival in Russia, 275
Art-schools, the teaching at, 258, 265, 330
Art-students, an appeal from, 459
Art-Union of London: plate for 1883, 23; prize distribution, 581
Artans industrial schools, 91, 229
Artisans' dwellings (see "Dwellings")
Artisans' estate at Hornsey, 880
Artists, lady, 342, 374; twelve French, 802
Artists': assistants, 24, 59; General Benevolent Association, 727; models, 666
Arts: decorative, 371, 429; in France, the, 157; in Rome, official report on, 137; the twin, 371, 429; useful, of the Greeks and Romans, 566
Asbestos goods, 833
Ascham Society, the, 882
Ashburnham MSS., 272, 334, 621, 833
Ashcroft Buildings, Liverpool, 500
Ashpitel family, the, 236
Ass's ears of the Pantheon, 364
Assessments and arbitrators, 298
Assessors, trials with, 802
Associations: Municipal Engineers', 886; Master Builders', 159, 194, 331, 621, 651; Medical Officers of Health, 692
Assistance for sculptors, 24, 59
Assyrian Antiquities, British Museum, 766, 800
Asylum: Carlisle, 158, 224; Lanarkshire, 872
Asylums' Board, land at Darenth, 692
Athene, chryselephantine statue of, 591
Athens: the Acropolis, 734; British School of Archæology, 861
Attica, the marbls of, 395
Auteuil, new church at, 843
Autobiography of James Nasmyth, 231
Avila, Spain: Church of Santa Teresa, 378; Church of San Pedro, 359
Awards: at Knightsbridge Exhibition, 92; at Smoke-Abatement Exhibition, 29, 296, 397, 429, 460, 654

BABYLONIAN explorations, 10, 489
Bagge Memorial, Swaffham, 740
Bankruptcy, proceedings in, 904
Banks, 396, 553, 651, 756, 757, 864
Banner-street Home, the, 588
Baptistery at Pisa, 140
Barnsley and Hull railway and dock, 136
Baths: Birmingham, 393; Bishopsgate, 225; Ramsgate, 432, 462; Rotherham, 335; Salford, 29; Skegness, 693; Swansea, 93
Battersea: St. Mary's Church, 690; Town-hall, 359
Bavaria, King of, new palace, 377
Bayswater, St. Matthew's Church, 444
Beaconsfield Memorial Statue, 553
Beanfeasts, 863
Bearings of archæology on Irish affairs, 305
Beckett, Sir E., and illicit commissions, 3
Bedford Park, 130, 224, 262, 297, 338, 431
Belem, Monastery of St. Jerome, 568
Belfast, Ulster Reform Club, 28, 656, 793
Bell, big, for the New Law Courts, 657
Bell-yard, Fleet-street, new premises, 242
Belt *v.* Lawes, 24, 59
Ben Jonson: and architecture, 526; at Lincoln's Inn, 532
Berlin: Bourse, 457, 790; brick paving for streets, 74; building in, 724; burning of the National Theatre, 497; English Church at, 362; Exhibition of Italian and Spanish art, 825, 861; Fine Art Exhibition Building, 619; Fine Arts Exhibition, 654; the new German Parliament House, 863; hygienic congress, 704; hygienic exhibition, 395, 433, 443, 457, 754; Metal-workers' Exhibition, 791; modern, 101; museums in, 102, 134; new panorama, 721; the Olympia collection, 562; Polytechnic School, Charlottenburg, 774; Rathhaus, 26
Bethnal Green Free Library, 797
Beverley Minster, fire in, 333
Berwick Cub, the, 272
Bills in Parliament, 275, 297, 311, 462

Birkbeck Institution, 584
Birkenhead: Children's hospital, 900; Town Hall and Sessions House, 620, 827
Birmingham: Architectural Association, 258, 274; art in, 433; Board schools, 93; Building Trades' Exhibition, 620, 735; Coffee Tavern, 378; notes from, 123, 618, 302, 636, 792; School Board Architects, 827; St. Chad's Schools, 299
Bishopsgate, sanitary state of, 235
Blackfriars Bridge: proposed statuary for, 619, 655; works of London, Chatham, & Dover Railway, 517
Blackmore Park, new mansion, 208, 258
Blindness as to form, 665
Bloomsbury, changes in, 68
Bloomsbury to Piccadilly, 235
Bloomsbury R fles, headquarters of, 740
Boadicea steam yacht, saloon of, 44
Board schools at Finchley, 38
Board of Trade and electric lighting, 334
Bond in brickwork, 844
Book-keeping competition, 262
Books, dangers of, 906
Books, Pamphlets, &c., notices, reviews, and articles as to:—
Amateur work, 431
Beckett, Sir E., Rudimentary Treatise on Clocks and Watches, 726
Bowes, J. L., Japanese Marks and Seals, 727
Bruce, J. C., Catalogue of Antiquities at Alnwick, 4
Buchan, W. P., Text-book for the Plumber, 726
Burges, W., Architectural Designs, edited by R. P. Pullan, 837
Buxton, H. J. W., and Koehler, S. R., English and American Painters, 66
Campin, F., Details of Machinery, 726
Collings, G., Treatise on Handrailing, 726
Colyer, F., Hydraulic, Steam, and Hand Power Lifting and Pressing Machinery, 520
Crane, W. J. E., The Smithy and Forge, 726
Delamotte, P. H., Art-work in Porcelain, 832
Dredge, J., Electric Illumination, 692
Eger, G., Technologisches Wörterbuch in englischer und deutscher Sprache, 461
Fergusson, J., The Parthenon: the Lighting of Temples, 492, 591
Gould, R. F., History of Freemasonry, 266
Guest, E., Origines Celticæ, 433
Hill, A. G., Organ-cases and Organs, 494
History of the Year, 333
Huish, M. B., New Year's Art, 1883, 62
Kelley's Directory of Building Trades, 461
Local Government Board, Reports to, 225
Local Government Board's Model Bylaws, Knight's annotated edition, 125
Lucas, C., Les Eglises Circulaires d'Angleterre, 302
Macnamara, W. H., Woolrych's Metropolitan Building Acts, 431
Meade, R., Iron and Coal Industries, 554
Nasmyth, James, an Autobiography, 231
Newton, E., Sketches for Country Residences, 874
Palestine Exploration Fund, Maps and Proceedings, 663
Perrot & Chipiez, History of Art in Ancient Egypt, 435, 557
Perry, J., Practical Mechanics, 52)
Picton, Sir J. A., Liverpool Records, 731
Proctor, R. A., Light Science for Leisure Hours, 636
Pullan, R. P., Architectural Designs of William Burges, 837
Sacsardó, La Basilica di San Marco in Venezia, 378
Scott, L., Renaissance of Art in Italy, 233
Smiles, S., James Nasmyth, Engineer, 231
Smith, B., Sketches Abroad, 723
Street, G. E., Christ Church Cathedral, Dublin, 99
Swindell, J. G., Treatise on Wells, 726
Tolhausen, A., Dictionnaire Technologique, 725, 907
Turner, E., Hints to House-hunters, 935
Variorum, 193, 224, 263, 298, 367, 388, 461, 554, 727, 906
Waller, F. S., Gloucester Cathedral, 431
Wheatley, H. B., Art-work in Gold and Silver, 832
Woolrych's Metropolitan Building Acts, 431
Year, history of, 333
Yriarte, C., Rimini: Etudes sur les Lettres et les Arts à la Cour de Malatesta, 8, 49
Bourgs, German, 500
Bourn Abbey Church, 161
Bourse, Berlin, 457, 790
Bower-Barff process for iron, 653
Bradford chimney disaster, 1, 23, 60, 90, 126, 155, 163, 552
Brain-tax, the, on patents, 396
Brassworkers, National Association of, 462
Brazilian Government buildings, 457, 518
Breakwater for Hastings, 3
Breda Cathedral, monuments in, 451
Brentford Union schools, 620
Brewery, Burton-on-Trent, 844, 879
Bricklayers' Clubhouse, Southwark, 791
Bricks: bituminised, 74; at Building Exhibition, 467, 498; paving, 74; Roman, 7; Swiss, 74
Brickwork: bond in, 844; of chimneys, 362
Bridges: Baldwin's, Eton, 587; across the Humber, proposed, 906; East River, New York, 567; fall of, at Bromley, 31, 87; Hammersmith, 589; longest and highest, 394; Lyndhaan, 804; railway, at Blackfriars, 517; railway, across the Lossie, 760; Spandau, near Berlin, 706; Tunbridge Wells, 428; Waterloo, 332; Wellesley, Limerick, 444
Brighton: improvements, 29, 265, 602; railway travellers to, 139; sanitary certification of houses, 392; sewerage, 862
Bristol: a new hospital, 790; Master Builders' Association, 159; new prison for, 458; notes, 154, 159, 160, 227, 649
Bristol and Clifton Architects' Society, 866
Bristol and Gloucestershire Archæological Society, 24
British Archæological Assoc., 223, 296, 457
British architecture, primæval, 4 8
British Museum: Anglo-Roman and Saxon Antiquities, 523; Assyrian antiquities, 766, 890
Bromley: house at, 663; railway bridge failure, the, 31, 97
Bronze: decorative, 530; horse, ancient Greek, 598
Brooklyn, building in, 651
Broome Hall, Surrey, 636
Browne, Hablot K., works of, 323
Brewing and architecture, 765
Brünn Stadttheater, 242
Buddha statue, a, 790
Budget, Paris municipal, 567
Builders: maxims for, 495; medals for, 332
Builders' Clerks' Benevolent Inst., 282, 390
Builders' Benevolent Institution, 723
Builders' prices in the 16th, 17th, and 18th centuries, 23, 72
Building: ancient Greek, 369; in Berlin, 101, 724; in France, legislation as to, 700; Freemasonry and, 266
Building Act, Metropolitan, cases under: By-laws, 62; dangerous structures, 331; District Surveyors' fees, 515; line of frontage, 333, 367, 374; timber-stages, 759, 793, 830; what is a building? 903
Building-Society, a Danish, 567
Building, vitrified, 123, 203
Building-customs in India, 755
Building-trade in Paris, 34, 433, 766
Building Exhibitions: Agricultural Hall, 465, 498, 555; Birmingham, 620, 735, 793
Buildings: high, 769, 867; historic, 202; in Northumberland avenue, 686, 737, 797; superintendence of, 296, 333, 429; for technical education, 171
Bull & Sons, failure of, 62, 187, 903
Burdett-buildings, Westminster-road, 223
Burges, W., works of, 837
Burial-ground, St. James's, 872
Burial-places, ancient, 241, 289
Burnley, new buildings, 459
Burns memorial, Westminster Abbey, 206
Bursary, the Godwin, 30
Burton-on-Trent, new brewery, 844, 879
By-laws: model, 125, 772; of rural sanitary authorities, 772
Byron and architecture, 629

CABLE tramways, 555
Cafés and coffee-houses, 334, 378, 873
Cairo: antiquities of, 63; Deaconess's Hospital, 635; tombs at, 289
Calais Gate, Hogarth and, 735
Calamity at Sunderland, 855, 870, 904
Calcutta Exh bition, 161, 228, 521
Caliphs, tombs of the, 289
Calne Town-hall, 459
Camberwell, Wilson's Grammar School, 621
Campanili, 616
Campo Santo at Pisa, 140
Canada, demand for labour in, 727
Canadian and Pacific Railway, 791
Canal: casualties, 462; Manchester ship, 209, 550; through Palestine, proposed, 600; Suez, 23
Canal and railway: projects, 301; transport, 23, 836, 879
Canonbury Tower, 622
Canova and Thorwaldsen, 523
Canterbury Cathedral, 402, 432, 740
Canterbury Lectures, Society of Arts, 530, 587
Cape colony: trade in, 689; ecclesiastical architecture, 26
Capital of English railways, 552
Cards: Christmas, 555; Hildesheimer's, 290
Career, an unsuccessful, 8 4, 839, 873
Carpenters, a school for, 38, 208
Carpentry of Greeks and Romans, 667
Cases under Employers' Liability Act, 159, 399, 760
Cases under Building Act (see "Building Act")
Castles: Fillougley, 241; German, 500; Hertford, 128; Heidelberg, 685, 810; Nawerth, 312, 399; Neu-Schwanenstein, 377; Scotch, 796
Cathedrals: Breda, monuments in, 451; Canterbury, 402, 432, 740; Chester, 367, 686; Christ Church, Dublin, 99, 227; Cologne, stones of, 157, 774; Djakovar, Croatia, 287; Gloucester, 366, 431; Lichfield, 692; Lincoln, 444, 862; Liverpool, 588, 887; Lucca, 412; Manchester, 433, 692, 759; Monaghan, 337; Palermo, 602; Peterborough: central tower, 58, 71, 97, 106, 160, 298; Pisa, 140; St. Giles's, Edinburgh, 25, 311, 747; St. Paul's, decoration of, 103, 154, 224, 257, 292, 393, 429, 795; St. Paul's, Wellington Monument, 549; Spalato, 202, 442; Truro, 809; Ulm, 173, 208, 668; Upensky, Moscow, 666, 729; R. C., for Westminster, proposed, 6
Caucasian Museum, Tiflis, 497
Cavendish Memorial, the, 555
Celtic art, 533, 654
Cement: iron, 222; the picturesque in, 874; Portland, 36, 89, 257
Cemeteries, 222, 828, 879
Central Association of Master Builders, 331
Central Hall, Houses of Parliament, 440, 519, 551, 609
Ceramic schools at Limoges, 137
Certificates: architects', 405; sanitary for Brighton, 399
Chalet residences, Harrow, 289, 879
Chambers, Dr. W., 727, 739
Channel tunnel, the, 334
Chantrey Bequest, the, 622
Chapels: Croydon Palace, 719, 759; Lambeth Palace, 167; Lincoln's Inn, 458; Monastery of San Juan, Toledo, 412
Chapter-house, Lincoln, 444
Charing-cross, changes at, 67, 547
Charlottenburg, Polytechnic School, 774
Charterhouse, the, 722
Château Scott, Cannes, 124
Chatterton and St. Mary Redcliff, 559
Chaucer and architecture, 491
Cheltenham Gas Offices, 61, 207
Chester: archæological and art school buildings, 26; Cathedral, 367, 686; the Queen's School, 397, 819
Chetham Hospital, Manchester, 753
Chicago, progress of, 757
Children, working, 335
Chilians in Peru, 623
Chimes, St. Mary's, Kidderminster, 693
Chimney cleaning, 126
Chimney disaster, Bradford, 1, 23, 60, 90, 123, 155, 163, 552
Chimney-pieces in Doulton-ware, 68
Chimney-straightening, 91, 126
Chimneys: brickwork of, 362; size of, 831; and skyline, 754
Chinese fishing stations, 685
Chiswick Church, 361
Chit-chat from Paris papers, 687
Choirs and organs in churches, 163, 193, 206
Christ Church Cathedral, Dublin, 99, 227
Christiania Exhibition, 518
Chryselephantine statue of Athene, the, 591
Church-building News (see weekly numbers)
Church-building in Prussia, 428
Church-roofs in Holland, 3
Churches: Addlestone, 828; All Saints, Ipswich, 310; Assumption, Moscow, 666, 729; Autenil, 843; Banbridge, County Down, 862; Catholic Apostolic, Edinburgh, 23; Chiswick, 361; circular, of England, 3, 2; City, 690, 692; Coptic of the fifth century, 843; Croydon, 722; Graaff-Reinet, South Africa, 444; Greek, London-wall, 833; Hammersmith, 373, 697, 856, 857; Kew, 343; Kidderminster, 693; Llanbedr, 153; Memorial, Constantinople, 136; Oratory, Brompton, 225; Protestant, Leipzig, 312; Scottish National, Belgravia, 620; Sacred Heart, West Brompton, 547; San Francesco, Rimini, 49; San Pedro, Avila, Spain, 359; St. Andrew's, Peebles, 393; St. John's, Warsaw, 547; St. Kew, 240; St. Mary's, Battersea, 690; St. Matthew's, Bayswater, 444; St. Michael's, Queenstown, South Africa, 26; St. Paul's, Camden-square, 520; St. Peter's, Bohemia, Hastings, 602; St. stephen's, Walbrook, 690; Santa Teresa, Avila, Spain, 378; Steynton, Pembrokeshire, 725; Votive, Vienna, 197; West St. Giles's, Edinburgh, 125; Wren's, 547
Churchyard, Bermondsey, 298
Circus burned down, 95
Cistercian Abbey of Maulbrön, 798
Cistern: bad position for, 94; Chandler's, 262
City and Guilds of London Institute, 836
City improvements, 395
City of London Court, 31
Civil and Mechanical Engineers' Society: paper read at, 30, 57, 89, 190, 255, 344, 4.6; visit to Parkeston, 341
Class-rooms, 33, 69, 95
Classic face, the, 199
Classic architecture, modern, 221
Clay a treacherous foundation, 97
Cleopatra, by Tadema, 68, 106
Clergyman, a remarkable, 160
Clerks of works, 293, 333, 429
Cleveland iron in 1882, 38
Clocks and bells, 375, 657, 693, 868, 936
Cloisters, Monastery, St. Jerome, Belem, 563
Club, house decorators', 261
Clubhouses: Bloomsbury Volunteers, 740; Bricklayers', Southwark, 791; Derby, 433; Junior Army and Navy, 93; National Liberal, 547, 588; Ulster Reform, Belfast, 28, 656, 793
Coal, consumption of in London, 95
Coal and iron industries, 554
Cock Tavern, Fleet-street, 276, 721
Coffee-houses and cafés, 873; coffee-taverns, 334, 378
Coins, Roman, discovery of, 584
Colchester Corn Exchange, 432
Collections, royal, of pictures, 837
Colleges: City of London, 30; Eton, 828; Finsbury Technical, 291, 520; of Music, Royal, 657; University, Bristol, 154
Cologne: Cathedral, 157, 774; improvements at, 659
Colour: applied to architecture, 201, 273; of sculpture, 835; washable lime, 224
Colours, Scottish regimental, 206
Commissariat and transport, 836
Commissions, illicit, 3, 126
Compensation cases, 295, 430, 726
Competitions: Admiralty, new, 567, 587, 692; Baths, Swansea, 93; Berlin Art Exhibition Building, 619; Bridge, Baldwin's Trust, Eton, 587; Brighton improvements, 385, 602; Bookkeeping, 262; Chapel, Gohebydd Memorial, Stoke Newington, 194; Christmas Card Albums, 555; Church, All Saints', Ipswich, 310, 386, 735; Church, Congregational, Edmonton, 500; Church, Old Meeting, Birmingham, 587, 618; Church, Presbyterian, Forest Hill, 810; Church, Presbyterian, Harrogate, 861; Clubhouse, Ulster Reform, Belfast, 28; Corn Exchange, Colchester, 310, 432; foreign, 457; furniture, Berlin, 790; Government buildings, Rio de Janeiro, 467, 518; Hall for St. Gallen, 825; Hospital, Deaconess's, Cairo, 635; Hospital, Glasgow Southern, 54, 810; Hospital, Rome, 734; Infirmary, Sheffield, 310; Infirmary, West Cornwall, 735; Knightstone Island, Weston-super-Mare, 168; Leeman Memorial, York, 861, 902; Memorial to Alexander II., St. Petersburg, 792; Monument, St. Stephen's, Vienna, 635; Monument to Victor Emmanuel, Rome, 73, 206, 425, 879; Municipal buildings, Glasgow, 290; Municipal buildings, Nottingham, 27, 93, 168, 531, 554; Museum, Dublin, Science, 396; Museum, Stockholm, 425, 518; Offices for Gas Co., Cheltenham, 61, 94; Parliament House, Berlin, 863; Parliament House, Hungarian, Pesth, 686; railway construction and working, 518; roof, Royal Exchange, 27; roof, Spitalfields Market, 366; Schools, Bradford, 310; Schools (Board), Finchley, 38, 412; Schools, Kidderminster, 365; Schools, Leamington, 735; Schools, Ripley, 365; Schools, Sheffield, 857; Sculpture, St. George's Hall, Liverpool, 304, 691, 753; Sessions House, Birkenhead, 620; Sewerage, Frome, 194; Sexey's County School, Somerset, 365; Sorbonne, Paris, 68; Statuary for Blackfriars Bridge, 619, 655; Statue to Hugh Grotius, 825; Theatre, a local, 518; Townhall, Birkenhead, 620, 827; Town-hall, Brisbane, 902; Town-hall, Calne, 459; Town-hall, Eastbourne, 657; Town-hall, Gosport, 396; War Office, new, 567, 587, 699; Workhouse, Framingham, 396; Workhouse, Mansfield, 63
Competitions, double, 554
Competitions in France, 235
Competitions, Institute's Suggestions, 519
Competitions, justice in, 768
Concrete: at Building Exhibition, 467, 498; and the picturesque, 874; Portland cement, 257; water-pipes, 224; vault for heavy loads, 261
Conflict at Limoges, 137
Congresses: French Architects, 863; German sanitary, 412; hygienic, Berlin, 704
Cooquest, architectural influence of, 129
Constantinople, Memorial Church, 136
Continental: passenger traffic, 761; Sunday, the, 599
Contractors for Law Courts, failure of, 62, 187, 903
Contracts, London School Board, 829
Conversazioni: Institute of Architects, 906; Institution of Civil Engineers, 753
Co-operation: decorative, 760; in the Parisian furniture trade, 275; for residential purposes, 135
Cooking by gas, 225
Copenhagen, 412; Working Men's Building Society, 567
Cordova, Mosque of, 237
Corea, houses in, 408
Corfu, discovery at, 740
Cork Exhibition, 127, 657
Corn Exchange, Colchester, 432
Cornish Antiquities, 720
Corridors, dark, 863
Cottage Hospital, Paul's Cray, 843
Coulsdon Commons, 693
Council Chamber, new, Guildhall, 619
Country houses, insanitary, 236, 296, 428
Courts of Justice, Royal, 135, 187
Courts of Justice Chambers, 108, 753
Covent Garden: changes in, 67, 70; marketplace, 70; reminiscences of, 695.
Coventry: Archæological Society, 458; sanitary inspection at, 364
Cowls and skyline, 754
Cow-sheds, regulation of, 862
Cricklewood, house at, 140
Cromwell homestead at Putney, 601
Cromwell-Williams families, the, 687
Cross, an ancient Celtic, 533
Crossall Bequest, 291, 289
Croydon: Archiepiscopal Palace and Chapel, 622, 719, 759; carpentry classes, 38; church, 722; proposed new railway, 692; Whitgift's Hospital, 719
Crystal Palace: proposed new railway, 209; School of Engineering, 26, 567
Culm fires, 23.
Cyprus: Mediæval, 304; tomb of St. Catherine, 706

DAIRIES and cowsheds, 862
Dangers, house, 6
Danish building society, a, 567
Darlington Free Library, 705
Death-rate, diminished, value of, 617
Decorating trade, the, 258
Decoration: architecture and, 188; amateur, 685; at Building Exhibition, 371; Bull, Houses of Parliament, 440, 519, 551, 699; mosaic, 740; and ornament, 119; painted tapestry, 68; personal, 396; of the Rath-haus, Berlin, 26; of St. Paul's Cathedral, 103, 154, 224, 257, 292, 393, 429, 795; wallpaper, 261
Decorations: at Building Exhibition, 467, 498; of saloon, yacht *Boadicea*, 42
Decorative: art, 869; Co-operators' Association, 760
Decorators' Club, 261
Delisle, M., and the Ashburnham MSS., 272
Deposits, Post-office Savings Banks, 732, 792
Derby, exhibition of paintings by Wright, 426
Design: first principles of, 563; modern, 325; teaching of, 258, 265, 33), 439, 723
Design for an Academy of Music, 568
Desire for a new style, 34
Development of science of hygiene, 788
Devil's Dyke Railway, Brighton, 793
Devonshire Hospital, 657
Diamond-fields of South Africa, 689
Diocletian's Palace at Spalato, 202, 442
Dirt a source of light, 198, 296
Discoveries, archæological: in Babylonia, 489; a Coptic Church of the Fifth Century, 843; Corea, 740; in Cornwall, 533; Egyptian papyri, 39; Fiesole, 843; an ancient Greek bronze horse, 598; in Mexico, 552; in Paris, 425; Rhodes, 843; Roman aqueduct at Altri, 157; Roman coins in Kent, 584; Dr. Schliemann's, 133, 203, 906; Steynton Church, Pembrokeshire, 725; in Syria, 663; Tivoli, 740; at Westminster Abbey, 225; will of Augustus Cæsar, 619; Yucatan, 272
Disfigurements, Thames Embankment, 395

Disinfection of inundated houses, 425
Dissenting Church-building News (see weekly numbers)
District Railway ventilators, 331, 337, 403, 583, 770, 906
District surveyors: and dangerous structures, 331; election of, 394
District Surveyors' Association, 534
District Surveyors' fees, 299
Djakovar Cathedral, Croatia, 287
Docks: floating, 57; Hull, 136; Parkeston, 341, 399
Doctors' houses, 139, 297, 373, 398, 431
Dome of St. Paul's, 154, 224, 257, 292, 303, 429
Doors: hall, 5; sliding, 904
Doorways: chapel, Lambeth Palace, 167; Church of Santa Teresa, Avila, 378; Monastery of San Juan, Toledo, 412
Doric architecture at Dublin, 799
Doulton-ware chimney-pieces, 68
Dover Seaside Orphans' Rest, 706
Dowson economic gas, 829
Drainage: Amsterdam, 364; scamped, 622
Drama, the Homeric, 735
Drapers as builders and decorators, 258
Draughtsmanship, James Nasmyth's, 231
Drawings by Flaxman, 303
Dresden industrial museum, 134
Dress, personal decoration and, 396
Drill-hall, Bloomsbury Volunteers, 740
Dry-rot in City churches, 690
Dryden and architecture, 527
Drying new buildings, 657
Dublin: Christ Church Cathedral, 99, 227; Doric architecture at, 799; hygiene in, 330; Royal Hibernian Academy, 334; Sanitary Association, 223; Science Museum, 396
Dudley Gallery, 303, 802
Dumas Monument, Paris, 451
Duncan, E., works of, 302
Dunecht outrage, the, 861
Dutch method of bonding brickwork, 844
Duty on wood in Germany, 724
Dwelling-houses in European capitals, 410
Dwelling-rooms, ventilation of, 56
Dwellings for artisans, 195, 223, 225, 332, 333, 367, 534, 589, 616, 635, 693, 774, 830, 862, 863, 880
Dwellings, domestic, in Sweden, 583
Dwellings in flats at home and abroad, 135, 140, 223, 235, 366, 410, 583, 616
Dwellings, unhealthy, Whitechapel, 833, 866
Dying London, 67
Dynes Hall, Essex, 127

EARTHEN monoliths, 133, 203
Earthworks: Croxall Mound, 241; Fillongley, 241
Eastbourne Town-hall, 657
Eastcheap, value of property, 158
Easter holidays, the, 405
Eccentricities of house-builders, 223, 262
Economy: in sanitation, 617; in water transport, 23 (see also "Canal")
Eddystone Lighthouse keepers, 307
Eden Theatre, Paris, 31, 171, 208
Edifices, London, 725
Edinburgh: Architectural Association, 87, 229, 426, 499, 695, 654, 723, 796; Architectural Exhibition, 6; building in, 550, 588, 640, 749, 901; Catholic Apostolic Church, 23; St. Giles's Cathedral, 25, 311, 727; street improvements, 332, 458, 551; a new theatre, 398; West St. Giles's Church, 125; works in, 25
Edmeston, Mr. J. S., 830
Edmonton Congregational Church, 500
Education: art, 426; and hygiene, 832; technical, 38, 171, 208, 261, 291, 391, 409, 520, 836, 866
Education or stupefaction, 801
Eglises Circulaires d'Angleterre, les, 302
Egress from public buildings, 859, 870, 904
Egypt: Arabian art in, 412; discoveries in, 843
Egyptian: art, 435, 557; papyri, 39
Eheu! Deleta, 631
Election of District Surveyors, 394
Electric lighting (see "Lighting, electric")
Electric Lighting Act, the, 334
Electricity as a motive-power, 403, 409
Elevators, 399
Embankments of the Thames, 406; disfigurement of, 395; at Pimlico, 63
Embroidery in Switzerland, 611
Employers' Liability Act, 159, 585, 760
Employers' Liability Assurance Corporation, 585
Engine-house, Thames Embankment, 395
Engineering: at Crystal Palace, 26, 567; Parliamentary, 255, 267; in the United States and Canada, 158; at University College, 31
Engineers: Amalgamated, 761; honour to, 907; legal position of, 664
English: circular churches, 372; painters, 66; railway capital, 552
Ensilage, 95, 195, 877
Episcopal residence, Portsmouth, 787
Epsom Town-hall, 460
Esplanade, Southend, 705
Estimates for Vienna Town-hall, 756
Etchings at Burlington Fine Arts Club, 770
Eton College, 529
Euston Station, new offices, 312
Eve, statues of, 698
"Evershot," Cricklewood, 140
Examinations at Surveyors' Institution, 253, 619, 899
Excavations at Pantheon, Rome, 157
Exhibitions: Amsterdam, 34, 332, 362, 565, 632, 721, 826; Art, Rome, 636; Art, in Whitechapel, 399; Berlin, Hygienic, 395, 433, 443, 457, 754, 790; Berne, 601; Boston, U.S., 299; Brighton Spring Exhibition of Pictures, 802; Building Trades', Agricultural Hall, 455, 488, 555; Building Trades', Birmingham, 620, 735, 792; Calcutta International, 161, 228, 521; Christiania, 518; Cork, 127, 657; Doulton ware chimney-pieces, 68; Dudley Gallery, 303, 802; Edinburgh Architectural, 6; Electric, Vienna, 262, 361, 521, 656; Etchings at Burlington Fine Arts Club, 770; Fine Arts, Berlin, 654; Fine Art, Rome, 234; Fisheries, 338, 588, 654, 685, 828; Foreign, 861; Forestry, 900; French and Flemish, 441; Furniture Trades, 583, 615; Grosvenor Gallery, 593; Huddersfield Art and Industrial, 228; Irish lace, 871; Institute of Painters in Water Colours, 561, 568; Italian and Spanish Art, Berlin, 861; Liverpool Society of Painters in Water Colours, 737; Massachusetts, 362; Metal Workers', Berlin, 791; Metallurgical, Madrid, 825; Munich art, 31, 235, 444; Municipal, Vienna, 405; Pictures by the "Impressionists," 562; pictures by Wright, of Derby, 426; portraits of French Painters, 654; Royal Academy, 696, 624, 660; Royal Hibernian Academy, Dublin, 334; Royal Scottish Academy, 271, 306; *Salon*, Paris, 235, 518, 634, 687; Samples, Stuttgart, 867; sanitary, at Knightsbridge, 787, 902; Smoke Abatement, 29, 286, 397, 429, 460, 554; Society of British Artists, 440; Society of Painters in Water Colours, 592; Swiss National, Zurich, 378, 825; Washington, 1884, 332; Water Colours, Birmingham, 433; works of Hablot K. Browne, 329; works of lady artists, Paris and London, 372; works by Mr. Tinworth, 550; Yorkshire Fine Art, 862
Expeditions, French scientific, 552
Experiments: electric, 276; in smoke abatement, 29, 296, 344, 397, 429, 460, 554
Explorations, Babylonian, 489
Explosion at Westminster, the, 432
"Extras" at Royal Courts of Justice, 187

FACE, the classic, 199
Factory at Northampton, 106
Factory chimney: construction, 1, 28, 61, 91, 136, 155, 163, 294, 552; straightening, 91, 126
Facts, new, as to inland transport, 879
Failure of the contractors for Law Courts, 62, 187, 903
Failures, structural, 1, 30, 31, 61, 91, 97, 126, 155, 161, 552
Fees, surveyors', 299, 830
Feet and hands, 269
Felt houses, 724
Female School of Art, 342, 399
Fenchurch-street: new buildings, 430, 438; railway station, 427
Ferstel, the works of Baron von, 197
Fever by despatch, 906
Fillongley Castle, 241
Finchley: Board Schools, 38; house, 242
Finsbury Technical College, 261, 540
Fire Brigade: head-quarters, Southwark, 793; station, Scotland-yard, 757
Fire-engines, steam, 653
Fire-extinction, instruction in, 554
Fire-prevention in theatres, 190, 824
Fireproof: construction, 28, 127; scenery, 424; walls, 294
Fireproofing textile fabrics, 94
Fire-resisting plastering, 291
Fires: Amsterdam Exhibition, 731; Berlin hygienic exhibition, 433; Beverley Minster, 333; at a builder's, 623; in a circus, 95; at a concrete factory, 907; in Jamaica, 31; in mansions, 30, 334; Rochdale Town-hall, 521, 555; saw mills, 867; in theatres, 28, 497, 829
First principles, 563
Fish markets, 656, 664, 760, 792, 793; Mediæval, in London, 841
Fish-supply question, 307, 656, 664, 760, 792, 793
Fisheries, Chinese, 685
Fisheries Exhibition, 338, 588, 654, 685, 828
Flats at home and abroad, 135, 140, 223, 235, 366, 410, 583, 616
Flaxman's drawings, sale of, 303
Fleet-street, changes in, 67, 222, 242, 276, 636, 721, 774
Floating-docks, 57
Floods: Pimlico, 63; remedy for, 401, 411, 425
Floors: hardening, 94, 126; paint for, 56; pugged with sand, 393
Flue: defective, suffocation of two people by, 127; size of, 831
Food for the million, 307, 656, 664, 760, 792, 793
Footways, cost of cleansing, 723
Fore-street, building in, 906, 461
Foremen and their favourites, 690, 759, 795
Forest: Hainault, 555; petrified, 690; Windsor, the, 153
Forest-hill railway station, 653
Forestry, schools of, 639, 900
Form-blindness, 665
Formby's Cement Company, 555
Foundations, 87, 97; of Waterloo Bridge, 332
Fountain, Redditch, 665
Fountain-court, Strand, 903
Fowler, Mr. C., presentation to, 534
France: fine arts in, 157; legislation as to building in, 740; wages question in, 766
Fraudulent gifts and commissions, 3, 126
Freckenham Church tower, 30
Free libraries: Darlington, 705; Twickenham, 797
Freeholds, City, value of, 294
Freemasonry, history of, 266
Freemasons' Hall, 760, 796, 833
French: architects, congress of, 863; artists, twelve, 802; furniture, 304; scientific expedition, 552
French and Flemish Exhibition, 441
Frescos, set of, 426
Frome sewerage, 194
Fruit sale-rooms, Monument-yard, 867
Fuel, smokeless, 23
Fulham Infirmary, 360
Functions of architects and engineers, 665
Furniture, French, 304
Furniture-trade of Paris, co-operation in, 275
Furniture Trades Exhibition, 588, 615
Future of the journeyman, 759, 795, 863

GAS: and the electric light, 223, 299; for cooking, 225, 619; Dowson economic, 829; for heating purposes, 829; on the stage, 657; from sewage, 198, 296; shares, value of, 725
Gas-bill, Metropolitan, 803
Gas-consumers, hints to, 221
Gas Institute, the, 861
Gas-lamps, lighting by electricity, 457
Gas lighting and vegetation, 225, 262
Gasometer, explosion of, 127
Gateshead tramways, 30
Gatti's Music-hall, Westminster-road, 394
Genoa harbour, 262
German: Archæological Institute, Rome, 652; castles and bourgs, 500; industrial museums, 134; Parliament House, Berlin, 863; Sanitary Congress, 412; theatre at Prague, 805
Germany: laundering, 333; wood-duty, 724
Gifts, fraudulent, 3, 126
Girgenti, 333
Glance backwards, a, 632
Glasgow: Board Schools, 262; gasometer blown up by dynamite, 127; Institute of Architects, 260, 685, 849; Master Builders' Association, 651; Municipal buildings, 290; Southern Hospital, 554, 810
Glasgow and Edinburgh, rivalry of, 399
Glass, effect of explosions on, 432
Glazing, methods of, at Building Trades' Exhibition, 467, 498
Gloucester Cathedral, 366, 431
Glover's tip-van, 430
Godwin Bursary, the, 30, 171
Goldsmiths': Company, 906; work, 832
Goole sewerage works, 903
Graaff Reinet, South Africa, church at, 444
Gracechurch-street, new buildings in, 457
Gravitation of travel, 309
Gray's Inn-road improvement, 652
Greece, modern vandalism in, 732
Greek: building, ancient, 369; church, London Wall, 830; face, the, 199; painting, ancient, 311; temples, lighting of, 492
Greeks and Romans: masonry and carpentry of, 667; mines and metals of, 566
Grosvenor Bridge, Tunbridge Wells, 428
Grosvenor Gallery, 593, 656
Ground-leases, 832
Guadalajara, Castile, 740
Guildhall: alterations at, 40; new Council-chamber, 619

HAINAULT Forest, 555
Halifax School of Art, 298
Hall-doors and house dangers, 5
Halls: Cardiff, 457; Freemasons', 760, 796, 833; Lund University, Sweden, 74; parish, Jersey, 359; Prince's, Piccadilly, 563; Sadgley, 61; St. James's, Piccadilly, 242, 292, 306; Sunday School Memorial, Leicester, 841; Westminster, 293, 458, 496, 622
Hamburg: Architectural Society, 410; dwellings, 410; Palace of Justice, 444
Hammersmith: Bridge, 589; Church, 373, 597, 656, 657
Hampstead, changes at, 625
Hampstead-road, changes in, 872
Hands and feet, 269
Harbours: Genoa, 262; Stonehaven, 399
Harbours of refuge, 228
Harrow, chalet residences, 289, 879
Hastings and St. Leonards, 36
Hawarden Castle mail steamer, 555
Head-quarters: Bloomsbury Rifles, 740; Metropolitan Fire Brigade, 793
Heating and lighting, 103, 330, 521
Heidelberg Castle, 535, 810
Hellenic studies, 861
Hendon, land at, 724
Hereford, the "Old House," 753
Hertford Castle, 128
High buildings, 769, 867
Highways: maintenance of, 411; use and abuse of, 439
Himalayas, architecture of, 104
Hindrances, 328, 359
Hints: to gas consumers, 221; to householders, 905
Hints and maxims for builders, 405
History of Freemasonry, 266
Hitchins's fire-resisting plastering, 291
Hogarth and Calais Gate, 735
Holborn: changes in, 67; to Islington, 437
Holidays, the, 406
Holland: brickwork, 844; church roofs, 25
Home in Banner-street, the, 588
Homer and architecture, 491
Homeric drama at Cromwell House, 735
Honour, a well-deserved, 561
Horse Armoury at the Tower, 332
Hospital: construction and planning, 309, 875; sanitation, 805, 860, 875
Hospitals: artistic materials for, 805, 860; Children's, Birkenhead, 900; cottage, St. Paul's Cray, Kent, 843; Bristol, 649, 790; Cairo, 635; Darlington, 262; Glasgow Southern, 554, 810; for Rome, 734; Royal Berks, Reading, 157; St. William's, Rochester, 653; South Africa, 365
Hotel fire in Milwaukee, 95
Hôtel Métropole, 686, 757, 797
Hotels: Northumberland Avenue, 686, 757, 797; Malvern, 63
House of the soul, the, 396
House-builders, eccentricities of, 223, 262
House-building in Paris, 616, 635
House-dangers, past and present, 5
House decoration, amateur, 585
House decorators' Club, 261
House-owners' liabilities, 655
Houses: artistic materials for, 805, 860; in Bell-yard, Fleet-street, 242; Bromley, 668; Corea, 408; country, sanitary condition of, 236, 296, 438; Cricklewood, 140; disinfecting and drying after inundation, 425; doctors', 139, 297, 373, 398, 431; of European capitals, 410; felt, 724; Finchley, 242; fireproof, 127; healthy, 364; high, 769, 867; Indian, at Surat, 823; iron, 157; leases of, 656, 700; Norwegian, 705; old, Hereford, 756; old suburban, 631; ownerless, 334; sanitary certificates as to, 399; sanitary inspection of, 95, 124; Strand, new, 289; warming, 521; Windlesham, 373
Houses of Parliament, decoration of Central Hall, 440, 519, 554, 699
Housing the poor, 863
Huddersfield: Kirkgate-buildings, 10; lead poisoning at, 271
Hull and Barnsley railway and dock, 136
Humber railway bridge, proposed, 906
Humboldt monuments, 827
Hungarian Parliament-house, Pesth, 686
Hyde Park-corner, 122, 161, 187, 433, 583, 602, 622, 839
Hygiene: of armies, 907; in Dublin, 330; education and, 862; the science of, 788
Hygienic: congress, Berlin, 704; Exhibition, Berlin, 395, 433, 443, 457, 754

ILKESTON sewerage scheme, 907
Imperial Property Investment Co., 499
Impressionism in art, 370, 562
India, building customs in, 755
Indian: architecture, 755, 808, 823; Institute, Oxford, 652; Public Works Department, 641
Industrial: armies, our, 836; museums in Germany, 134; progress, 906
Industrial schools, Artane, 91, 229
Industry, mechanical, in Russia, 223
Infantado Palace, Guadalajara, 740
Infirmaries: Fulham, 360; Oldham, 589; Sheffield, 310
Influence of conquest, architectural, 129
Influence of natural forms on architecture, 889
Inner Circle Railway, 295, 396, 430
Inquest, Bradford Chimney Accident, 183 (see also "Bradford")
Inspection, sanitary, of houses, 95, 124
Inspectors, sanitary, 126, 554, 829
Institute of Painters in Water-Colours, 126, 462, 561, 568, 615, 633
Institute, Royal, of British Architects: annual meeting, 649; Architecture of the Himalayas, 104; Architecture in India, 808; Buildings in Northumberland-avenue, 686, 797; Buildings for Technical Education, 171; Cistercian Abbey of Maulbrönn, 738; Committee on the Law of Light, 102; *Conversazione*, 906; Domestic Dwellings in Southern Sweden, 583; Foreign Correspondence, 807; Medals and Prizes, 171, 310, 807; Mosques of Cordova and Kairwân 237; Presentation of Royal Gold Medal, 807; Report of the Council, 617; Revised Paper of Suggestions for the Conduct of Architectural Competitions, 519, 554; student's drawings, 310
Institution of Civil Engineers, 30, 258, 362, 409, 565, 639, 753
Inventor of the Steam-hammer, 231
Inventors and the Patent laws, 377, 396
Ipswich steamship, the, 761
Ireland, sanitary progress in, 517
Irish affairs, bearings of archæology on, 303
Irish Lace Exhibition, 871
Iron: in architecture, Mr. Aitchison on, 297; cement, 222; Cleveland, in 1882, 38; columns, defective, 433; decorative treatment of, 531; dephosphorisation of, 588; and fireproof construction, 28; houses, 157; preserving, 653; stoves, 228; theatre, a, 395
Iron and Coal Industries, 554, 601
Iron and Steel Institute, 683
Ironwork: wrought, 797; at Building Exhibition, 467, 498
Irregularity and regularity, 598
Islington, 437
Italian architecture, 233, 395, 513, 723
Italy: malaria in, 796; Pozzolana deposits, 138; sketches from, 412

JAMAICA, fire in, 31
Jersey: parish halls, 359; pleasure-grounds, 657
Jesmond Wesleyan Church, 397
Joiner's shop management, 690, 759, 795
Joinery of hall doors, 5
Jordan, navigation of the, 600, 794
Journeyman, future of the, 759, 795, 863
Junior Army and Navy Club, 93
Jupiter Pluvius, 61
Justice in architectural competitions, 768

KAHLENBERG Monument, Vienna, 568
Kairwân, Mosque of, 237
Keats and architecture, 696
Kenney, the late C. L., 160
Kensington: market, proposed, 158, 159, 520; St. Paul's School, 553; town-hall, 56, 63, 550; Vestry and illicit commissions, 3
Kew Church, 343
Kidderminster parish church, 586
Kieff, sanitary state of, 260
King of Bavaria's new palace, 377
King's palace at the Tower, 662
Kirkgate buildings, Huddersfield, 10
Kitcheners at Building Exhibition, 467, 498
Knightsbridge Sanitary Exhibition, 787, 902
Knightstone Island competition, 158
Konyetzlik Gallery, British Museum, 800
Kremlin, Moscow, 729

LABOUR-MARKET, state of the, 259, 301
Lace, Irish, 871
Lady artists, 342, 372
Lady surveyor, a, 866
Lambeth, Artisans' dwellings scheme, 367
Lambeth Palace, its associations, 165, 227
Lamp, miners', 161
Lancashire & Cheshire Antiquarian Soc., 753

Land: Birmingham, 686; in the City, 564; Darenth, 692; Hendon, 724; reclamation of, 406; value of, 263; Wimbledon, 862
Landslip at Liverpool, 30
Land-tax, the, 691, 758
Law as to: architects' certificates, 405; false representations by agents in regard to value of property, 733; light, 94, 102
Law Courts, the new, in and around, 138; big bell for, 687; failure of the contractors, 62, 187, 903; shrinkage of woodwork at, 95
Law Courts, Hamburg, 444
Law Courts, old, Westminster, 71, 127, 293
Lawns, 228, 520, 656
Lawyers and architects, 239, 293, 311, 366, 397, 426
Lead, decorative treatment of, 531
Lead-poisoning, 271
Leadenhall-street, new buildings in, 457, 520
Leases: ground, 832; of houses, 658, 700
Lectures (architectural) at Royal Academy, 207, 273
Ledbury Church, memorial window, 174
Leeds Architectural Society, 229, 292, 328, 389, 399
Legislation: private Bill, 341, 402; proposed, on building in France, 700; sham, 688, 787
Leicester, Sunday School Hall, 844
Leipzig, Protestant Church, 312
Leith sailors' home, 898
Lessons of a biographical sketch, 629
Letters, writers of—
Aitchison, G., tensile and cross strains, 795
Aldwinckle, T. W., class-rooms, 95
Baggallay, F. T., "Looking Back," 725
Barker, E. H. L., Steynton Church, 725
Bartlett, H. H., worms on lawns, 656
Bentinck, G. C., Decoration of Houses of Parliament, 519
Birch, G. H., Cantor Lectures, 587
Blashill, T.: church roofs in Holland, 25; Dutch brickwork, 844
Bolt, B., artisans' dwellings, 830
Botting, F., sanitary condition of country-houses, 296
Brown, S., ruins in Cyprus, 706
Brunton & Trier, stone-cutting machines, 160
Caws, F., the Sunderland disaster, 904
Chappuis, P. E., bean-feasts, 863
Chinnock, Galsworthy, & Co., Members' Mansions, 200
Clark, D. K., smoke abatement tests, 429, 554
Clarke, A., gas *v.* vegetation, 262
Coles, W. R. E., smoke abatement tests, 397
Connon, J. W., double competitions, 554
Conquest, A. W., to the benevolent, 262
Conradi, W., Christ Church Cathedral, Dublin, 227
Crace, J. G., teaching at schools of art, 258
Cubitt, J., Church of the Redeemer, Edgbaston, 656
Cussans, J. E., Hertford Castle, 128
Dunkley, H., foremen and favourites, 759
Edmeston, J. & J. S., buildings in Leadenhall-street, 520
Edwards, F.: awards at Smoke Abatement Exhibition, 29, 296, 460; size of chimneys, 831
Ewart & Son, fraudulent gifts, 126
Fogerty, W., Vienna railways, 756, 796
Foster & Dickson, Blackmore Park, 258
Fowler, F. H., class-rooms, 95
Gale, A. J., professional practice, 429
Giraud, B., ancient burial-places, 289
Gough, H. R., Croydon palace, 759
Graham, the construction of theatres, 224
Grimes, E.: landlord and tenant, 758; rainfall, 91
Hammond, W. F., decoration of St. Paul's, 795
Hebb, J., construction of theatres, 258
Hedges, K., gas-lighting and vegetation, 225
Hope, Beresford, Street Memorial, 429
Hoskins, G. G., calamity at Sunderland, 859
Huggins, S., decoration of St. Paul's, 103, 393
Inkpen, B., superintendence of buildings, 333
Jackson, T., straightening chimney, 91
Jones, W., Cheltenham gas offices, 297
Kerr, R., lawyers, 311, 426
Legg, S. C., sanitary inspectors' association, 554
Lorentz, P., Norwegian timber houses, 705
Marks, A., Lambeth Palace, 237
Matheson, E., public works, 297
Mathews, J. D., Architects' Benevolent Society, 554
May, E. J., house, Bedford Park, 398
Meyer, H. R., overhead wires, 62
Milbourn, T., dry rot in churches, 690
Moore, F., calamity at Sunderland, 859
Nolf, A., marbles, 656
Paterson, R. O., Cheltenham Gas Offices, 61
Payne, E., Greek Church, London-wall, 830
Pearse, R., bankruptcy law, 227
Pocock, G. P., Red Sea and Jordan navigation, 794
Price, Lee, & Co., house, Bedford-park, 431
Sams, W. T., the Grosvenor Gallery, 656
Scott, G. G., Church of St. John Baptist, Norwich, 656
Sivart, H. de, Dome of St. Paul's, 154
Smeaton, J., rain-water conductors, 759
Smith, A., Cheltenham Gas Offices, 94
Spence, C., future of the journeyman, 759
Spencer, J. P., architects and lawyers, 366
Statham, H. H., organs in churches, 206
Stopford, H. W., Teaching Design in Schools of Art, 723
Thomas, W. C.: affectation in art, 157; decoration of the house of the soul, 396; rightness in art, 519
Thwaite, B. H., iron and fire-proof construction, 28
Trapp, E. C., light out of dirt, 296
Letters, writers of (*continued*):—
Travis, H., smoke and Westminster Abbey, 261
Tudor, T., the water companies, 160
Vickery, G., buildings in Fore-street, 461
Wallen, F., timber-stages, 830
Warner, H., advantages of unionism, 863
White, W., damp and porous walls, 227
Williams, R., housing the poor, 863
Worthington, T., Garlands Asylum, Carlisle, 224
Liabilities of house-owners, 655
Liberty, colossal statue of, 687
Library of Lambeth Palace, 167
Lichfield Cathedral, 692
Lifts, 160, 399, 467, 488
Light on the most ancient architecture, 133
Light for dark passages, 863
Light out of dirt, 198, 206
Light, rights of, 94, 102, 206
Lighthouse-keepers, Eddystone, 307
Lighting of Greek temples, 492
Lighting, electricity, 223, 241, 276, 298, 299, 334, 457, 688, 692; applications to Board of Trade, 27
Lighting and heating, 103, 330
Lightning conductors, new system of, 791
Lime-colour, washable, 224
Lime-street, new buildings, 430, 438
Limerick, Wellesley Bridge, 444
Limoges, ceramic works at, 137
Lincoln: Cathedral, 444, 862; central railway station, 30
Lincoln's Inn: Ben Jonson at, 532; chapel, 458
Lincrusta-Walton, 397
Linen for roofing, 364
Linnell's works at Burlington House, 2, 33
Liverpool: Art Club, 329; Architectural Society, 188, 651; artisans' dwellings, 693; Ashcroft Buildings, 509; cathedral, 588, 897; Eberle's Hotel, 864; Engineering Society, 158, 462, 598, 791; Free Library, 432; landslip at, 30; municipal records, 731; sculpture for St. George's Hall, 364, 691, 758; Society of Painters in Water-colours, 727; Water Engineer's office, 399
Local Government Board, reports to, 225
Locomotion in London, 403
Locomotive for tramways, a, 598
Locomotive works, Neasden, 551, 587
London: Bridge, proposed widening, 863; builders' work in, three centuries ago, 23, 72; consumption of coal in, 95; dying, 67; Æddles, 725; Gas Bill, the, 863; the growth of, 525; locomotion, 403; markets, 564; viability of, 659; water, 128, 160
London's Mediæval fish-markets, 841
London and Middlesex Archæological Society, 496
London Sanitary Protection Association, 840
London School Board: Architect's Department, 333, 368; contracts, 829
Longfellow: memorial, the, 132; and architecture, 697
Looking back, 633, 725, 794
Lubeck, sanitary condition of, 443
Lucca Cathedral, 412
Lunatics in a competition, 425
Lund University, Sweden, 42, 74
Lycian antiquities, 203

MACHINE tools, 362
Machinery: at Building Exhibition, 467, 498; for working stone, 59, 160
Maintenance of roads, 411, 439
Malaria in Italy, 796
Malatestas, the, and Rimini, 8, 40
Management of builders' shop, 690, 759, 795
Manchester: cathedral, 435, 692, 759; Chetham's hospital, 753; Institution, 619; ship-canal, 299, 550; Victoria buildings, 295; water supply, 534
Manitoba, 363
Mansions: Blackmore Park, 208, 258; burned down, 30, 334; iron, 157; "Oxford and Cambridge," Marylebone, 140
Manufacture of Portland cement, 36, 89
Manuscripts, the Ashburnham, 272, 334, 621, 833
Marble of Attica, the, 395
Marienburg, the, near Hanover, 500
Markets: Birmingham, 792; Covent Garden, 67, 70, 695; fish, 656, 664, 760; London and Paris, 564; Mid-London, 127, 158; Newark, 663; Spitalfields, 366; South Kensington, 158, 159, 529
Masonry, 87; ancient, in Syria, 663; of the Greeks and Romans, 667
Masons' work at the Tower of London, 23
Massachusetts Exhibition, 362
Masters and Men, *réunion* of, 229
Materials: artistic for houses and hospitals, 805, 860; at Building Exhibition, 467
Mausoleum, Spalato, 202
Maxims for builders, 405
Mayfair, Lord Londonderry's stables, 278
Measures against scaffold accidents, 443
Measuring, payment for, 160, 226
Medals for builders, 332
Medical officers of Health, 692
Members' Mansions, Westminster, 158, 200
Memorials of the dead, 833
Menes-Smith Travelling Studentship, 663
Metal in architecture, treatment of, 530, 587
Metropolitan Board of Works; and Northumberland-avenue, 686, 757, 797; sale of sites for artisans' dwellings, 774
Metropolitan water-supply, 732
Metropolitan Building Act, cases under (see "Building Act")
Mexican antiquities, 552
Middlesbrough public buildings, 42
Milton: and architecture, 492; proposed memorial, 334
Mines and metals of Greeks and Romans, 556
Miscellanea (see weekly numbers)
Model By-laws, 125, 772
Models, artists', 666
Modern design, 325
Moisture in walls, 689
Monaghan Cathedral, 397
Monasteries: Belem, 568; Toledo, 412
Money value of diminished death-rate, 617
Monoliths, earthen, 133, 203
Monument-yard, fruit sale-rooms, 667
Monumental items, 127, 149, 228, 263, 334, 553, 555, 619, 635, 653, 693, 724, 758, 861, 883, 902
Monuments: Alexandre Dumas, Paris, 451; of Arabian art in Egypt, 412; Breda Cathedral, 451; Humboldt, 827; Kahlenberg, Vienna, 568; Münster Cathedral, 28; Prince Imperial, 63, 95; Spohr, 518; Victor Emmanuel, Rome, 73, 206, 425, 879; Wellington, St. Paul's Cathedral, 549
"Mortar" at West Ham, 794, 866
Mortar for fire-proof walls, 294
Mortising machine, the "Eclipse," 160
Mosaics, 514, 740
Moscow: the Kremlin, 729; sanitary state of, 260; Uspensky Cathedral, 686, 729
Mosques: Cairo, the, 63; Cordova and Kairwân, 237
Mound, Croxall, 241, 289
Munich Art Exhibition, 31, 235, 444
Municipal buildings: Glasgow, 290; Middlesbrough, 42; Nottingham, 27, 93, 158, 521, 554; Yarmouth, 429
Municipal records, Liverpool, 731
Münster Cathedral, monument in, 26
Mural painting, the waiting game as to, 551
Muscovite architecture, 729, 771
Museums: Alnwick, 4; Architectural, 106; Berlin, 102, 134; British, 634; British, Anglo-Roman and Saxon antiquities, 623; British, Assyrian antiquities, 766, 800; Dublin, 396; industrial, in Germany, 134; Natural History, South Kensington, 633, 685; Oriental, Vienna, 889; Parkes, 600, 640, 736, 788, 803, 868, 875, 907; the planning of, 633, 655, 685; Sir John Soane's, 58; South Kensington, 441, 634, 833; Stockholm, 425, 518; Sydney, 427; Tiflis, 497
Music, Design for an Academy of, 568, 636
Music, Royal College of, 667
Music of Wagner, 233
Music-hall, Gatti's, 394

NASMYTH, James, 231
National Association of Master Builders, 194
National Gallery, the, 312, 655
National Health Society, 636, 787, 902
Natural forms and architecture, 863
Navigation: inland, 23; Jordan, 600, 794
Nawortb Castle, additions at, 312, 349
Neasden, locomotive works, 551, 587
Need for a new style, supposed, 34
Needlework, Art, School of, 399
Neglected art epoch, a, 771
Newark Market Hall, 668
New York: colossal statue for, 687; East River Bridge, 587; elevated railway, 224; a high house, 867; subterranean projects, 757
New Zealand timber supply, 693
Newton Abbot School of Art, 330
Nice state of things, a, 97
Northampton, factory at, 106
Northern Architectural Association, 240, 860
Northumberland, antiquities of, 4
Northumberland Avenue, buildings in, 686, 757, 797
Norwegian style of building, 705
Notes: from abroad, 234; from Edinburgh (see "Edinburgh"); on professional practice, 238, 296; on school planning, 38; from the West, 649
Nottingham: municipal buildings, 27, 93, 158, 521, 554; School of Art, 411; visit of the Society of Engineers, 842
Nuisances, inspection of, 126, 829
Nuisances Removal Act, the, 94

OBITUARY: Allen, J. M., 863; Ashpitel, A., 236; Blatchford, H., 40; Brendstrup, M., 686; Brotherhood, R., 310; Browne, Rev. W., 160; Castellani, A., 831; Chambers, Dr. W., 727, 739; Clint, A., 433; Corbaux, Miss F., 226; Doré, G., 125; Farr, Dr. W., C.B., 532; Firbank, —, 28; Geefs, G., 125; Haosen, Dr. C., 686; Higgs, W., 93; Hütter, K., 734; Jacommetti, J., 653; Lee, J. S., 28; Lucas, R. C., 125; Malahide, Lord Talbot de, 553; Manet, E., 653; Ogle, C. C., 225; Rawson, —, 699; Rhind, D., 635; Sell, C., 654; Scott, General, 553, 618; Snooke, W., 240, 867; Spicer, J., 93; Thomson, J. J., 705; Wagner, 233; Webber, J., 462; Worthington, W. J., 879; Wright, G., 553; Wythes, G., 310; Young, W., 292
Odessa, sanitary state of, 260
Office of Works, administration of, 160
Offices: Bucklersbury, 432; Cheltenham Gas Co., 61, 297; Euston Station, 312; Fenchurch-street, 490, 438; London School Board, 126; Mill's Building, New York, 312; Waterloo Station, 74
Ogle, the late C. C., 225
Olympia collection, the, in Berlin, 562
Opera, *Henry VIII.*, Paris, 341
Operative Bricklayers' Society, 791
Oratory, Brompton, 223
Ordoance Survey, the, 623
Organ at Canterbury Cathedral, 432
Organ-cases and organs of the Middle Ages and Renaissance, 494
Organs and choirs in churches, 168, 193, 206
Oriental Museum, Vienna, 880
Origin of the science of hygiene, 783
Ornament of the period, 119
Ornamental art, 291, 391, 409
Orphan Home, Headingley, Leeds, 724
Orphans' Rest, Dover, 796
Outlook, the, for 1883, 301
Over-education, 831
Overhead wires, dangers of, 62, 879
Owerlees house, 334
Oxford: Architectural Society, 867; Birmingham archæologists at, 898; the Indian Institute, 652
Oxford and Cambridge Mansions, Marylebone, 140
Oxford-street, premises in, 140, 500, 555

PAINT for floors, 58
Painted tapestry, 68
Painter-Etchers, Society of, 95
Painters' Company, and technical education, 291, 391, 409
Painting: ancient Greek, 311; English and American, 66; mural, 551
Painting and decorating trade, 258
Painting and sculpture, 371
Paints at the Building Exhibition, 467, 498
Paisley Sheriff Court-houses, 335
Palaces: Croydon, 622, 719, 759; Diocletian's, Spalato, 202, 442; fine arts, Rome, 636; Guadalajara, 740; Imperial, Strasburg, 132, 304, 879; of Justice, Hamburg, 444; the King's, at the Tower, 662; Lambeth, 165, 237; of the King of Bavaria, new, 377
Palazzo Contarini Fasan, Venice, 412
Palermo Cathedral, 602
Panclaste, 425
Pandora Theatre, Leicester-square, 30, 274
Panoramas, new, at Berlin, 721
Pantheon, Rome, 157, 384
Papyri, Egyptian, 39
Parcels Post, 462, 551, 692
Paris: building trade, the, 340, 766; chit-chat, 687; church at Auteuil, 543; colossal statue of Liberty, 687; co-operation in the furniture trade, 275; the Dumas Monument, 451; dwellings in flats, 135 the École de Médicine, 361; Eden Theatre, 31, 171, 208; an electric railway, 790; exhibition of portraits of French painters, 654; furniture in, 304; houses in, 410; markets, 564; municipal budget, 567; new, 200, 235; opera, *Henry VIII.*, 341; prevention of scaffold accidents, 443; proposed works in, 367; pottes-cochères, 763; the *Salon*, 339, 518, 687; the Sorbonne, 68; Sunday in, 599; underground, 425; workmen in, 433; proposed tunnel to Rouen, 457; workmen and their wages, 766; workmen's dwellings, 616, 635; the works of lady artists, 372
Parish halls, Jersey, 359
Park, Alexandra, 726
Parkes Museum, the, 600, 640, 736, 788, 805, 860, 866, 875, 907
Parkeston, works at, 341, 399
Parliament Houses: Berlin, 863; Hungarian, Pesth, 686; Parliamentary Engineering, 255, 297
Parsonages, new, 593
Parthenon, the, 942
Partnership, a, 432
Passages in an unsuccessful career, 804, 839, 873
Passenger-traffic on railways, 139, 309
Patent Agents, Institute of, 760
Patent Bills, the new, 377, 396
Patents connected with building, 27, 59, 94, 159, 226, 260, 293, 365, 428, 459, 518, 586, 621, 655, 690, 725, 788, 794, 830, 864, 901
Pavement, wood, 240
Payment: for measuring, 160, 226; of wages in public-houses, 334, 392
Norwegian fruit-trees, work of, 332
Peebles, St. Andrew's Church, 303
Penrose, Mr., and Royal Gold Medal, 807
Permeability of walls affecting ventilation, 65
Peru, Vandalism in, 623
Pesth, Hungarian Parliament House, 686
Peterborough Cathedral, central tower, 58, 71, 97, 106, 160, 298
Pettenkofer's researches as to ventilation, 54
Petrarch's triumphs, tapestries of, 441
Phidias's chryselephantine statue, 591
Philadelphia, new Post Office, 312
Philo, the Arsenal of, 369
"Phiz," works of, 329
Photo-filigrane, 432
Piccadilly: entrance-front, St. James's Hall, 242, 292; galleries of the Institute of Painters in Water Colours, 568, 623; new premises, 23, 242; street to Bloomsbury, 205
Picture, a remarkable, 791
Picture-gallery, Broome Hall, Surrey, 636
Picture-galleries, recent, 874
Pictures: by the "Impressionists," 562; the royal collections of, 837; by "Wright, of Derby," 428 (see also "Exhibitions")
Pipes, concrete, for water, 224
Piss, 149
Planning: American, 312; of hospitals, (see "Hospitals"); schools, 38, 69, 95; of theatres (see "Theatres")
Plumbers' work, 40
Plastering, fire-resisting, 291
Poets, the, and architecture, 491, 526, 558, 628, 695, 754
Poets' Corner, Westminster Abbey, 206
Polytechnic School, Charlottenburg, 774
Pontefract Townhall, 125
Poor, housing the, 863
Pope and architecture, 527
Population and building, 525
Porcelain, 312
Portals: Church of San Pedro Avila, Spain, 396; Church of Santa Teresa, Avila, 378
Portes-Cochères, 763
Portland cement, 36, 89, 237
Portraits of French painters, 654
Portsmouth, episcopal residence, 787
Possibilities of a new style, 34
Post-office Savings' Bank deposits, 722, 792
Post-offices: Birmingham, 618; Philadelphia, 312; Stafford, 692
Power: electrical transmission of, 409; of the sun's rays, 425
Pozzolana deposits in Italy, 138

Practice, professional, 238, 296, 333, 386, 426, 429
Prague: the Altneusynagoge, 203; new German theatre, 805
Prevention of damp walls, 100, 227
Prices of work in 16th, 17th, and 18th centuries, 23, 72
Prince's Hall, Piccadilly, 568
Principles, first, of architectural design, 563
Printing offices, Spottiswoode's, 864
Priory, White Friars, 7, 294
Prison, Bristol, 458
Problems, art, 794
Progress, industrial, 906
Projects for 1883, 301
Property, false representations as to, 733
Property, sales of, 158, 200, 294, 861
Property in Somerset and Wilts, 833
Propylæa of the Acropolis, Athens, 734
Protection of ironwork in buildings, 28
Prussia, church building in, 123
Public works, 495; accounts, three centuries ago, 23, 72; obtaining sanction for, 295, 297, in India, 621
Pugging, sand as a material for, 393
Pugin Studentship, the, 171
Pulpits: Kington, 903; Stratford, 95
Purchase of houses by their leaseholders, 700
Putney, the Cromwell homestead, 631

QUANTITIES, short, 62
Quarrymen, North Wales, 790
Queen's, School, Chester, 397, 810
Queenborough Pier, 826
Queenstown, South Africa, Church of St. Michael, 26, 367
Question of wages, a French view of the, 766

RAFFAELLE: as an architect, 565; commemoration, the, 432
Raffaelle's Apollo and Mars, 734
Railway: bridge, fall of, Bromley, 31, 97; building, rapid, 791; capital, 652; carriage works, Neasden, 551, 587, depôt, Parkeston, 341, 399; passenger-traffic, 139, 309; projects, 301; rates for timber, 655; statistics for 1882, 721; warehouses, Bootle, 61
Railway stations: Euston, 312; Fenchurch-street, 427; Forest-hill, 653; Lincoln, 30; Strasburg, 411; Walworth-road, 757
Railways: Brighton to Devil's Dyke, 793; to Crystal Palace, proposed new, 299; the District, and its ventilators, 331, 337, 403, 688, 770; electric, Paris, 790; elevated, 94, 161, 224; Inner Circle Completion, 295, 396, 430; London, Chatham, and Dover, new works, 517; Lancaster and Glasson Dock, 462; Hull and Barnsley, 136; Vienna elevated, 161, 636, 755, 796
Rainfall, 61, 382
Rain-water conductors, 725, 759
Ramsam's discoveries in Babylonia, 10, 489
Rathhaus, Berlin, 20
Reclamation of land, 446
Record of building patents (see "Patents")
Record Office, accounts of builder's work, 23, 72
Records, municipal: Liverpool, 731; Stratford-on-Avon, 308
Refuse, utilisation of, 689
Regularity and irregularity, 505
Remedies for floods, 141, 411, 425
Renaissance, the, 8, 40, 233
Report on the arts in Rome, 137
Reports to Local Government Board, 225
Representations, false, by agents, 733
Reredoses, 157; St. Mary's, Newington, 500; dispute, as to, 432
Research, archæological, 340
Researches as to ventilation, 56, 65
Residences: episcopal, Portsmouth, 787; chalet, Harrow, 289, 879; old suburban, 131
Responsibilities of a revived style, 131
Restoration: of two historic buildings, 202, 443; of St. Mark's, Venice, 378
Restrictions on tendering, proposed, 333
Retaining-walls, 97
Retrospect at Spring-gardens, 595
Revelation, French, a memorial of the, 840
Rhind, David, 635
Ribble navigation scheme, 299
Right of buildings to support, 131, 600
Rightness in art, 519
Rights of light, 94, 102
Rimini and its monuments, 8, 40
Rio de Janeiro, Government buildings, 457, 518
Risks of a remodelled style, 131
Roads, maintenance of, 411, 439
Roman: aqueduct at Altri, 167; antiquities in the British Museum, 523; antiquities of Northumberland, 1; bricks and tiles, 7
Roman Catholic Church Building News, 6, 229, 547, 771, 867
Rome: Academy of St. Luke, 157; arts in, 137, 160, 234; excavations at the Pantheon, 167; fine art exhibition, 234, 638; German Archæological Institute, 662; great hospital in, 734; Gregorian prize, 552; Mediæval, 503; monument to Victor Emmanuel, 53, 206, 425, 879; Palace of the Fine Arts, 636; Pantheon, 157, 364
Romsey Abbey, 843
Roof for quadrangle of Royal Exchange, 27
Roofing liners, 394
Roofs, church, in Holland, 25
Room for architecture, 525
Rooms: strong, 229; ventilation of, 56
Rossetti, works of, 2, 33, 138
Royal: Academy (see "Academy"); collections of pictures, the, 837; Courts of Justice Chambers, Strand, 106, 753; Scottish Society of Arts, 398
Ruin entailed by floods, 101, 411
Ruins in Cyprus, 706
Rural sanitary by-laws, 772
Russian: architecture, 729, 771; art-revival in, 275; mechanical industry, 293; sanitation, 260
Rye harbour of refuge, 223

SAFETY: of egress from public buildings, 859, 874, 944; in theatres, 169, 227, 299, 334, 426, 657, 707
Sailors' Home, Leith, 898
Saint James's Burial-ground, 872
St. James's Hall, Piccadilly, 243, 262, 306
St. Kew Church, 240
St. Leonard's, progress at, 36
St. Mark's, Venice, 378
St. Martin's-lane improvements, 695
St. Martin's School of Art, 92
St. Pancras Workhouse, 378
St. Paul's Cathedral: decoration of, 103, 154, 225, 247, 262, 393, 429, 795; the Wellington Monument, 349
St. Paul's Ecclesiological Society, 719, 722
St. Paul's School, Kensington, 553
St. Petersburg: a remarkable picture, 791; sanitary state of, 260
Sales of property, 158, 200, 294, 866
Salle du Jeu de Paume, Versailles, 840
Salon, the, Paris, 339, 518, 637
Saloons: *Hawarden Castle* mail steamer, 553; yacht *Boadicea*, 42
Sanatorium, Virginia Water, 412
Sanction for public works, 256, 297
Sand as a filling-in material, 393
Sandberger's sewage gas, 195, 296
Sanitary Authorities and By-laws, 772
Sanitary Assurance Assoc., 293, 657, 829
Sanitary Inspectors' Association, 554, 829
Sanitary Protection Association, 840
Sanitation, economy in, 617
Savoy schools, 396, 366
Saxon antiquities in British Museum, 523
Scaffold accidents, 30, 443
Scamped drainage, 622
Scenery, fireproof, 128
Schliemann's explorations, 133, 203, 936
Schloss Neuschwanestein, 377
School of Art Needlework, 399
School of Art Wood-carving, 228
School Building News (see weekly numbers)
School Board Schools (see weekly numbers)
School for Carpenters, a, 206
School of Engineering, Crystal Palace, 26, 567
School plans, 4, 36, 95
Schools: London Board, cost of, 829; Polytechnic, Charlottenburg, 774; Queen's, Chester, 810; Romsey, 843; St. Paul's, Kensington, 553; Wilson's Grammar, Camberwell, 621
Schools of Art: Chester, 26; Female, 342, 399; Halifax, 298; Nottingham, 411; St. Martin's, 92; West London, 863; Westminster, 166
Schools of art, teaching at, 238, 265, 330, 459, 723
Science of hygiene, 788
Scotland, workmen's dwellings in, 534
Scott, General, 553, 618
Scott, Sir Walter, and architecture, 628
Scottish: Celtic art, 654; National Church, Belgravia, 620; regimental colours, 206
Sculptors' assistants, 34, 59
Sculpture: Assyrian, in British Museum, 786, 800; Babylonian, 10, 489; of Canova and Thorwaldsen, 528; coloured, 835; modern, 303; painting, and, 371; at the Royal Academy, 661; for St. George's Hall, Liverpool, 364, 691, 758
Sea, proposed inland, North Africa, 495, 518
Seaside House, Birkenhead, 621
Sewage, utilisation of, 198, 296, 330
Sewerage: Goole, 903; Southport, 622, 791
Sexey's County School, Somerset, 365
Shakespeare and architecture, 492
Sheffield: Board Schools, 158; sewerage, 433
Sheffield Park, works at, 223
Shops: Addison-road North, 706; Bell-yard, Fleet-street, 242; Oxford-street, 140, 500, 555; Piccadilly, 23; Strand, 289
Shorthand Society, 588
Silos and ensilage, 95, 195, 897
Sion College estate, London Wall, 652
Sites for artisans' dwellings, 774
Sketch, a biographical, 529
Sketches: abroad, 723; in Italy, 412
Sketching and sketching-trips, 701, 703
Slaughterhouse reform, 262, 904
Slough sewerage, 304
Smoke abatement tests, 29, 296, 397, 429, 468, 554
Smoke prevention, 23, 240, 261, 314
Soane Museum, the, 58
Society of Arts: Cantor lectures, 432, 530, 587; economy in sanitation, 617; Indian architecture, 755; fires in theatres, 824; prizes, 160, 295; sanitary inspection of houses, 95, 124
Society of British Artists, 160, 440
Society for Encouragement of Fine Arts, 830
Society of Engineers: papers read at, 221, 330, 653; visit to Nottingham, 842
Society of Operative Bricklayers, 791
Society of Painter-Etchers, 95
Society Painters in Water-colours, 463, 592
Society Preserving Memorials of Dead, 833
Society Protection of Ancient Buildings, 797
Soho, changes in, 67, 205
Solway, Archæological Association, 584
Somerset Drainage Commissioners, 906
Sorbonne, Paris, 68
Southend, esplanade, 705
Southesk viaduct, the, 367
Southport: growth, 427; sewerage, 622, 791
Southwark, sanitary matters in, 907
Space, the, at Hyde Park Corner, 839
Spalato, restorations at, 202, 442
Spandau, new bridge at, 706
Specification, an ancient, 369
Spenser and architecture, 491
Spitalfields Market roof, 366
Spring-gardens, Strand, retrospect, 729
Spohr monument, the, 518
Sportsman Office, Fleet-street, 222, 263
Spottiswoode's new printing-offices, 864
Spring-gardens, a retrospect, 595
Stables, Lord Londonderry's, Mayfair, 208
Stadttheater, Brunn, 242
Stained glass (see weekly numbers)
Staircase, Post-office, Philadelphia, 312
Statistics: railway, 721; telephone, 791
Statuary: Blackfriars Bridge, 619, 655, terra-cotta, 793
Statues: "Alexander and Bucephalus," by sir John Steell, 339; Alexandre Dumas, Paris, 451; Athene, chryselephantine, 591; Auber, 863; Beaconsfield, 553; Buddha, 790; Lord Frederick Cavendish, 883; Duploix, 518; Exeter, 662; Eve, 688; gigantic, for New York, 687; Hugh Grotius, 825; the Humboldts, 518; Leibnitz, 562; Luther, 562, Mr. J. Vaughan, 863; Wellington, 122, 161, 167, 204, 333, 588, 602; Mr. J. S. Wright, 861
Steam-hammer, the inventor of, 231
Steel and iron industries, 323, 554, 601
"Steeple Jack" killed, 832
Stevens, A., and Wellington Monument, 549
Stock Exchange additions, 30, 618
Stockholm, proposed museum, 425, 518
Stone of Westminster Abbey, 210, 261
Stone-working machinery, 59, 160
Stones: building, use of, 87; of Cologne Cathedral, 157; paving, 619
Stoves: iron, 228; at Building Exhibition, 487, 488
Strains, tensile and cross, 793
Strand: the, up again? 653; new premises in, 259; proposed new theatre, 738, 803; Courts of Justice Chambers, 106, 753
Strasburg: Imperial Palace for, 138, 394, 879; new railway station, 411
Stratford-on-Avon records, 308
Strawberry-hill Estate, 866
Street, new, Bloomsbury to Piccadilly, 205
Street, what is a new? 296
Street, the late G. E.: Christ Church Cathedral, Dublin, 99; Memorial of, 363, 429
Street improvements, cost of, 30
Streets of London, 659
Strong-rooms, 229
Strood, floods at, 411
Structural failures, 1, 30, 31, 60, 90, 97, 126, 155, 163
Structures, dangerous, 331
Stupefaction v. Education, 801
Style: desire for a new, 34, 290; risks and responsibilities of a revived, 131
Sub contracting, 160
Subsidence of houses at Wigan, 462
Suburban houses, old, 631
Subways: Tower, 229; London street, 659
Suez Canal, 23
Suffocation by defective flue, 127
Suggestions for conduct of competitions, 519
Sun, the, as a source of power, 425
Sunday, the, Continental, 599
Sunday Society, 133
Sunday School Memorial Hall, Leicester, 844
Sunderland, calamity at, 559, 870, 904
Superintendence of buildings, 296, 333, 429
Surveyors' fees, 550
Surveyors' Institution, 691, 727; examinations, 258, 694, 900
Surveyorship items, 158, 183, 272, 367, 459, 493, 520, 553, 554, 588, 617, 623, 657, 772, 860, 901
Swaffham, the Bagge memorial, 740
Sweden, domestic dwellings in, 583
Switzerland: bricks in, 71; embroidery in, 891; National Exhibition, Zurich, 378, 823
Sydney, a museum for, 427
Synagogue, Prague, 203
Syria, architecture and archæology in, 663
System in art-education, 126

TABLETS: Babylonian, 10; in the cathedral of Westphalia, 26
Tademo's "Cleopatra," 68, 106
Tait memorial, Canterbury Cathedral, 740
Tale of Troy, the, 735
Tapestries of Petrarch's triumphs, 441
Tapestry-painting as a decoration, 68
Tauchnitz, Baron, 726, 907
Tavern, the Cock, Fleet-street, 276
Teaching, the, at school's of art, 258, 265, 330, 459, 723
Telegraph and telephone wires, 62
Telegraphs of the ancients, 392
Telegraphy, progress of, 538
Telephones, statistics of, 791
Temple, the, at Rimini, 40
Temples, Greek, lighting of, 192
Tenders: Cheltenham Gas Offices, 61, 297; duplicate, 622, 827; unrestricted, 333; for works for City Commission of Sewers, 734 (see also weekly numbers)
Tenements of the poor, the, 589
Tennyson and architecture, 784
Terra-cotta: marl, Ruabon, 298; statuary, 793
Testimonials, 534, 555, 766, 830
Tests at Shoreditch Abatement Exhibition, 29, 296, 397, 429, 468, 554
Tewkesbury Abbey House, 832
Textile fabrics rendered incombustible, 94
Thames, embankments of, 636, 652
Theatre-building mania in London, 867
Theatres burned down, 28, 447, 829
Theatres: Adelphi, 227; the Alhambra, 235, 553, 810; Brunn, 242, construction of, 199, 224, 258, 299, 374, 657, 797; Eden, Paris, 31, 171, 208; Edinburgh, 398; Elephant and Castle, 394; fires in, 824; iron, 395; model, 518; National, Berlin, 497; Northumberland-avenue, 737; Pandora, 30, 474; Prague, German, 835; Strand, new, 738, 803; Valparaiso, 222; ventilation of, 258
Thermometer, the Casella Goolden, 132
Thirlmere scheme, the, 514
Thompson's Castle of Indolence, 559
Thorwaldsen and Canova, 528
Thrift, 722, 792
Tiflis, the Caucasian Museum, 497
Tiles, Roman, 7
Timber: age of, 458; architecture, 705; future supplies of, 442, 629; New Zealand, 693; railway rates for, 655
Timber-stages, 759, 794, 830
Tin-plates, use of in building, 155
Tinworth Exhibition, the, 550
Toledo, Monastery of San Juan, 412
Tombs: Cairo, 289; Rimini, 8, 40; Cyprus, 706
Tools, machine, 362
Tower: Canonbury, 622; fall of a, 30
Tower of London: builders' accounts, 23; changes at, 332; King's palace at the, 662
Tower-hill, changes at, 67
Tower subway, 229
Towers: Belgian, 289; Peterborough Cathedral, 68, 71, 97, 106, 160, 298; leaning, at Pisa, 140
Town names, identical, 849
Townhalls: Battersea, 339; Birkenhead, 620, 827; Calne, 459; Eastbourne, 657; Epsom, 499; Gosport, 398; Kensington, 56, 63, 650; Lerwick, 138; Lydd, Kent, 334; Middlesbrough, 42; Pontefract, 125; Rochdale, 621, 653; Vienna, 759
Traction engines on highways, 439
Trade conflicts at Limoges, 137
Trade, state of, 259, 301
Traffic in London streets, 659
Traits of Canova and Thorwaldsen, 528
Tramway: locomotives, 462, 598; propulsion, 395, 443, 555
Tramways, Gateshead, 30
"Transition," the, 771
Transport by canal and railway, 23, 836, 879
Travel, gravitation of, 369
Travellers to Brighton, 139
Travellers' Rest, Swaffham, 740
Treatment of metal in architecture, 531
Trélat, M., on ventilation, 65
Trees: in streets, 161; and tall buildings, 769
Trials with assessors, 902
Triforium, Lucca Cathedral, 412
Troy, the tale of, 735
Truro Cathedral, 849
Tunbridge Wells, the Grosvenor Bridge, 428
Tunis, proposed inland sea, 495, 518
Tunnels: American, 847; Arlberg, 826; Channel, 334; Italo-Sicilian, 333; Mersey, 427, 844; proposed gigantic, Paris, 457; Wrekenkeek, 224
Tussaud & Sons' waxworks, 793
Twin arts, the, 371, 429
Tyndale Memorial, 228
Tyres for carriage-wheels, 832

ULM Cathedral, 173, 2 S, 668
Ulster Reform Club, Belfast, 28, 656, 793
Unionism, advantages of, 863
University College, engineering at, 31
University of Lund, Sweden, 42, 74
Unsuccessful career, passages in an, 804, 833, 873
Uspensky Cathedral, Moscow, 666, 739
Utilisation of sewage and town refuse, 193, 330, 686

VALPARAISO, new theatre, 222
Value of: City freeholds, 294; diminished death-rate, 617
Vans, tip, 139
Vandalism, modern: Greece, 732; Peru, 623
Variations, measuring, 160, 226
Variorum (see "Books")
Vault, concrete for heavy loads, 261
Vaulting, 55
Vegetation affected by gas-lighting, 225, 262
Venice: Palazzo Contarini Fasan, 412; St. Mark's, 378
Ventilation: as affected by permeability of walls, 65; Boyle's system, 737, 902; dwelling-rooms, 58; of theatres, 256
Ventilators for District Railway, 331, 337, 403, 688, 770, 906
Versailles, Salle du Jeu de Paume, 840
Viability of London, 659
Viaducts: Southesk, 367; Whalley, 831
Victor Emmanuel Monument, Rome, 73 206, 425, 879
Victoria Coffee Hall, 462, 526, 630
Vienna: electric exhibition, 282, 361, 521, 636; elevated railways, 161, 636, 755, 796; houses in, 410; industrial museum, 134; the Kahlenberg monument, 584; municipal exhibition, 405; New, 197; the Oriental Museum, 880; St. Stephen's, 635; Town-hall, 756
Vitrified building, 133, 203
Volta prize, the, 557
Vote for Fine Arts in France, the, 157

WAGES: in building trade three centuries ago, 23, 72; payment of, in public houses, 334, 392
Wages question, a French view of, 766
Wagner, 233
Wall decorations: mosaic, 740; paper, 74
Walls: damp and porous, 160, 227; fireproof, 294; moisture in, 689; permeability of, 65; retaining, 97
Walsingham, Lord de, 520
War Office, proposed new, 567, 587, 699
Warehouses, Bootle, 61
Warsaw, Church of St. John, 547
Water-communications, ancient, 157
Waterloo Bridge, foundations of, 332
Waterloo Station, new buildings at, 74
Water-pipes, concrete, 224
Water: lead-poisoned, 271; London, 126, 160
Water supply, London, 126, 160, 732
Water transport, 23
Watersheds, management of, 401
Waxworks, Tussaud & Sons', 793
Wellington Arch, Hyde Park Corner, 187
Wellington Monument, St. Paul's Cathedral, 349
Wellington statue, removal of, 122, 161, 187, 294, 333, 588, 602
Wells, Sir T. Spencer, 5-1
West, notes from the, 649
West-end properties, 158, 200, 861
West Ham: "mortar" at, 794, 866; sewerage works, 395
West London School of Art, 863

Westminster Abbey: discovery at, 225; Poets' Corner, 2 6; stone of, 240, 261; Wren's work at, 3-7
Westminster: changes at, 67, 70; explosion, the, 432; Hall, 263, 458, 622; the old Law Courts, 71, 127, 203, 496; proposed E. C. Cathedral, 6
Wheel-tyres, new, 832
Whitechapel: art in, 399; unhealthy dwellings, 833, 863
Whitefriars Priory, 7, 204
Whitehall, builders' accounts relating to, 72
Whitgift's Hospital, Croydon, 719
Whitsuntide holidays, the, 496
Wills, 398, 833, 867
Wilson's Grammar School, Camberwell, 621
Wimbledon Park Estate, 863
Windlesham, doctor's house at, 378
Window, Ledbury Church, 174
Window-frames, construction of, 293
Windsor Forest, 153
Wires, overhead, dangers of, 62, 879
Wisdom of House of Commons on art, 699
Women, employment of, 632
Wood, durability of, 429
Wood-carving, 229
Wood-duty in Germany, 721
Wood pavement, 240
Wood-stone, 774
Woodstreet, new buildings in, 552, 727
Woodbastwick Hall, Norfolk, 30
Wood-working machinery at the Building Trades' Exhibition, 467, 494
Wooden houses, Norwegian, 795
Woods, building, 204
Wordsworth and architecture, 696
Work: prices of, in 16th, 17th, and 18th centuries, 23, 72; for Scotland to do, 534
Workhouses: Brentford, 523; Burnley, 459; Fordingbridge, 396; Lambeth, 294; Mansfield, 63; St. Pancras, 387; Wandsworth and Clapham Union, 296
Workmen and wages in Paris, 410, 434, 766
Workmen's dwellings (see "Dwellings")
Works, public, 495
Worms on lawns, 520, 658
Wren, Sir C.: City churches, 547; and "His Majesty's Works," 559; work at Westminster, 307
Wright of Derby, 426
Wrists and ankles, 209
Wynnstay, drainage at, 428

YARMOUTH municipal buildings, 129
York: Architectural Association, 364, 906; artisans' dwellings at, 862
Yucatan, archæology of, 272

ZINC, decorative treatment of, 532
Zurich, Swiss National Exhibition, 378, 582

ILLUSTRATIONS.

ABBEY, Romsey, Sketches at, 818
Academy of Music, Design for a, by R. A. Briggs, Architect, 570, 579, 647
Air-warming and Cooling Apparatus, Boyle's, 902
Alhambra Theatre, Perry & Reed, Architects, 814, 816
Arch, the Wellington, Decimus Burton, Architect, 185
Art Galleries, Piccadilly: the Prince's Hall, E. R. Robson, Architect, 572
Artisans' Dwellings at Hornsey, R. Plumbe, Architect, 886, 887, 889
Ashcroft Buildings, Liverpool, Hoult & Wise, Architects, 504

BABYLONIAN Sculptured Tablet, 14
Bagge Memorial, Swaffham, A. W. Blomfield, Architect, 742
Baptisteries: Christ Church Cathedral, Dublin, G. E. Street, Architect, 117; Pisa, drawn by H. W. Brewer, 146
Billiard-room, Broome Hall, John Birch, Architect, 689
Brickwork, Dutch Method of Bonding, drawn by T. Blashill, Architect, 857
Brighton Improvements: Selected Design, J. Johnson, Architect, 604; Second Premiated Design, E. E. Scott, Architect, 604
Brewery, Burton, Scamell & Colyer, Architects, 853, 855

CASTLE, Fillongley, Plans, 244
Castle, the Marienburg, near Hanover, Hase and Oppler, Architects, 506
Castle, Naworth, the Stanley Tower, C. J. Ferguson, Architect, 316
Cathedral, Christ Church, Dublin (restored by the late G. E. Street, R.A.): View of Nave, looking East, 108; Interior of Baptistery, 117
Cathedral, Djakovar, Croatia, C. Rösner, Architect, 237
Cathedral, Lucca, Triforium Traceries; sketched by R. T. Conder, 124
Cathedral, Palermo, Sicily, 608
Cathedral, Peterborough: View of Central Tower and Clearstory; drawn by H. W. Brewer, 110
Cathedral, Pisa; drawn by H. W. Brewer, 146
Cathedral, Ulm; the Choir, with the "Sacramenthäuschen," 180; Exterior of the Choir, 214; Exterior as proposed to be Restored, 674
Cemetery Lodge, Ayton, J. W. Alexander, Architect, 884
Chalet Residences, Harrow, J. T. Walford, Architect, 782, 832
Chancery Royal Courts of Justice, Strand, W. Wimble and G. Cuthbert, Architects, 112
Chapel, Monastery of San Juan de los Reyes, Toledo, A. de Covarrubias, Architect, 418
Chapter-house, Lincoln Cathedral: Doorway and Triforium, drawn by W. A. Pite, 448, 453
Church of Auteuil, Paris, M. Vaudremer, Architect, 816
Church, Catholic Apostolic, Edinburgh, R. R. Anderson, Architect, 16
Church, Congregational, Shanklin, John Sulman, Architect, 645
Church at Graaf-Reinet, South Africa, J. R. Nicholls, Architect, 446
Church of the Sacred Heart, West Brompton, J. A. Hansom & Son, Architects, 538
Church, San Domenico de Pesaro, 41
Church, San Francesco, Rimini, 41, 44
Church of St. John, Warsaw, 540
Church, St. Matthew's, Bayswater, J. Johnson, Architect, 455
Church, St. Pedro, Avila, Spain, Portal, 349
Church, St. Peter's, Leipzig, A. Hartel and C. Lipsius, Architects, 314
Church, St. Peter's, St. Leonard's-on-Sea, Jas. Brooks, Architect, 686
Church, Santa Teresa, Avila, Spain, Portal, 378
Cloisters of the Monastery of St. Jerome, Belem, 574
Clubhouse, Bloomsbury Volunteers, S. Knight, Architect, 749, 751
Clubhouse, National Liberal, Charing-cross, F. & H. Francis, Architects, 536
Coffee Tavern, Birmingham, W. Doubleday, Architect, 382
Cottage Hospital, St. Paul's Cray, G. St. Pierre Harris, Architect, 872

DOORWAY, Chapel of Monastery of San Juan de los Reyes, Toledo, A. de Covarrubias, Architect, 418
Doorway in Chapter-house, Lincoln, drawn by W. A. Pite, 448, 453
Doorway of Infantado Palace, Guadalajara, Castile, 746
Doorway of Lambeth Palace Chapel, 167
Doorway, San Domenico de Pesaro, 41
Doorway, Church of San Pedro, Avila, Spain, 348
Doorway, Church of Santa Teresa, Avila, Spain, 378
Drill-hall, Bloomsbury Volunteers, S. Knight, Architect, 749, 751
Dwellings for Artisans at Hornsey, R. Plumbe, Architect, 886, 887, 889

EARTHWORKS, Croxall Mound, Plan, 244
Earthworks, Fillongley Castle, Plans, 244
Entrance-front to St. James's Hall, Emden & Co., Architects, 251
Episcopal Residence for the R.C. Bishop of Portsmouth, J. S. Hansom, Architect, 778
Exhibition, Fine Art, Rome, 642
Exhibits at the Building Trades Exhibition, 467, 490

FACTORY at Northampton, T. Garratt, Architect, 115
Flats, Oxford and Cambridge Mansions, Marylebone, C. Eales & Son, Architects, 144, 149

GALLERIES, Fine Art, Rome, 642

HALL of Lambeth Palace, 167
Hall of Lund University, H. Zettervall, Architect, 76
Hall, Prince's, Piccadilly, E. R. Robson, Architect, 572
Hall, St. James's, Piccadilly, entrance-front, Emden & Co., Architects, 251
Hall, Sunday-school Memorial, Leicester, J. Tait, Architect, 859
Halls, Parish, Jersey, Hayward & Son, Architects, 352, 353
Head-quarters, Bloomsbury Rifle Volunteers, S. Knight, Architect, 749, 751
Hospital, Grossow Southern, Design by H. McLachlan, Architect, 821
Hospital, Cottage, St. Paul's Cray, G. St. Pierre Harris, Architect, 852
Hot-air Engine, Bailey's, 903
House, Blackmore Park, Great Malvern, David Brandon, F.S.A., Architect, 212, 219
House, Bromley, Aston Webb, Architect, 670
House, Cricklewood, E. A. Heffer, Architect, 142
House at Finchley, Thos. Newell, Architect, 246
House, Indian, at Surat, Plans, 823
House, Timber, in Norway, P. Lowzow, Architect, 712, 713
House at Windlesham, Byrne & Wilmot, Architects, 387
Houses in Bell-yard, Isaacs & Florence, Architects, 253

IMPROVEMENTS at Brighton: Selected Design, Mr. John Johnson, Architect, 604; Second Premiated Design, Mr. E. E. Scott, Architect, 604

KAHLENBERG MONUMENT, Vienna, Herr A. Streit, Architect, 575
Kirkgate Buildings, Huddersfield, W. H. Crossland, Architect, 12

LAMBETH PALACE, 166, 167
Lodge, Ayton Cemetery, J. W. Alexander, Architect, 884
London Street Architecture:—
Entrance Front to St. James's Hall, Emden & Co., Architects, 251
National Liberal Clubhouse, Charing-cross, F. & H. Francis, Architects, 536
Premises in Addison-road, C. Grieve, Architect, 717
No. 193, Fleet-street, Archer & Green, Architects, 776
Premises in Oxford-street, F. Boreham, Architect, 151
Premises in Oxford-street, E. Marks, Architect, 502
Premises in Piccadilly, Archer & Green, Architects, 19
Premises in the Strand, Archer & Green, Architects, 245
Royal Courts of Justice Chambers, Strand, W. Wimble & G. Cuthbert, Architects, 112
Lund University, Sweden, H. Zettervall, Architect, 63, 76

MANSION, Blackmore Park, near Great Malvern, David Brandon, F.S.A., Architect, 212, 219
Mansions (Flats), "Oxford and Cambridge," Marylebone, C. Eales & Son, Architects, 144, 149
Marienburg, Hanover, Hase & Oppler, Architects, 506
Market Hall, Newark, Design by Messrs. Saville & Son, Architects, 672
Memorial, the Bagge, Swaffham, A. W. Blomfield, Architect, 742
Monastery of San Juan de los Reyes, Toledo, Doorway, A. de Covarrubias, Architect, 418
Monastery of St. Jerome, Belem, Cloisters, 574
Monument to Alexandre Dumas, Paris, Gustave Doré, Sculptor, 450
Monument of Barnabo Visconti, Rimini, 9
Monument, the Kahlenberg, Vienna, Herr A. Streit, Architect, 575
Monuments in Breda Cathedral, drawn by H. W. Brewer, 151
Mosaic Wall-Decoration, executed by Mr. J. F. Ebner, 744
Municipal Buildings, Middlesbrough, G. G. Hoskins, Architect, 48
Museum, Natural History: Plan of Ground Floor, A. Waterhouse, A.R.A., Architect, 683
Museum, Oriental, Vienna, a Room in the, 892
Music, Design for an Academy of, by R. A. Briggs, Architect, 570, 579, 647

OFFICES, Birmingham, W. Doubleday, Architect, 382
Offices, New York, G. B. Post, Architect, 318
Organ and Screen, designed by H. W. Brewer, 178
Orphans' Rest, Dover, J. T. Hanson, Architect, 710, 715

PALACE, Infantado, Guadalajara, Doorway, 746
Palace, Lambeth, 166, 167
Palazzo Contarini Fasan, Venice, sketched by R. T. Conder, 814
Parish Halls, Jersey, Hayward & Sons, Architects, 352, 353
Picture-gallery, Broome Hall, John Birch, Architect, 638
Plans of Indian House at Surat, 823
Plans of Offices, New York, G. B. Post, Architect, 318
Polytechnic High School, Charlottenburg, Prof. Lucae & Baurath Hitzig, Architects, 780
Portal, Chapel of Monastery of San Juan de los Reyes, Toledo, A. de Covarrubias, Architect, 418
Portal, Church of San Pedro, Avila, Spain, 348
Portal, Church of Santa Teresa, Avila, Spain, 378
Post-Office, Philadelphia: Iron Staircase, J. A. Hill, Architect, 319
Public Buildings, Middlesbrough, G. G. Hoskins, Architect, 48

REREDOS, St. Mary's, Newington, J. Fowler, Architect, 511
Residence for the R.C. Bishop of Portsmouth, J. S. Hansom, Architect, 778
Residence, Timber, Norway, P. Lowzow, Architect, 712, 713
Residences, Chalet, Harrow, J. T. Walford, Architect, 782, 832
Rimini, Churches, Tombs, and Monuments at, 8, 9, 41, 44
Roof Construction, Iron, T. Garratt, Architect, 115
Room in the Oriental Museum, Vienna, 892

SALOON of Steam Yacht *Boadicea*, Alexander & Howell, Designers, 46
School, Polytechnic, Charlottenburg, Prof. Lucae and Baurath Hitzig, Architects, 780
Schools, St. Albans, J. & S. F. Clarkson, Architects, 80, 81
Schools for Finchley School Board, Dunk & Geden, Architects, 416, 421
Schools, Queen's, Chester, E. A. Ould, Architect, 812
Schools, Romsey, W. E. Nesfield, Architect, 848
Schools for Savoy Precinct, Perry & Reed, Architects, 640
Sculpture, Babylonian Tablet, 14
Shop, Addison-road, Notting-hill, C. Grieve, Architect, 717
Shop in the Strand, Archer & Green, Architects, 245
Shops and Premises, Liverpool, Hoult & Wise, Architects, 504
Shops, Birmingham, W. Doubleday, Architect, 382
Shop, 193, Fleet-street, Archer & Green, Architects, 776
Shops in Oxford-street, F. Boreham, Architect, 151
Shops in Oxford-street, E. Marks, Architect, 502
Shops in Piccadilly, Archer & Green, Architects, 19
Shops and Residences, Kirkgate Buildings, Huddersfield, W. H. Crossland, Architect, 12
Stables, Marquis of Londonderry's, Mayfair, James Brooks, Architect, 217
Staircase, Iron, New Post-office, Philadelphia, J. A. Hill, Architect, 319
Statue of Alexandre Dumas, Paris, Gustave Doré, Sculptor, 450
Statue, the Wellington, Hyde Park Corner, 185

TABLET, sculptured Babylonian, 14
Temple of Rimini, 44
Theatre, Alhambra, Perry & Reed, Architects, 814, 816
Theatre, Brünn, Hellmer & Fellner, Architects, 248
Theatre, Eden, Paris, sketches by J. Tavenor Perry, 210
Timber House, Norway, P. Lowzow, Architect, 712, 713
Tomb, a, outside Cairo, 278
Tomb of Pandolphus Malatesta, Rimini, 8
Tomb of St. Catherine, Cyprus, measured and drawn by F. R. Stent and W. Williams, 708
Tomb of Sigismund Malatesta, Rimini, 44
Tower, central, of Peterborough Cathedral, drawn by H. W. Brewer, 110
Tower, leaning, at Pisa, drawn by H. W. Brewer, 146
Tower, Naworth Castle, C. J. Ferguson, Architect, 316
Tower of Ulm Cathedral, as proposed to be restored, 674
Towers, old, at Bruges, 289
Town-hall, Battersea, Morris & Stallwood, Architects, 350
Town-hall, Middlesbrough, G. G. Hoskins, Architect, 48
Triforium of Chapter House, Lincoln, drawn by W. A. Pite, 448, 453
Triforium, Lucca Cathedral, sketched by R. T. Conder, 124

UNIVERSITY BUILDING, Lund, Sweden, H. Zettervall, Architect, 63, 76

VAULTING: Diagrams illustrating Paper by Mr. W. H. Wood, 51
Ventilating Arrangements, Boyle's Air-warming and Cooling Apparatus, 902

WALL DECORATION, Mosaic, by Mr. J. F. Ebner, 744
Wall Paper Decoration, design of by Owen W. Davis, Architect, for Messrs. Woollams & Co., 78
Wellington Arch and Statue, Hyde Park Corner, 185
Window (Stained Glass), Ledbury Church, executed by Lavers, Westlake, & Co., 176
Workhouse, St. Pancras, Competitive Design for, J. Saville & Son, Architects, 384

YACHT *Boadicea*, Saloon, Alexander & Howell, Designers, 46

Vol. XLIV., No. 2283.—Saturday, Jan. 6, 1883.

The Builder

ILLUSTRATIONS.

Tomb of Pandolphus Malatesta, erected 1460 8
Funeral Monument of Barnabo Visconti, A.D. 1370..... 9
Kirkgate Buildings, Huddersfield (Double-page Engraving).—Mr. Crossland, Architect 12
Memorial Stone recently discovered in Babylon.—Date probably about Fourteenth Century B.C. 14
Catholic Apostolic Church, East London-street, Edinburgh (Double-page Engraving).—Mr. R. Rowand Anderson, Architect... ..... 16, 17
London Street Architecture: New Premises, Nos. 30 and 32, Piccadilly.—Messrs. Archer & Green, Architects..... 19

CONTENTS.

Structural Failures 1
Linnell and Rossetti at Burlington House 2
Fraudulent Gifts and Commissions 3
Two Museums at Alnwick 4
Hall Doors and House Dangers, Past and Present..... 5
The Proposed Roman Catholic Cathedral for Westminster 6
Edinburgh Architectural Exhibition 6
The Priory of Whitefriars and its Sanctuary 7
Roman Bricks and Tiles 7
Ranid 8
Babylonian Sculpture 10
Kirkgate Buildings, Huddersfield 10
Catholic Apostolic Church, Edinburgh 23
London Street Architecture: Nos. 30 and 32, Piccadilly..... 23
Smokeless Fuel 23
An Important, but Neglected, Element in the Economy of Water Transport 23
Public Works and Buildings in London and Suburbs, in the thirteenth, Seventeenth, and Eighteenth Centuries 23
How far may Sculptors obtain Assistance? 24
Royal Academy Admissions: December, 1882..... 25
Church Roofs in Holland 25
Works in Edinburgh 25
New Archæological and Art School Buildings at Chester 26
The Internal Decoration of the Rathhaus at Berlin 26
Monument in the Cathedral of Münster, Westphalia 26
"Stolen by Gipsies.—The Rescue" 26
Cape Town: Ecclesiastical Architecture 28
Crystal Palace Engineering School 29
The Electric Lighting Act and Board of Trade Applications 27
Building Patent Record 27
Competitions 27
Theatres burned down in 1882 28
Iron as an Agent of Fire-Resisting Construction 28
Obituary 28
The Fall of a Mill Chimney at Bradford 28
Smoke Abatement 29
Church Building News 29
Stained Glass 29
Provincial News 29
Fatal Scaffold Accident at the New General Post Office 30
Miscellanea 30

Structural Failures.

THE last week of 1882 witnessed such a series of disasters that, had the news of them come from some distant land, we should have been led to attribute them to some common cause. Destructive fires, disastrous floods, and the falls of buildings, have all been repeatedly chronicled during the week. Three lofty chimneys fell, in part or altogether, within as many days. And the loss of life occasioned by these various catastrophes has been by no means small. Of all these disasters, the fall, mentioned in our last number, of the chimney of Sir Henry Ripley's factory, at Bradford, affords the most striking occasion for comment; not only on account of the great damage and lamentable loss of life and limb that it occasioned, but also on the ground of the special circumstances of the case.

The fall of a very lofty building is an event but rarely witnessed by any persons competent to describe it. A good account of any such catastrophe has thus a threefold value. Our knowledge of defective structure is enlarged by such experience, whether as regards faults in original design, or unjustifiable tampering with work on the ground of redressing any results of undue movement. A literary value, moreover, attaches to such a record, as will be at once seen by the following citation from one of the most celebrated descriptive passages of one of the most gifted of descriptive writers. Again, there is an art interest awakened. Our readers may remember, now many years ago, our remarks on the manner in which falling buildings were delineated by Gustave Doré in his illustrations of the Bible. The drawings of the fall of the Temple of Dagon at Ashdod, and of the walls of Jericho, did not commend themselves to our sense of weight; and we then spoke, if we remember rightly, of the difficulty with which the artist had to contend in having to draw almost exclusively on his imagination for the details that he had to represent.

In the case of the Bradford chimney, it appears to be undisputed that the site was undermined by old coal workings; that alterations in the design of the chimney were made in consequence of the discovery; and that during the erection of the shaft, it leaned so far from the perpendicular that a process of straightening, which seems to have been of very questionable safety, was adopted, and that 35 ft. was deducted from the contemplated height. The questions for the architect, then, are,—was the fall attributable to any renewal of the subsidence of the foundation, due to the subterranean hollow; or was it more directly the result of that tinkering of the chimney which was carried out before its completion to the height of 255 ft.?

It is clear that the mode of fall, if correctly described, may throw much light on these important questions; so, again, may the condition of the ruins. It is, therefore, fortunate that we have the accounts of two independent eye-witnesses, which, although brief and untechnical, so far explain and corroborate one another as to enable us to form a very distinct idea of what actually took place.

At five minutes past eight on the morning of December 28th, a train from Bradford to Halifax was standing in the St. Dunstan's Station, on the Great Northern Railway, when the attention of the passengers was called to "a fearful whizzing sound, followed by a deep murmuring, resembling the sound which is so familiar to residents in districts in which colliery explosions have been of frequent occurrence." Mr. E. L. Turnell, of Bradford, one of the passengers, observed, at the distance of a quarter of a mile, the base of the chimney to subside. Then the massive stonework divided about half-way up the chimney, and the remainder descended perpendicularly for some distance, only deviating from that course when about 20 yards from the ground, when it leaned from north-west to south-east, and fell across the mill, razing to the ground a portion covering about 20 yards square, and four stories and an attic in height.

Another eye-witness says, "The chimney was not in a good state; pieces of stone falling out now and again; there was a big fall, three or four tons, ten minutes before the chimney came down. During the ten minutes between the three or four tons falling, and the whole stack coming down, there was no sound from the chimney. It came down straight, without any more warning. It seemed to give way just where it was about as high as the mill." As to the question of the use made or not made of the ten minutes of precious time after this very plain warning was given, we defer any remarks, for obvious reasons.

Neither do we feel prepared, at the present moment, to express any opinion as between the two causes of failure before indicated. Light, it may be expected, will be thrown on that subject by the inquest. It is stated that to remedy the deviation from the perpendicular which occurred during the erection of the chimney (about twenty years ago), a man named Woodward, considered an expert in straightening chimneys, was called in, who cut some of the mortar from the side opposite to that on which the deviation had taken place, for a distance of about 15 yards or 20 yards from the foundations. By this process the stack was straightened; but the account adds that "where the mortar was got out that portion of the chimney was in a shattered condition." This agrees with the statement of the other witness as to the partial falls. On the one hand, therefore, we have the fact that the chimney stood for twenty years after the straightening process was applied. On the other hand, we find that the portion thus dealt with had been for some time in a ruinous state, and that it gave unmistakable signs of being on the move for a time ample to have insured the escape of all persons from the building. If Mr. Turnell's impression of the base first subsiding was accurate, it would seem that subterranean sinking was the agency at work. But it is difficult to reconcile this with the fall of "three or four tons" from the side of the shaft, previously to this apparent subsidence of the base. That looks like absolute crushing of the masonry, under the influence of weight and of wind. It is highly desirable that this question should be cleared up before the Coroner.

The account to which we referred of the fall of a lofty tower will be found in the thirty-fourth

chapter of "Woodstock"; in describing the fall of Rosamond's tower,—"The explosion was only powerful enough to blow out, in a lateral direction, a part of the wall just above the foundation, sufficient, however, to destroy the equipoise of the building. Then amid a cloud of smoke, which began gradually to encircle the turret like a shroud, arising slowly from its base to its summit, it was seen to stagger and shake by all who had courage to look at a sight so dreadful. Slowly, at first, the building inclined outwards, then rushed precipitately to its base, and fell to the ground in huge fragments, the strength of its resistance showing the excellence of the mason work." To the soldiers in the neighbouring town the fall was announced by a "sullen sound, at first low and deep, but augmenting like the roar of a cataract, as it descends, reeling, bellowing, and rushing, as if to astound both heaven and earth."

We can hardly think that in the case described the tower would have come down in large fragments. It would, we apprehend, have fallen like a tree, and only broken on the ground. As to the Bradford chimney, whether the cause of the fall was subterranean or internal, there appears to have been a crushing of the lower part of the stack, accompanied by a vertical descent of the upper portion, until, turning to one side, perhaps under the influence of the wind, it fell sidelong on the mill. We hope that photographs will be taken of the ruin, that careful examination will be made of the state of the different parts of the fallen shaft, and of the goodness or badness of the materials. The matter is not one of curiosity alone, as the plan of straightening chimneys may be said to be on its trial, and future calamities may be prevented by a clear detection of the cause of the disastrous fall.

LINNELL AND ROSSETTI AT BURLINGTON HOUSE.

The loan exhibition at the Royal Academy Rooms this winter owes its special character to the collection of the works of the two deceased painters above named, though the exhibition of works by those who are more generally distinguished as "Old Masters" occupies the large gallery and one of the small ones, and contains a good many paintings of no ordinary interest. We give precedence, however, to the works of the two English painters (for Rossetti is English in all but name) who are specially represented on this occasion.

Since the time when it has become rather a fashion to exhibit collectively the works of one painter, it has not unfrequently been observed how formidable a test this is of the powers of an artist, and how few reputations there are that come out of such an ordeal without suffering some loss of lustre, and awakening some little doubt and dissatisfaction in the minds of their admirers. Our impression, after going through the works of John Linnell which are here displayed, is that he survives the test wonderfully, and in a greater degree even than we should have expected. In viewing his collected works we find out, not how like they are to each other, though, in a certain sense, they are so, but how much more distinctness and individuality they display than we had been accustomed to think from seeing specimens separately year after year. There was left on the mind in that case, no doubt, a pretty strong impression of Linnellism,—of a feeling and a method of regarding nature peculiar to the artist. But on seeing his works collectively we find surprising varieties of detail, of feeling, and of subject; and though one or two couples of painting may be bracketed together as exhibiting a close resemblance, taking the collection as a whole it is anything but monotonous. Another point which is much more strongly brought out, however, is the uniform progress of this conscientious and earnest painter from good to better, without any hint of a relapse, or of the weakness which too often gives a melancholy distinction to the works of the latter years of a man of genius. The pictures have not, unfortunately, been hung in chronological order, as they might very well have been, for most of the dates are known; and the progress of the artist would have been more significantly brought out. As it is, we have to pick out the sequence for ourselves; and when noted, it is a very striking one. The earliest works go back to quite another school of landscape from that which is prevalent now. Linnell was born in 1795, and exhibited his first picture at the Academy in 1807. The earliest contained in the present collection is dated 1808. That was a time when English landscape art consisted in "composition" and the making of effects; when there was hardly such a thing as local colour, when it was thought sufficiently near nature to paint a scene all in dull browns, provided the relation of the various portions as to force and depth was correct and effective: a superstition which lingered for some time longer, to the time when Sir George Beaumont could ask Constable "where he put his brown tree," and propose the colour of an old violin as the prevailing tone of a landscape. And the earliest works of Linnell exhibit the characteristics of this school. The "Qnoit Players" (33), painted in 1810, is, as far as the landscape is concerned, as deficient in light and air, in the sparkle of nature, as the landscapes which form the backgrounds or foregrounds to the out-door groups of Teniers. There is, in fact, a very Dutch look about the whole work, which, as an out-door scene, is sombre and depressing, and the figures are not so good or characteristic as those which Teniers would have given us. "Removing Timber in Autumn" (26) is another of these sombre landscapes, dated 1808. In "Bayswater in 1814" (11) we find light breaking over the scene; this is a wooded and undulating prospect, with a group of boys and girls in the foreground (the artist entitled it "The Bird-catchers"), and here there is more lighting in the scene, and less of that dun brown pervading everything; but the trees are still very conventional, large masses of dull colour, very low greens and browns, entirely conventional in treatment. This conventionality in representing trees hung about Linnell's work more or less for a great period of his life; he studied trees in the mass, not in their individual character, or, at least, he painted them so for the most part. How soon his landscapes began to exhibit an emancipation from this timid and conventional tone the present exhibition does not serve to inform us, for there is a gap not filled up till about 1840. It would appear as if he had to some extent neglected landscape for a time, for nearly all the paintings belonging to the decade 1830-40 are portraits. After this gap a great difference appears. The landscape lent by Mr. Huth (75), dated 1847, is one of the earlier of those which go to make up the bulk of the exhibition; and here we have a glowing sunset picture, with the glow reflected in the water, in a manner quite at variance from that of Linnell's earlier work. We have not yet, however, quite the style which was most distinctively characteristic of his art, and which for many years recurred to every lover of painting when the name of Linnell was mentioned. Perhaps the most completely typical example of the complete Linnell style which we could select from this exhibition is "The Timber Wagon" (7), painted in 1852. Here we see in all its breadth and force his peculiar style of handling landscape during a considerable portion of his artistic career. The trees form a rich mass of foliage just beginning to be touched with the tones of autumn, or that is the impression conveyed, whether intended or not; a broad light is flung over the foreground, and the distance is rich in blue and purple tones as it recedes from the eye. This middle style of Linnell's seems to represent the abstract beauty and expression of landscape, treated with the greatest breadth, and undisturbed by any too forcible local colour or by any predominance of one detail over others. The landscape is not localised either; its general character is English, but it might be elsewhere than in England, nor are we concerned to determine where it is or to fix its special character: it is landscape in the abstract, yet not imaginary or ideal, but true to the broad facts of nature. Of course there is something wanting in this; there is an interest belonging to landscape of which the *locale* and detail are more distinctly characterised, which this wants. How indifferent Linnell, like other landscape-painters of that period, was in regard to local characteristics, may be seen in the work which is called "The Flight into Egypt" (32), about twelve years earlier. This is a grand mountain landscape, with the sacred trio in the foreground, and the Pyramids put in the distance, over the slope of the hill, in a scene quite different from any which could possibly have been found within ken of the Pyramids, which were apparently added as an after-thought, to give a title to the picture. A painter would be laughed at who were to do this now; but we might compound with a few of such eccentricities for the sake of the broad and grand style of painting of which we have so few examples at this time.

"The Sandpits" (3), painted four years later than the "Timber Wagon," seems already to foreshadow the change, not too marked, but still quite recognisable, which came over the painter's style in his later years. That broad and equal treatment seems already giving place to a more forcibly accentuated composition, in which the lights and shadows are more concentrated and contrasted. Later works than this display a desire, which never appears in Linnell's earlier and middle pictures, to represent remarkable and unusual effects of light and colour in nature. His colours deepen and grow more intense; he paints crimson-lighted clouds at sunset, as in "The Sheepfolds" (54), painted in 1859, or strong effects of another kind, as in the tremendous thunder-cloud picture, "A Storm in Autumn" (65), of which the date seems to be no more nearly fixed than that it is between 1856 and 1866. This seems exaggerated, at least in the apparent solidity and weight of the cloud, but at least it is no superficial sensational effect; it is worked out with every effort at truth, and with great power; and if in part a mistake, it is one worth more than the successes of a more feeble painter. But this tendency to stronger effects never seems to have led Linnell far away from nature, or to have induced in him any love for scenic effects of painting. On the contrary, almost the very latest work exhibited is a painting of spring scenery, "Crossing the Bridge" (78), which is one of the most fresh and genuine transcripts from nature which could be seen in landscape painting; it was painted in the artist's eighty-fifth year. Comparing this with the early works of the 1810 period, it really seems as if Linnell's artistic nature became younger and fresher with his advancing years.

Among the other examples of his powers may be mentioned one or two which have an especial interest. Among these is the large and very powerful work entitled "The Disobedient Prophet" (66), which represents a class of work such as Poole excelled in, in which, though the figures which give the name to the painting are small and comparatively insignificant, the whole landscape appears to embody in itself the feeling appropriate to the event represented. In this case the landscape seems the very one to be the centre of some divine judgment; it is dark, lowering, and portentous. Another type of work which is represented in one or two, and only in one or two, of Linnell's pictures, is what may be called the idyllic,—the combination of landscape with figures so that both elements seem equally important to the general result. It is needless to remark how favourite a form of art this has now become. One of Linnell's specimens is unfortunate,—the "Shepherd tending his Flock" (17). The figure is ugly and uncouth; but another specimen, "The Hayfield" (93), with a group of figures seated in the foreground, is remarkable in comparison with some similar scenes as treated by idyllic painters at the present moment. We have commented once or twice, in noticing water-colour exhibitions, on the unreal tone which hangs over some of these rustic idylls, in which landscape and figures are alike idealised out of all natural life and reality. In this painting of Linnell's we have the same kind of scene, the same elements, treated with a healthy realism, not excluding poetic feeling, but at the same time not ignoring the reality of nature. It is a more satisfactory kind of picture to the intellect, though less emotional, than the painted idylls that are now produced. In addition to the landscapes, the exhibition contains some admirable portraits, showing how complete and all-round was the artist's culture. Among the most interesting are that of Carlyle at a youthful period of his life (16), that of "The Rev. John Martin" (36), and that of the artist himself (50). Among the miniature portraits lent by the Linnell family (102) are the portrait of Blake, from which the illustration in Gilchrist's "Life of Blake" is taken; a very interesting portrait of Mr. Wedgwood; and a curiously-elaborated group of the painter's three children playing with a cat, the style of which seems to indicate that Linnell was not without his sympathies for the art of the now extinct "præ-Raffaellite brotherhood."

The collected works of the painter who was in his early years one of the most prominent

and uncompromising of the said brotherhood, though he professed to have deserted them afterwards (we say "professed," for his practice does not seem to have materially altered), are hung in Galleries V. and VI. Whatever may be said as to individual works of this collection, one thing is certain, that Rossetti's works are not among those which will gain in repute by being studied *en masse*. On the contrary, we should say that one look round the galleries ought to be enough to shake the faith of any who may have been deluded into believing in the absurdly-exaggerated claims which are made for this painter by his partisans, and which, during his lifetime, were equally made by himself. Here was a painter who could paint nothing but one woman, and she a woman unlike any healthy creature ever seen under the heavens. We go from one painting to another, and (with one or two partial exceptions to be mentioned hereafter) we find nothing but a repetition of the same type of face, the same blank expression of sensuous languor, the same full lips and impossibly-long neck. It is the art of a dream, and of a very unhealthy dream. In a decorative sense, some of the paintings are exceedingly fine. Rossetti had a remarkable feeling for rich colour-combinations, a feeling which seems to have been unaccompanied by any great power of drawing or any intellectual energy; it impresses itself upon us as a sensuous pleasure in beautiful colour, "merely that, and nothing more." We should call some of these, such as "La Bella Mano," glorified furniture pictures, idealised *bric-à-brac*, in which the female who forms the centre of the scene has no more expression than the furniture; she is one item in a gorgeous representation of "still life." Rossetti commenced his career with a rather different class of work; he was at the outset mainly a reproducer of the feeling and effect of early Florentine art, consciously assuming its childlike naïveté and simplicity. The result is ludicrous enough in such an example as "The Girlhood of the Virgin" (286), which suggests the idea of the corner of a hospital ward, where two rather meagre "sisters" are having a half-hour's relaxation, one of them squatted on one of the beds. One small painting of this period, however, "Paolo and Francesca" (291), a triptych in which Dante and Virgil are represented in the centre relieved against a gold ground, is powerful in its way; it is a purely decorative picture, and the stiff and archaic style does not seem out of harmony with the associations connected with Dante's great Gothic poem. Among the larger and later paintings are two which approach at least to being great pictures; there are the "Sybilla Palmifera" and "The Beloved" (294, 297). The latter has been repainted since we saw it, a good many years ago, and, if our recollection is right, has gained considerably in force for its recent treatment. The subject refers to Solomon's Song; "The Beloved" is a beautiful blonde woman whose fair face and light hair and flesh tints are the more set off by contrast with the negro boy in front of her who holds a gold goblet full of flowers before her; she is followed by four other women, who seem attendants upon her. The face of "the beloved" is the only one among the larger paintings which has something higher in stamp than that sensuous full-lipped type which predominates everywhere else; it is a really beautiful and serene countenance, worthy of being beloved. The "Sybilla Palmifera" is a still finer, because more completely homogeneous, painting; it represents a half-length of some mystical woman, seated in the midst of a marble chamber where censers burn, and over which a mysterious half-light is diffused, amid which the figure and the room seem blended into one harmony of colour and feeling, in a way difficult to describe at all in words. This has just missed being a really great picture,—missed it for want of greatness of style and expression in the figure. She is, indeed, of a better type than many of the others; but still her face has nearly the same expressionless languor, the same absence of all the nobler attributes of womanly character. The painting entitled "A Vision of Fiammetta" (304), has also a kind of greatness about it: it is a powerful work of the second order, sensational, and defective in drawing. As for some of the "ideal" women portrayed here, such as "The Blue Bower" and "Venus Verticordia," they are simply women who, if possible at all, could not be tolerated in any decent society; indeed, we remember, at another loan exhibition a good while ago, to have heard one of them characterised by a spectator by that particular monosyllable used in the Bible and Shakspeare to designate those *quæ spectrum exporibus faciunt*, as Dugald Dalgetty delicately put it, under the veil of a dead language. Even of some that look less morally obnoxious, such as "The Salutation of Beatrice," one can only say that a man who fell in love with such a creature as that must have been in a nightmare, and a very bad nightmare. We are among those who would encourage and revere the ideal in art,—among those who think that painting tends at present far too much towards mere realism; but if "these be thy gods, O Israel," if this be ideal art, rather let us have Mr. Millais's most realistic portrait of the most commonplace London young lady, Paris millinery and all.

Of the remaining portion of the exhibition, including the works of those more usually classed as "Old Masters," we may say a word next week.

FRAUDULENT GIFTS AND COMMISSIONS.

A LOCAL scandal has recently been engaging the attention of the Kensington Vestry which is worth some attention, especially at the present season. It appears that the Superintendent of Scavenging, Watering, and Dust has received valuable gifts from persons who have taken the dust and refuse from the roads. It appears, too, that the terms on which this dust was disposed of were as favourable to the Vestry as those on which they disposed of the dust to other parties. Still the gift which has caused the Vestry to dismiss their superintendent is of such value as to make it clear that the persons who gave it would apparently have entered into more favourable terms with the Vestry. On the other hand, it is only right to say that it does not appear that the superintendent entered or had the authority to enter into any agreement as to this dust, but that he merely, so to say, introduced the person who would take the dust and his terms to the Vestry, and through such introduction this person obtained the dust on his terms. It seems to be obvious that there was no criminal offence committed, though from a report in a local paper it would seem that the Vestry have ordered a prosecution. It is the fashion, however, of our local bodies to rush from one extreme to another,—to display laxity in the general management of their affairs, and then, when a subordinate transgresses, to rush into an equally foolish extreme, namely, that of an absurd and useless severity.

But such a case as this shows very strikingly the low morality which exists in regard to gifts and commissions of an improper nature; that is to say, which are calculated to influence the mind of an *employé*, and to cause him to act less strictly in his employer's interests. Judges have declaimed from the bench against this system, yet it still flourishes, and is the canker-worm which eats into uprightness of conduct, both in purely business circles and among those who serve local bodies, not to speak of domestic servants. We do not for one moment believe that if we could act as father-confessor to the various officials of the London vestries we should find more than one in ten uncontaminated by this baneful system. Some may take such trifling gifts as turkeys and geese; but it is certain that when some small matter has to be arranged the donor of the turkey is given the advantage over the person who forgets to offer gifts of this kind. When large matters have to be undertaken it is certain that large gifts are offered, and, one may be sure, as a rule, are accepted, which are equally demoralising to the donor as to the acceptor, for the former is certain sooner or later to be hoist with his own petard, for his servant will receive a gift from some one who has as little scruple as his master. It would be absurd to comment upon the way in which tradesmen give gifts and commissions to domestic servants, it is too notorious to be worth mentioning at length; but we may say that from careful observation we are certain that one of the causes which has helped to make some of the largest co-operative societies so great successes, has been the fact that masters and mistresses know that in dealing at these emporiums their servants will not be contaminated, and their fidelity shaken, by gifts given with the sole object of biassing them in favour of the donor, whether he deserves it or not.

We have said that the judges have done their best to put a stop to the practice of fraudulent gifts and commissions. Some years ago a case was decided,—that of Sorby *v.* Smith,—in which it was held that gifts given with the intention of biassing the mind of the donee in favour of the donor and against the interest of his employer, rendered the contract void, and that the employer of the unfaithful servant could break off the contract made by him, and say, "No; it is a contract not fair in its inception, and I refuse to abide by it now that I know that my agent's mind was influenced by gifts from the other contracting party." That is a judgment which we should like to see more often invoked by persons who discover that their agents receive such gifts, for it contains a principle which English judges earnestly desire to apply. Then followed a more recent decision, in which a person had been promised a gift if he would do some act favourable to the promising party,—Harrington *v.* The Victoria Dock Company; and here again the Court enunciated the principle that the contract, as between promiser and promisee, was void, and that such a promised gift could not be recovered. Still more recently, the celebrated case of Barbour *v.* Williamson, came before the Courts, in which the Master of the Rolls ordered that commissions improperly received must be accounted for to the principals by the agents who received them. From this brief summary of some of the best known recent judicial decisions upon this subject, it is clear that our judges have done all they can to put an end to this pernicious practice of what we have called fraudulent gifts and commissions. But with regret we say, we fear that these decisions have been practically unavailing. Considering the pitch to which the practice has increased, influential individuals and bodies, whether they are engaged in commerce or in managing local matters, should, if they really desire to lessen,—we fear it would be Utopian to say to put an end to,—this practice, band themselves together for this purpose. We have associations enough and to spare to put an end to vivisection, to prevent cruelty to animals, to protect liberty and property, and so on. Surely there are some persons influential enough and earnest enough to found a society for the abolition of illicit gifts and commissions.

Sir Edmund Beckett is a man of extreme energy and courage, and has decided opinions on this subject, as his letters to the *Times* sufficiently show; but to write letters even to the leading journal is but to cry in the wilderness; something more practical must be done. A society such as we now suggest would, so far as its own members were concerned, be a nucleus of upright persons and bodies who would, in their own matters at least, set a good example, and also do their best to exterminate the practice among those with whom they mixed. By continual publications they would keep the matter before the public, by meetings from time to time they would produce a similar effect. They should enlist the aid of the clergy, for to promote this end would be to promote a higher tone of general morality, and, indeed, no class of the community should be left untouched. The society should unflinchingly expose these unrighteous practices whenever opportunity offered, even though they should be exposed to law-suits, which they should courageously face when they knew that their denunciations had been based upon well-ascertained and carefully-weighed facts. We confess we see no other means at present of lessening this great evil; we and other journals may from time to time take up our parable against it, but by masses of persons, in most affairs of life honest and straightforward men, this custom of fraudulent gifts and commisions is not regarded as a wrong practice. Subordinates see it followed by superiors, and from one end of England to another it flourishes unshaken but by an occasional blow. The only consolation which we at present find is that, among two bodies, at any rate, there will always exist steadfast and energetic protestors against this disgraceful practice, and that is in the press and on the bench.

Hastings.—Mr. F. Johnson, of St. Leonards-on-Sea, has generously offered to construct a large concrete breakwater for the protection of the Hastings fishermen, and present it to the town. The cost of such a breakwater is spoken of as likely to reach 20,000*l.*

TWO MUSEUMS AT ALNWICK.

THE second museum placed within the walls of Alnwick Castle contains a large collection of choicely-selected antiquities, which have been lucidly and readably described by Dr. J. Collingwood Bruce in a handsome companion volume * to Dr. Birch's "Catalogue of Egyptian Antiquities," of which we gave a notice lately.† In fact, the printing, and the numerous coloured plates and woodcuts with which the volume is adorned, render this book much more beautiful than the one above mentioned. The objects here considered, also, if they yield to Egyptian antiquities in regard to their great age, will probably interest a larger number of antiquaries. The museum described by Dr. Bruce is of comparatively recent origin. It may be taken to have commenced with the removal of a fine Roman slab found on the Roman wall at Hunnum, Halton-Chesters, in 1769, to Alnwick Castle shortly after its discovery. Early in the present century, the idea of collecting in the castle all antiquarian objects that came under his control appears to have been formed by Sir David W. Smith, commissioner to the second and third dukes of Northumberland. Thus, for example, some valuable urns dug up on the Northumberland estates, and some Roman inscriptions from sites within the county, were also acquired. The removal of a number of inscribed and sculptured Roman stones from the station of Chesters, and the archæological objects found on another Roman station, that of Bremenium, on the Redewater, excavated in 1852, added considerably to the number of objects that were now gradually being brought together. Not long afterwards several altars and monumental stones which had been found in the Roman camps of High Rochester and Risingham were presented by their owners to the Duke of Northumberland, and now hold an important place among their contemporaries in the museum. Further additions were made by the late Mr. Albert Way, M.A., F.S.A., of Wonham Manor, the well-known antiquary, who from time to time secured several archæological objects of importance for comparison with the objects already in the museum, and it was further enriched by the introduction of a valuable collection of Pompeian relics presented by the king of the Two Sicilies in 1854. At later periods a number of Roman and Mediæval remains were obtained from the collections formed by Mr. E. J. Willson, of Lincoln; some urns and bronzes, procured at the sale of the collection formed by Mr. F. Dixon, of Worthing; and a very large series of Irish relics of an early period secured on the dispersion of Mr. R. C. Walker's museum. Excavations on the site of Roman Bath, the *Aquæ Solis* of ancient writers, yielded some interesting remains, and the curiosities collected by Mr. Davison, of Alnwick, contributed a further selection of miscellaneous antiquities. With these materials the present museum now located in the "Postern Tower" of the castle is chiefly filled, and the compilation of a catalogue of its contents was naturally the next consideration. This was commenced by Mr. Way, who in a great measure arranged the contents, and superintended the preparation of most of the finely-engraved illustrations with which the volume is so copiously filled. Mr. Way's health, however, failed, and Dr. Bruce undertook the completing of the catalogue, which as an illustrated work upon general archæology redounds to the credit of all those who have been in any way concerned in its production, among whom Dr. Bruce mentions Canon Greenwell, Mr. C. R. Smith, F.S.A., and Mr. A. W. Franks.

The catalogue, which has been prepared to some extent in classified and chronological order, commences with the consideration of the British antiquities of the earlier periods. Here, as Dr. Bruce truly writes, it seems certain that there have been tribes of men, and still are, whose sole implements have been formed of stone; others, ignorant of iron, but possessing weapons of bronze; and, lastly, those who have left behind them relics composed both of brass and iron. These classes must be taken to represent different degrees and forms of civilisation, rather than successive eras of time, and we must not attempt to define these periods too strictly, for they often run into each other, and the survival of archaic arts forms a disturbing element in the many problems connected with these questions. The sepulchral vessels of this class in the museum are all of more than usual interest. They are handmade, and innocent of the potter's wheel, and are, therefore, when we take into consideration their size and symmetry, surprising examples of fictile art. The patterns have been variously made upon them; some appear to be the result of drawing a sharply-pointed instrument over the clay when moist, or impressing a notched or squared piece of bone or wood on the surface of the pot; others, again, show dotted markings, impressions of human finger-nails, and not infrequently the peculiar impression produced by a twisted thong is found when the ornamentation is carefully examined in detail. Of the four great subdivisions of sepulchral *fictilia*, viz., cinerary urns, incense-cups, food vessels, and drinking-cups, there are abundant specimens in the Alnwick Museum. Of these, that called incense-cups is perhaps the most interesting, because the exact uses to which these vessels were applied is at present only conjectural. The author, however, appears to incline to consider them as having been used as chafers for the conveying of fire from some sanctified source to the funeral pile. In this view he is supported by several antiquaries of great reputation. The food-vessels include one 5½ in. high, found in 1833 in a field near Hazon, in the parish of Shilbottle, Northumberland. This is worthy of notice, because it is stated there was a lid to it when first dug up, and five small stunted handles have evidently been attached, at equal distances, to the shoulder, three of them being now broken off. In this case the markings are due to the employment of a twisted thong. The ornamentation upon another food-vessel of unusual form shows peculiar lozenge-shaped impressions made by the redoubled application of a triangular tool. The Irish sepulchral urns which close this section bear some resemblance to the Northumbrian examples, but they possess elaborate details of ornamental work peculiar to themselves. The British town or fortification at Greaves Ash, described at length some years ago by Mr. Tate, has contributed some relics to this museum of prehistoric pottery.

Of stone implements many good examples have been found in the county on the sites of camps and dwellings now obliterated by the plough. One of these is an instructive specimen, presumed to have been found in the neighbourhood of Alnwick, having a length of 4⅛ in. and breadth of 2½ in.; it has a depression on both faces so as to give a hold to the finger and thumb when held in the hand; it is also notched in its side so as to give a firmer attachment when used with a handle. In this class also is a small chisel formed of serpentine, found in a grave in Norfolk Island. It is supposed that a large canoe full of men had been driven by contrary winds from New Zealand, and that this grave, one of no less than seventeen in a row, contained the remains of many of the crew. Perforated axes, arrow-heads, javelin-heads, hammer-stones, pounders, weights or sinkers, whetstones, burnishers, spindle-whorls, beads, knives, chisels, scrapers, cups with perforated handles, and miscellaneous objects attest the richness of this portion of the museum. The palæolithic stone implements are not particularly numerous.

At this part of the book an interesting dissertation is introduced upon the ancient markings on stone found at Routing Lynn and Old Bewick, and also in many other places, chief among which may be mentioned Northumberland, Argyleshire, and the West Coast of Kerry. Many ingenious theories to account for these mysterious markings have been suggested. Mr. J. Romilly Allen, F.S.A. Scot., has recently written, in the Journal of the British Archæological Association, upon some Scottish examples, and discusses at length the various theories connected with them. The author of this catalogue, however, sees in them a symbolism indicating the belief, or at least the hope, of a future life, and quotes from Sir J. Y. Simpson a passage pointing out that these symbols are sometimes found engraved on the outer or inner surfaces of the stone lids of the ancient kistvaen and mortuary urns. The remains of the dead which occupied these cists and urns were covered over with stones carved with these rude concentric circles, apparently just as afterwards, in early Christian times, they were covered with cut emblems of the cross placed in the same position.

Bronze implements follow next in order, and one of the finest and least conventional in character is a flat axe found near Corbridge, 7¼ in. long, with a cutting edge of 4¼ in. It is highly decorated with chevrons and acute angles, having at first sight somewhat of the appearance of basket-work, probably effected, as Dr. Bruce conjectures, by the action of a fine chisel. Canon Greenwell's Chollerford axe may be compared with this in respect of the ornamentation, but its flanges and stop-ridge claim a place in a more advanced period of human handiworks. The consideration of palstaves, socketed celts, swords, daggers, spears, blades of weapons, moulds, and shields next follows, succeeded by the account of objects of the later Celtic and early iron age. The antiquities of the Saxon period commence with an illustration and interesting description of an inscribed sepulchral cross found in the ruins of Woden's church at the mouth of the river Alne, which formerly ran into the sea to the south of the church, but it has now altered its course and passes to the north of the site of the church, thus separating it from the village of Alnmouth. The "uncouth sculpture" with which this stone is rudely "deck'd," is a representation of the Crucifixion of our Lord, the feet being placed, as in all very archaic work of the kind, side by side and not one upon the other. The knotwork which replenishes the rest of the stone's surface is worthy of comparison with many well-known crosses, as well as with the ornaments found depicted in early manuscripts of the so-called Irish school. But it is the peculiar, although mutilated inscription, which gives the greatest charm to the relic. This is engraved in rude Roman capitals, with the exception of two, or perhaps three Runic characters, a combination of great rarity and indicative of a period of transition from one alphabet to the other, or of a coalescing of forms selected from each. Although there is little doubt that this sculpture marks the site of "Eadulf's grave," we see no reason why a name so frequently found as "Eadulf" in Saxon times should be applied specially to the Eadulf who, in the year 705 usurped the crown of the Northumbrians on the death of Alfrid, and was slain in his unsuccessful siege of the fortress of Bamborough or Bebbanburg, as related by William of Malmesbury and other historians. From its ecclesiastical characteristics we may more properly assign it to the grave of one of the two abbots named Eaduulf, who are duly enrolled in the Durham Book of Life, the "Liber Vitæ Dunelmensis," an early ninth-century manuscript written in liquid gold and silver, now entitled "Domitian A. VII.," in the British Museum.

Fine Saxon fibulæ or buckles, copper and bronze weapons found in Ireland, objects found at Stanwick, in Yorkshire, and various minor antiquities, are next considered, but the introduction of a series of Mediæval seals of the Percy family appears incongruous and out of place here in the work just before a notice of Chinese seals of porcelain and steatite, followed by a long series of specimens of Roman pottery. Among the Samian vessels, one shows the esteem in which these vessels were held, by having been mended in ancient times with a rivet of lead after it was broken. The Romano-British vases found in various sites in Britain are very typical of their kind. Their description is followed by some mural fresco paintings from Pompeii, among which the seated priestess charming a snake by sounding a *sistrum* is worthy of notice for its characteristic drawing and colouring; specimens of Roman glass and terra cottas; a *dimyzos*, or lamp for two wicks; a *trilychnis*, or three-fold burner, and other lamps; and some bronze bells and utensils, deserve attention before we pass on to the facsimile of the celebrated Roman silver dish or *lanx*, bearing a mythological design or composition, of which a fine steel engraving gives a faithful representation. This charming and elaborate relic of Roman silversmiths' art was accidentally discovered in 1735 at Corbridge, by a blacksmith's daughter, and after passing through various vicissitudes, and even mutilations, at length fell into the hands of its rightful owner, Charles Seymour, the sixth Duke of Somerset. Its shape is a rectangle, measuring 15 in. by nearly 20 in. It has been described in detail by Mr. C. W. King, of Cambridge, and the author of this catalogue reproduces that writer's account of it. Equally unique and beautiful is the bronze enamelled cup, familiarly known as the "Rudge" cup. Its diameter is

* "A Descriptive Catalogue of Antiquities, chiefly British, at Alnwick." Printed for private distribution. Newcastle-on-Tyne. (Andrew Reid.)

† See *Builder*, vol. xliii., p. 771.

4 in., and height, 3 in. This noble Roman relic, of which a charming coloured plate is given in the work before us, was found in the year 1725, in a well close to the site of a Roman building at Rudge Coppice, near Froxfield, Wilts, during the progress of some scientific excavations. The cup probably came into the well by accident, or was cast in for concealment, although the idea was long entertained that the cup had been purposely thrown into the well as a propitiatory offering to the Nymph who presided over its waters. From the time of Horsley, the learned author of "Britannia Romana," to the present day, this cup has worthily enjoyed an unrivalled reputation among the choicest and most valuable Roman antiquities found in Britain. Its shape resembles that of a shallow cup or basin. It is ornamented with *champlevé* enamel work, consisting of a red line in the form of a simple rectangular mæander, enclosing square panels divided by a cross into four cantons of alternate colour, and sets of four crescents placed edge to edge. Around the rim of the cup is a frieze or ribbon, containing, in Roman capitals (the A having no cross-bar), the following inscription:—

A · MAISABALLAVAVXELODVMCAMBOGLANSBANNA.

In this Dr. Bruce recognises the names of five places connected with the Roman wall in the North of England, but he offers no explanation of the fact of its discovery so far away from the sites which it enumerates. He thinks it not improbable that this inscription contains the names of the resting-places of a pilgrim proceeding from Maia, perhaps the Magna of the Notitia (now Great-Chesters, to the north of Haltwhistle), through Aballaba (undetermined), Axelodunum (thought by Prof. Hübner and others to be near Maryport), and Amboglanna (now Birdoswald), to Banna, for which the author suggests the modern Gilsland. But we agree with Br. Bruce that, even with the aid of this conjecture, those places cannot be linked together into a probable line of march from any one station to another.

A plan of excavations carried on very systematically in 1852 at the Roman camp of Bremenium, or High Rochester, showing the general result of the whole of the operations, follows, remarkable for the closeness with which the buildings have been packed together, and for the finding of several underground tanks in the station, a circumstance that has not been much noticed before. The antiquities found during the course of exploring the camp, which was enclosed in a wall having the remarkable thickness of 16 ft. 6 in., include, among miscellaneous minor objects, a circular bronze ornament of open-work, nearly 3 in. in diameter, having an eagle in the centre, surrounded by an inscription, which reads, COH. or COM. OPTIM. MAXIM.; portion of a ridge tile, bearing the stamp, LEG VI V (*Legio sexta victrix*); and a white terra-cotta figure of Venus holding a towel, similar to those engraved in Barker's "Lares and Penates" (p. 193), C. R. Smith's "Collectanea" (vi. 52), and his "Roman London" (p. 109).

A great feature in the Alnwick Museum is the series of fine Roman inscribed and sculptured slabs and altars. They come, for the most part, from the Roman wall at Hunnum or Halton-Chesters, and the stations of Cilurnum, or Chesters, on the North Tyne; Bremenium, already spoken of as High Rochester, near Rede Water; and Habitancum, now Risingham, on the same river. The Roman capital characters employed in these inscriptions appear to range from the second to the fourth century after Christ. The names of the various deities, legions, and personages recorded on these relics, and the elegant forms of Roman art details and proportions which they exhibit, are well worthy of the careful study of the antiquary. We can only notice here a few salient points, such as, for example, the altar of the "Transmarine Mothers," an unusual epithet of the "Deæ Matres"; the *fylfot* ornaments on the altar numbered 844, exactly like those found on archaic Cypriote pottery of about 1,000 years' greater antiquity than this altar, on the breasts of Chinese idols, ancient Phœnician *fictilia*, in Buddhist symbolism, on early Syracusan coins, and on Trojan whorls; the occurrence of the Spanish tribe of the Varduli, whose cohorts garrisoned Bremenium as early as the time of Trajan, the commencement of the second century of our era; and a "dreaming altar," inscribed with two hexameter lines,—"SOMNIO PRAEMONITVS MILES HANC PONERE IVSSIT ARAM QVAE FABIO NVPTA EST NYMPHIS VENERANDIS." Cohorts of the Lingones, Dalmatians, and Asturians, and vexillations of various legions are mentioned in succeeding inscriptions. No. 895, a slab from Cilurnum, seems to represent a scene in the amphitheatre, showing a combat between a lion and a gladiator, in which the animal has overcome his human foe. The president, seated in a niche on the right-hand side, is in the act of giving the signal which decides the fate of combatants. The last slab which we shall mention comes from a tank on the northern margin of the Prætorium at Bremenium. Dr. Bruce recognises in this carving the highly-creditable skill of the soldier artist, but thinks it is difficult to say why the subject of three nymphs at their ablutions in a fountain should have been chosen for the adornment of his barracks, for "fire rather than cold water would be the great want of the Spanish soldiery of Bremenium." But may not this subject be in some measure explained by comparison with *nymphis venerandis* of the inscription quoted above? The catalogue closes with notices of some miscellaneous Mediæval remains. These two museums, and the catalogues in which their contents are so carefully and completely described, form features connected with Alnwick Castle which raise it far beyond the usual interest that attaches to ancient buildings. The former advances the study of Egyptian archæology in no slight degree; the latter forms an indispensable contribution towards the early history of Northumberland, and assists the student of prehistoric British history in many of the difficulties with which that path of inquiry is beset.

HALL DOORS AND HOUSE DANGERS, PAST AND PRESENT.

A BAD piece of workmanship can undoubtedly give pain and considerable annoyance, and in a dwelling a badly-made and ill-fitting door is a source of continual trouble and vexation. The ills to which doors are subject chiefly arise through faults in their materials, making, fitting, and hanging. There are, however, other subsidiary causes contributing to the ills which affect doors, but it may be stated at once that the main ones are insufficient scantling and bad workmanship, and these two defects are common to the majority of the doors and other framings of our present day speculatively-built dwellings. We do not wish it to be inferred, however, from what we have said, that a bad door may not be made of scantling in every way sufficient for the purposes of a good door, or that a door may not turn out unsatisfactory with even passably good workmanship. There is nearly always the certainty of satisfactory service when the proper methods are adopted, but there can be no hope when the conditions of durability are ignored. Between an eighteenth or an early nineteenth century hall, parlour, or drawing-room door, in the houses of our merchants and gentry, and the doors now manufactured for use in our suburban dwellings,—there is as much difference as exists between solidity and hollowness, or reality and sham. Substantial and well-finished doors, after the old method, of course, are made, but only in a limited number, or when specially stipulated for by architects and clients, in houses of the better class, or in those coming under the class of family mansions or public offices. The six-panelled doors, with their mouldings on stiles and rails, worked in the solid, and the squares of their raised panels moulded as well, seem, except under exceptional circumstances, things of the past. The four-panelled door, 1¼ in. thick, but generally much less, with its ¼ in. thick panels, and its stuck-on mouldings, is made to do service in place of the former, in which the framing was from 2 in. to 2½ in., with a thickness of panelling (in the centre) almost flush with the framing. Throughout the eighteenth century and in the earlier part of the present century, the doors of our private mansions and public offices were not only made to present a pleasing and effective appearance, but were made with a view to their durability and the safety of the household. These latter points are seldom considered now, particularly in towns and cities, on account of our organised police system. The constable is expected to secure what the public leaves insecure, and inducements are held out to thieves and burglars to force and break into dwellings through the flimsy character of the materials and workmanship of our doors and windows. There can be no question that, if suburban London of to-day was dependent on the system of police inspection that obtained in the opening years of this century, burglaries would count by the thousands nightly from the character of our doors and window-sashes, in make, materials, and fittings. Let us here draw a comparison between what may be called the old-fashioned and durable hall-door and the modern substitute in our suburban houses. The former was seldom less than 3 in. thick when finished and hung, for if framed of 2¼ in. scantling, the diagonal sheeting on the inside made it up to 3 in. The door outside was generally a six-raised-panelled one, with mouldings struck in the solid. The hinges were wrought iron, the lock was large and strongly made, there were top and bottom bolts, and a chain for fastening right across at night. We will pass over the large knockers and ornamental furniture. The fanlight over the door was generally semicircular, with two or three or more bars radiating from the centre, but for safety there were upright bars of ornamental iron work fixed in the head of the door-frame, within the fan-light, rising to the soffit of the arch above. In several instances the old-fashioned hall-doors were oak framed, and had within their diagonal wooden sheeting on the inside sheets of iron, of the thickness, at least, of hoop iron. Sometimes the diagonal beaded matchwood was dispensed with, and the sheeting of iron supplied its place. The insides of the window-shutters to the principal rooms were also often sheeted with iron. This, then, was a specimen of the burglar-proof hall-doors of our grandfathers' time. Let us see what their highly-civilised and law-abiding grandchildren are content with, relying upon the arm of an officer who is supposed to be ubiquitous, but who nevertheless must be often absent when he is most needed. The modern suburban dwelling hall-door is seldom 2 in. in the thickness of its framing; indeed, it is often made from 1¼ in. timber, and when finished is, of course, less. It has four panels, the upper ones being glass, flowered and circular-headed, to make a "genteel" appearance, and the two bottom panels are about ¼ in. thick pine or deal. A common ogee-moulding is planted round the bottom panels, and the same kind of moulding is made to act as the ornament and rabbet for the glass panels on the top. Centre upright rails or muntins form the divisions between the panels. There is no sheeting of any sort on the inside of this kind of hall-doors, but a shutter of the commonest and flimsiest kind is made to be affixed at night-time within the glass panels, but these shutters are not always used or put up by the servants. These hall-doors are hinged by a pair of metal butt hinges, have a very ordinary lock, and a few inches of night chain. The chain in question is more used for keeping the door ajar at times to let in the fresh air and let out the foul, and for other household purposes, than for any absolute safety it affords. It can be seen at a glance that the modern suburban hall-door affords no protection against burglary. Its bottom panels could be kicked through by the heel of a man's boot, or cut through in a few minutes by a certain class of pocket-knife, not to speak of those handy little and almost noiseless saws of which burglars, as well as joiners and cabinetmakers, know the use. The "jemmy," however, that terrible night weapon and lever of the burglar, is all-sufficient to force our modern hall-doors from their hinges and flimsy fastenings. Give an experienced burglar a quarter of an hour's security from a surprise on the part of an inmate of a house or passing policeman or other person outside, and your modern suburban hall-door and window-sashes will give way to the leverage he applies if he lacks a sharp-cutting or opening tool, which he seldom does in the form of ingenious pocket-knives, skeleton keys, &c. Hall-doors whose outer face is flush at bottom with an oaken threshold or sill, should have a weather-board, a hinged one, that drops and rises as the door opens and shuts, and that provided with castors is the best kind. When the door terminates on a level landing or step level with the hall, and extending outwards for some distance beyond the face of the door cold draughts are certain, and a weather-board, is of little use, as it cannot project below the bottom rail, and some freedom in the opening of the door is necessary. Stationary weather-boards are little better than expedients for affording some relief when the space between

the door and the sill, or landing-step, is too much, and far beyond what is needed for freedom in opening. As a hall-door is subject to extremes of heat and cold in summer and winter, it should be made strong, and of well-seasoned timber. Glue-jointed panels should be avoided, for when not of suitable thickness, they are torn open by the scorching rays of the sun, or cracked by the incessant clapping that hall-doors are subject to in shutting on the part of servants or retiring visitors. Jointed panelling, therefore, should be discarded or not allowed. The heavy and sudden "bang" of a hall-door, particularly in speculative-built houses, shakes the walls and floors from basement to roof-tree, knocks the poor plasterwork around the jambs or door-frames to pieces, loosens the hinges, and soon plays sad havoc with the very indifferent latches and locks. Dolorous indeed is the spectacle that hall-doors and their belongings and surroundings present in cheap-class speculation suburban houses. There are to be found in several of the old squares and private streets, ay, and in sundry City quarters, numerous massive and well-framed and finished hall-doors, swinging with steady freedom and ease on their original hinges. A strong and well-made door with good frame-work will never warp or go in winding. With perfectly plumb-hanging stiles or door-frame, and substantial flooring beneath, the door will, when well fitted and hung with three stout iron hinges, do good service for a century and upwards. The locks and fastenings of such doors might require at long intervals a little repair or replacement from exceptional causes, but the door *per se*, if not subject to bad usage, would keep sound and serviceable as long as the house itself. Such doors as these, made conscientiously in the spirit that actuated the masters and workmen of the old school, are not in the market now, and can only be procured to order and at much additional cost above ordinary prices. A hall-door or room-door now of the standard kind, with the aid of machinery, can be sold at the price (and even under it) that a workman would formerly have received only for the making of it by hand labour.

Time and workmanship were two of the prime factors to be considered in the making of the old class of framed doors, with raised panels, moulded in the solid, and scribed at the angles instead of mitred. From four days to a week might be honestly spent on some of the old class of doors, and the workman would be busy during the whole time. The flimsy four-panel parlour or drawing-room door, with its flat panels and stuck-on mouldings, even before machinery was introduced, took the workman from a day and a quarter to a day and a half to make it. Unaided he had to saw out the materials from 1¼ in. boards, and mortise, tenon, and prepare the mouldings by the aid of hand tools. Save in few places, there are now mortising and tenoning hand-machines everywhere, and in large workshops steam power, and the workman is spared much heavy labour in the preparation of his work.

It would be desirable to see generally more solid and conscientious workmanship, along with better materials, not only in house joinery, but other building branches. The employment of machinery should not only tend to the cheapening of production, but lead to the turning out of varied and substantial workmanship. The dull, dead level of uniformity that now obtains in our doors and other framings, and their finishings, with pretence without and hollowness within, are sure signs of a decadence in skilled labour, and a departure from the conscientious motive that prompted the masters and workmen of the old school to do honest and durable work, and, therefore, to build both wisely and well.

The Proposed Roman Catholic Cathedral for Westminster. We mentioned last week that the project for erecting a Roman Catholic Cathedral for Westminster had been revived by the offer of Sir Tatton Sykes to build the cathedral at his own cost. It is stated that the new cathedral will be built on the model of the Votive Church at Vienna, of which the Baron Heinrich von Ferstel was the architect. A double-page exterior view of the Votive Church appeared in the volume of the *Builder* for 1876 (p. 662), and a two-page interior view and some details of the exterior in the volume for 1879, pp. 714-17.

EDINBURGH ARCHITECTURAL EXHIBITION.

AT the annual Academy exhibitions the architectural drawings exhibited are generally either representations of ancient buildings or designs for contemplated buildings. We have here an opportunity of comparing the latter class of design with the realised conception, and to estimate at its true value the architectural skill of the designer, for the realisation is not infrequently very different from the preconceived idea as shown on paper. In some few instances the reality excels the expectations raised; in others it falls short of these, the detail which in the drawing appeared bold and effective is in execution flat and tame; even the proportions are not the same, and the want of a thorough practical training is observable throughout. Another thing we notice is that some architects do not hesitate to alter the detail as the work progresses, and the alterations are almost invariably for the better; these are the men who bestow thought upon their work, and are not content to accept their first conceptions as the best they can do. But of all the representations of a building the photograph is the most reliable, and photography is at its best in subjects of this nature, especially as regards detail. The chief difficulty seems to be to get a good point of view so as to take in at a proper angle and distance a sufficient portion of the building. We have here many admirable photographs, but in the *embarras de richesse* before us we cannot undertake to notice these in detail; they are mostly from Continental buildings, and are probably well known to most of our readers. The well-selected views of Scottish subjects by Mr. John Annan, of Edinburgh, may not, however, have attracted notice, and to those interested they are well worthy of attention.

The exhibition is not confined to mere representations of buildings, but contains statuettes, tapestry, designs for internal decoration, stained glass, and portraits and busts of deceased Scottish architects of note. Amongst the portraits we note those of William and Robert Adam, Playfair, Thos. Hamilton, Craig (who planned the new town of Edinburgh), Gillespie Graham (in Highland costume), Kemp (the architect of the Scott monument), Mathieson (architect of the Edinburgh Post-office, &c.), and a spirited bust of David Bryce. These are in the first room, which is mainly devoted to representations of Old Edinburgh,—quaint, interesting, and replete with associations which would fill a volume. These nooks and corners, courts and alleys, have many of them disappeared, and more of them are bound to follow; this will make these drawings more precious, and we have reason to know that they are highly prized by their owners. Craig's plan of the new town of Edinburgh shows a circus intersecting the centre of the length of George-street, a feature which, it is to be regretted, was not realised. Kemp's drawings from Melrose Abbey, which he made ample use of in designing the Scott Monument, are careful and dainty pencil studies, and the drawings and model of the monument display the same careful hand. There is also a design for completing Rosslyn Chapel by Kemp's son, which shows that the cloak of the father had descended upon the son, but death cut off his early promise. A large oil colour representing St. Giles's Cathedral before its so-called restoration by Burn shows how the building has been completely altered both in outline and detail; a curiously irregular and picturesque pile it must have been, but it is now effectually tamed down to the common-place. It would now be not only undesirable but impossible to restore it, in the proper sense of the word, but as much may be done for the exterior as is being done to the exterior, and we are not without hope that ultimately the whole pile will be brought in unison so as to present an æsthetic *ensemble*.

In the next room we find a series of beautiful water-colour drawings of Oriental buildings by Mr. Phené Spiers; a magnificent "Pictorial Representation of a Temple of Victory, according to antique Sages," by Professor Donaldson; and the fine design for the Royal Scottish Academy Buildings by the late Thomas Hamilton, showing two distinct buildings for the National Gallery and the Academy, Doric in style and adorned with groups of statuary. For these drawings the architect was awarded a gold medal at the first Paris Exhibition. Mr. Hamilton's rendering of Gothic is very inferior to his rendering of Classic architecture, as may be seen in his design for the Edinburgh Assembly Hall. *Apropos* to the Assembly Hall, there is a design by the late Welby Pugin for a Roman Catholic Cathedral for Edinburgh, an examination of which will satisfy the most sceptical that Pugin was the master-hand in designing that hall. The cathedral is a fine conception, with three spires and all the requisite appendages. The late Bishop Gillies used to express sanguine expectations that this design would be realised, but that appears to be as far off as ever, and in all probability, if a cathedral is ever built for the Roman Catholics of Edinburgh, an entirely new design will be required. The designs of the late Alexander Thomson, of Glasgow, of which several are exhibited, show how a new expression can be given to the Classical style, and his works are of the class which appear to greater advantage when executed than as they are foreshadowed by the designer. As specimens of powerful draughtsmanship, nothing exhibited surpasses Mr. Street's handiwork. The bird's-eye view of the Law Courts is especially remarkable. Quite after a different manner are the drawings by Mr. Waterhouse of the Manchester Assize Courts and the Natural History Museum at Kensington. And in a different manner still are a number of admirable sketches by T. Raffles Davidson. The beautiful architectural design, of Renaissance character, for the Prince Consort Memorial in Edinburgh, by J. Starforth, has not lost in the keeping. Many think that it would have been a greater ornament to the city than the equestrian group which was chosen. Mr. Starforth also sends views of several churches and public buildings which we believe have not been before exhibited. The designs for country mansions, by the late David Bryce, of which there are a number in the rooms, continue to hold their place in the first rank; none of his successors exhibit the like vigour and variety in the treatment of the Scottish Baronial style. We have also Mr. Bryce's design for Free St. George's Church, Edinburgh, the upper portion of the tower of which is, if we mistake not, somewhat different from the original conception.

A goodly display is made of designs submitted in competition for the Glasgow Municipal Buildings, and amongst these is the selected design by Mr. Young. Some of the competitive drawings for the Birkenhead Town-hall are beside these, the reaction in favour of the Classical style being manifested in all of them, but we fail to observe freshness of treatment in any one of them. Nevertheless, they are all more or less possessed of a certain dignified character, such as did not always obtain when Gothic was in the ascendant.

No architectural exhibition would now be complete without examples of the modern interpretation of the style of the time of the good Queen Anne. Of these the most notable are the "Mansions in Cadogan-square, London." The late Mr. Rochead, of Glasgow, is well represented; his "Premiated Design for Government Offices, London," elegant in detail, and striking in general effect, would, we think, have excelled in beauty the buildings which now face St. James's Park; and his "Design for the Glasgow University," after a different manner, is possessed of considerable dignity, but like most, if not all, Classicists, he fails in his rendering of Gothic. "Twelve Suggestive Designs for Churches" are pretty enough upon paper, but they would be weak and ineffective in execution. We do not forget that Mr. Rochead designed Free St. Mary's Church, Edinburgh, which, externally, is not devoid of merit.

Kemp's "Design for a New Palace at Dalkeith, for the Duke of Buccleuch," is represented by a large model. We do not think his Grace has reason to regret that the project was abandoned; it would doubtless from mere mass have been a striking building, but the detail as shown has a cast-iron uniformity about it, and the numerous false gables would not have produced a happy effect. The style is Elizabethan, and the buildings are disposed on three sides of a quadrangle, a square tower rises above the principal entrance, and there are minor towers at the re-entering angles. A model is not the best means of showing the design of a building, although to the uneducated it may be so, and it is probable that a man possessed of so much fancy as Kemp was would have allowed his fancy greater play than appears on the model, but there are few living architects of note who could not produce a design infinitely superior. Near this model is placed a marble

bust of Mr. Burn, who designed Montague House, London, for the Duke, which we understand, superseded the Dalkeith project.

The walls of the south room are hung with beautiful examples of Arras, Gobelins, and Brussels tapestry, exhibited by Messrs. Whytock, Reid, & Co., who also show many excellent designs for furniture and wall-decoration. Equally good are similar designs by Scott, Morton, Brown Bros., J. W. Small, and others, all exemplifying the advance of taste in these matters. And the like good taste is shown in the mural decorations of Messrs. Bonar, Dobie, Hall, and others. Designs for stained glass, by Messrs. Ballantine, Graham, Ross, Adams, and Small, deserve favourable notice; as do also designs for wall-papers and hangings, by C. A. Jockel; and for tesselated pavements, by W. Stevenson, and Hawley & Co.

The statuary is mainly made up of the models for the Scott monument by various sculptors. There is a model design for the Byron memorial, by D. W. Stevenson, showing the poet standing on a rock with figures of Liberty and Poesy at the base; also a "Model for the Buchanan Memorial Fountain, proposed to have been erected in Edinburgh, by John Rhind," enriched with sculptured group, &c.

We are fully sensible that in this rapid sketch we have omitted to notice many excellent designs, but we trust we have given our readers a slight notion of the materials of which the exhibition is composed.

THE PRIORY OF WHITEFRIARS AND ITS SANCTUARY.

BETWEEN Whitefriars-street and Bouverie-street a great gap has been formed by the demolition of the old Bolt-in-Tun Inn. The portion of this once celebrated coaching-house fronting Bouverie-street not many years ago, was named the Sussex Hotel, and the coaching office at 64, Fleet-street, became a railway receiving-house. The date, 1692, on a stone above the Bouverie-street entrance, was probably the year in which the inn was erected.

Entering from Whitefriars-street we came upon the *débris* of the ancient hostelry mingled with those of the "Hospitium Vocatum [called] Le Bolt-en-Ton," of which the White Friars had a grant in 1443; nay, more, upon a tower which formed part of the church of the White Friars,—the brothers of the Blessed Mary of Mount Carmel,—founded by Sir Richard Gray, knight, in the year 1241. King Edward I. granted the brethren a plot of ground in Fleet-street whereon to build their house, writes Stow in 1603, which was since re-edified or new builded by Hugh Courtney, Earl of Devonshire, about 1350. John Loufkin, a stock fishmonger, who was mayor of London in 1348, and again in 1365-66, granted a lane called Croker's-lane, leading from Fleet-street to the Thames,—a portion probably of Bouverie-street,—to build in the west end of the church. In the year 1407 the body of Sir Robert Knowles, knight, was brought to London, "and honourably buried by the Lady Constance, his wife, in the body of White Friars' Church, which he had newly builded," and to which, in 1420, the bishop of Hereford added a choir, presbytery, and steeple. The church was surrendered at the Reformation, and in place of it, writes Stow, "be now many fair houses builded, lodgings for noblemen and others." The old hall, or refectory of the brotherhood, became the first Whitefriars Theatre. "It hath been used as a place for the presentation of plays and interludes," we learn from an MS. survey of 1616, "for more than thirty years last by the children of Her Majesty. It hath little or no furniture for a playhouse, saving an old tattered curtain, some decayed benches, and a few worn-out properties and pieces of Arras for hangings to the stage and tire-house [dressing-room]. The rain hath made its way in, and if it be not repaired, it must soon be plucked down, as it will fall." "The children of Her Majesty" is explained by the title-page of the comedy, "Woman is a Weathercock," printed in 1612, which was acted "divers times privately at the White Friers by the Children of the Revels." This last paragraph refers to one of the few final performances in the metamorphosed refectory, which, having served the purpose of a playhouse for thirty-three years, was pulled down in 1613.

The library and other parts of the priory were granted by Henry VIII. to Richard Moresyne; the chapter-house and some other parts to William Butts, whose name and calling Shakspeare, in his play of "Henry VIII.," has handed down to us. The scene is the lobby of the King's council-chamber. Butts crosses the stage, talking aloud to himself, and without any sign of recognition, passes Cranmer, who exclaims:—

> "'Tis Butts,
> The king's physician: as he pass'd along
> How earnestly he cast his eyes upon me
> Pray Heaven he sound not my disgrace!"

The last blow levelled at the priory was the grant by Henry VIII. of the reversion of all the messuages of the Carmelites to Thomas West, Lord la Warre.

The district or precinct of the Whitefriars long enjoyed peculiar privileges; among these the right of sanctuary, which was continued after the dissolution, and enlarged in 1608 by royal charter. It appears from the Clause Roll of King Edward III. (1346), that both men and women of bad repute had for a considerable time made their abode so close to the White Friars, that the holy brotherhood could not celebrate divine service in their church in consequence of the continual clamour and outcries by which the district was disturbed, and the mayor and aldermen of London were ordered in the king's name, for the tranquillity of the prior and brethren, to remove the nuisance. Strype informs us that Whitefriars was, since its building in houses, inhabited by gentry; but some of the inhabitants taking upon them to protect persons from arrest, upon a pretended privilege belonging to the place, the gentry left it, and it became a sanctuary unto the inhabitants, which they kept up by force against law and justice. He also tells us that when the sheriff and his *posse comitatus* made a descent upon its inhabitants, his coming not being concealed, and they having notice thereof, took flight by water to the Mint in Southwark, another such place, until the hurly-burly was over, and then they returned. This district, in which fraudulent debtors, gamblers, abandoned women, and other outcasts of society, formed a community, adopted a cant language, and openly resisted the execution of every legal process upon any of their members, was known, at least as early as 1623, by the name of Alsatia. *Courtine* in Otway's "The Soldier's Fortune" (1680), exclaims, "'Tis a fine equipage I am likely to be reduced to. I shall be, ere long, as greasy as an Alsatian bully; this flopping hat, pinned up on one side, with a sandy weather-beaten peruke, dirty linen, and, to complete the figure, a long scandalous iron sword jarring at my heels." An Alsatian squire is represented in Tempest's "Cryes of London," 1711, as a young gallant, with cane, sword, hat, feather, and Chedreux wig. The most vivid pictures of Alsatian life are to be found in Shadwell's "Squire of Alsatia," to which Sir Walter Scott was so much indebted for the ground-work of a considerable portion of his "Fortunes of Nigel." In the play there is a great dinner at the George tavern in the Whitefriars. One of the company is mistaken for a bailiff, and a cry is raised,—"Help, help! an arrest, an arrest!" Then follow the stage directions,—"All cry out 'An Arrest.' Drawers and some of the rabble come in and join the cry, which get into the street, where they cry out too." In another part of the play, in order to resist an arrest, "They" (according to stage directions) "cry out 'An Arrest!' Several flock to them with all sorts of weapons; women with fire-forks, spits, paving-shovels, &c." Another stage direction,—a sergeant and party of the Guards have entered the precinct,—"The debtors run up and down, some without their breeches, others without their coats; some out of the balconies, some crying out 'Oars, oars! Sculler! Five pounds for a boat! Ten pounds for a boat! Twenty pounds for a boat!' The inhabitants all come out, armed as before, but as soon as they see the musqueteers, they run, &c." Shadwell boldly denounced the sanctuary of villany. Towards the conclusion of the play, Sir Edward Belford, "A merchant, who, by lucky hits, has gotten a great estate, lives single with ease and pleasure, reasonably and virtuously," exclaims,—"Was ever such impudence suffered in a Government? . . . Methinks 'tis strange that places so near the king's palace should be no part of his dominions. . . . Should any place be shut against the king's writ or *posse comitatus?*"

The George Tavern, above alluded to, was the printing-office of William Bowyer, after him, of Thomas Davidson, and now forms a portion of the printing establishment of Messrs. Bradbury, Agnew, & Co.

Enough of Alsatia and its unsavoury associations. In the reign of William III. the law was stoutly enforced within the precinct, and its privileges were abolished. The *Tatler*, in 1709, says "Alsatia is in ruins."

Those who take an interest in all that appertains to old London, and are not afraid of tramping through a few inches of mud, and clambering over mounds of broken chalk and bricks, may yet see the portion of the northern side of the Tower, whose flat, squared stones indicate no period nor style of architecture, and which, for more than 200 years, has served as a buttress to the Bolt-in-Tun; and many remains of the massive archways of the cellarages of the refectory, from which, doubtless, the good red wine was brought forth to pledge the return of the victorous Crusaders, and which, after a lapse of four centuries, became the refuge and lurking-place of poverty and felony. Improvement has issued its fiat, and on these ruins, within a few weeks, will rise buildings dedicated to the business requirements of London.

ROMAN BRICKS AND TILES.*

THE bricks and tiles made by the Romans are interesting specimens of the plastic industry of ancient times, and their form and dimensions vary within certain limits, exact mechanical accuracy not being, however, found in them. Their bricks may be classified into square and oblong models. To the former belong the *bipedales*, measuring about 19½ in. square. The *sesquipedales*, about 15 in. square, and the *tetradora*, 7 in. to 8 in. square; the thickness of these kinds being relatively small, from 1¼ in. to 2 in. To the oblong models belong the *pentadora*, 15 in. long by 7½ in. wide, which were used, for instance, in the Imperial palace at Treves. The *bessales*, measuring about 10 in. by 8 in., were principally used in connexion with the construction of heating appliances, &c. Semicircular bricks were also used in the building of round pillars, and where Roman building works have been discovered numerous specimens of this particular kind of brick have come to light.

The tiles (*tegulæ*) were usually 16 in. long, 10½ in. wide, and 1⅝ in. thick, although sometimes 8¾ in. square, and were made of a similar substance to the bricks, but harder and less fine, being also sometimes mixed with small stones. When used for baths and covering walls they were often ornamented with floral and geometrical decorations cut out. When used for roofing they were provided with a hole or were bent in a slope at the sides. The ledges rising above each other were covered with tiles of a semicylindrical form. On the tiles of the lowest row, the lower one was usually decorated with an ornamented edge, and provided with a gargoyle in the shape of a plastic modelled lion's head, while the half-cylinders of this row were finished off with Medusa-heads, masks, dolphins, busts of Venus or Juno, &c. Two pieces of this description which were found in the East Indies, and date from the time of the Emperor Hadrian, are described by Birch as having been even more richly ornamented, representing Neptune on his chariot drawn by *hippocampi*, and Cybele on a ship. Tiles were also used (particularly the *bipedales*) in the burial of the dead. A layer of them formed the base of the grave, while two rows, placed like rafters against each other, formed a roof over the corpse. The funeral urns were also in some cases covered with a tile.

A particular description of tiles, 17 in. long, 7 in. wide, and 5 in. deep, was used in connexion with the building of baths as well as in the construction of internal walls. Incised lineal ornamentation is frequently found to have been employed.

There would seem to have been some legal enactment in force (although frequently evaded), according to which the mark of the manufacturer had to be impressed on bricks and tiles; this figure being usually round, although it was in some cases oval or square. This mark was surrounded by an inscription. The more complete specimens of this marking have been found in Italy, and do not begin from an earlier date than the reign of Domitian.

* From a paper on Roman Plastic Manufactures, contributed to the *Spectator*, by Herr J. Innicke.

In addition to the designation of the factory, or of its owner's name as well as of the property from which the clay was derived, it is by no means unusual to find the year noted, or a record of the name of the reigning emperor. In most cases only the initial letters of the names appear. Other ornaments, such as figures of deities, stars, palm-branches, crowns, animals, &c., are also found in connexion with this class of work.

More historical interest is, however, attached to the records which some specimens of tiles furnish as to the legions which occupied at one time the places where they have been discovered. Thus at the Roman fortress at Taunus, one of the most noteworthy in Germany, tiles have been discovered bearing inscriptions which indicate that the eighth and twenty-second legions were once in occupation of that stronghold.

RIMINI.

M. CHARLES YRIARTE, to whom the artistic world is so deeply indebted for the works he has published on Venice and Florence, has now added a third volume to his valuable series in the book which at present lies before us.* To those unacquainted with the peculiar artistic interest of the little town of Rimini on the Adriatic coast, the subject might at first sight scarcely seem to promise a field of inquiry important enough to fill a portly quarto volume of over 500 pages of text, illustrated with 200 engravings, all of considerable beauty, and belonging almost entirely to one period of art. It is with this period,—the Renaissance,—that the story of Rimini is so intimately bound up, and with it the romantic existence of the ruler of Rimini, Sigismund Malatesta, to whose stirring life M. Yriarte devotes no small portion of his volume.

Sigismund Malatesta,—whose striking profile has been made familiar to all lovers of art by the characteristic medal of Pisanello to be found in every moderately complete collection throughout the world,—Sigismund Malatesta is as representative a type as could possibly be found of those *condottieri* or mercenary generals who, during the troubled days of Italian history, served so singularly, in the midst of war, of rapine, and confusion, to spread throughout the peninsula the love of learning and of art which marks deeply the fifteenth century; men of the sturdy stamp of our own English mercenary John Hawkwood, employed by the Florentines, and whose equestrian portrait, painted of colossal size by Paolo Uccello, never fails to attract the attention of the visitor to Santa Croce at Florence. In those sad days of turmoil which harassed Italy during the Middle Ages and the early years of the Renaissance, due to the still unappeased disputes between the Popes and the German Emperors,—disputes to a lengthy summary of which M. Yriarte devotes several most interesting chapters,—ambition found ample scope for the exercise of its wildest dreams, and many are the names of famous leaders who succeeded in founding families,—some still in existence,—on the ruins of the principalities they themselves had helped to overthrow. Yet to these *condottieri*, these captains of adventure, civilisation,—culture, as we call it,—owes a debt of gratitude for the part they played in fostering at their courts the learning and art which simultaneously and under many complicated influences were awakening into new life throughout Italy; for, while Florence largely monopolised the artistic and literary revival which we have now come to understand as the Renaissance, the movement was in no way centralised. The very dissensions which tore Italy served, in fact, to aid its spread, as the constant sentences of banishment drove from court to court the learned men who brought in their train the love of letters and of art. From the whirlpool of its institutions into which Italy was for centuries thrown by the quarrels of popes and emperors and their respective partisans, gradually, as the Renaissance approaches, we see comparative order evolved, and the various ruling families which held power till almost within our days settled in the cities which in many cases the mercenary leaders employed by them had seized by force of arms.

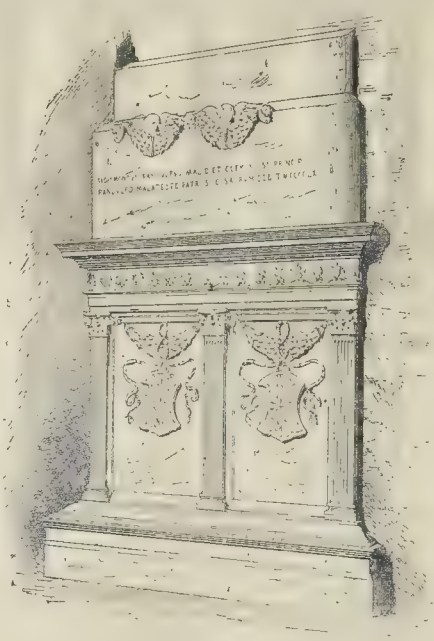
The changes through which Italy in these centuries passed, "it is," as truly remarks M. Yriarte, "the marvellous privilege of the arts, of architecture, and of sculpture, to bring before our eyes. If we examine the monuments attentively, we shall find in them the living image of the chronological development of past events; the pagan temples converted into basilicas speak to us of the first Christian centuries, and the fall of the Empire. Altino, Aquileia, show us the ruins heaped up by the barbarians; Ravenna speaks to us of the efforts of the Gothic kings to introduce their rule, and there we see the East invading the West to take revenge for its conquests. Aversa, Lucera, Manfredonia, the Norman towers of Puglia and Calabria, speak of the strange story of those French knights who returned from the Holy Land, to break lances with the Saracens encamped in the South of Italy. Foggia and Naples still bear the traces of the Hohenstauffen, and we read their names on their still standing palaces. In Lombardy, in Emilia, in Romagna, everywhere rise these palaces of the communes, as rugged as the time which brought them into existence, side by side with the palaces of the *podestats*, in the walls of which can still be seen the escutcheons of the successive rulers; while a little later the noble dwellings of the princes of the fifteenth century will speak to us of the supreme taste and refinement of an epoch prodigious in its intellectual energy."

M. Yriarte has largely followed this excellent principle of laying stress on the historical value of artistic relics, and his volume is crowded with representative illustrations, which, in addition to rendering his work attractive to the general reader, singularly increase the value of the book to the art-student and the seeker after those suggestive decorative motives in which the Renaissance is so rich. Through the courtesy of the publisher, M. Rothschild, to whose wise exercise of capital no small share of credit is due for the publication of M. Yriarte's various handsome volumes, we are enabled to produce some of the illustrations.

M. Yriarte has traced at considerable length the constitution of the Italian monarchies and the part played by the companies of adventurers who aided in the task,—men of whom may be taken as a type the Visconti, whose tomb now in the museum of the Brera we reproduce. M. Yriarte relates in detail the story of one of the greatest of the *condottieri* families, the Malatesta, who for two centuries ruled Rimini as princes, as great and lettered warriors, as Mæcenases, and as captains of adventurers. In this strange family, as truly observes the author, the traditions of love for art and letters, of acute military skill, and unflinching perfidy seem hereditary. Almost all the Malatestas are in some way famous. Till the world's end the romantic story of Francesca di Rimini,—of which, by the way, M. Yriarte has published a separate volume, charmingly illustrated with sketches by Ingres and Ary Scheffer,—will throw a halo of interest round the little city nestling on the Adriatic coast.

But the most illustrious of the family was Sigismund Malatesta, in whom seem united, in the most singular proportions, all the characteristics, good and bad, of his race. The most ambitious of *condottieri*, we find him wandering from north to south of Italy; the most warlike of warriors, he is for ever besieging new cities,—he earned the title of Poliorcetes,—while in his own dominions he displays the utmost skill as a military engineer; his court is the centre, in a brilliant period of Italian history, of the brightest minds of the day. His love of art and letters is no mere pretentious patronage; he is himself an able scholar, and though proved beyond question guilty of the foulest crimes, is not alone a poet of delicate tastes, but the earnest protector of men of letters and artists, with whose ashes, laid in the Pantheon he caused to be built by the great architect, Leo Battista Alberti, he desired his memory should be handed down to posterity. Such a character, it can be understood, lends itself to suggestive treatment, and, indeed, the story of Malatesta's life and that of his ancestors reads like a fascinating romance in the skilful hand of M. Yriarte.

Of all the great *condottieri* who figure so conspicuously in Italian history, the Malatestas could boast the oldest lineage, a title of no small distinction in a society so strangely constituted as was that of the Italy of the Renaissance. This lineage M. Yriarte traces from the centenarian Malatesta da Verucchio (1212-



Tomb of Pandolphus Malatesta, erected 1460.

* "Un Condottière au XVe Siècle. Rimini: Études sur les Lettres et les Arts à la Cour des Malatestas." By Charles Yriarte. Paris. J. Rothschild.



Funeral Monument of Barnabo Visconti, A.D. 1370.

1312), and his son Giovanni *il Scanciato*, the Cripple (who is no other than the murderer of Francesca and Paolo in Dante's touching story), through the various other members of the family, many of them illustrious, among these Malatesta *dei Sonnetti*, senator of Rome (1370-1429), and so through the branch which ruled at Pesaro (where Malatesta *dei Sonnetti* built the beautiful Church of San Domenico, the portal of which, 1390, we shall reproduce), and through the Malatesta branch which ruled at Rimini, down to Carlo Malatesta, with whom, though a famous warrior, we commence to trace the family interest in art and letters.* The measure of Carlo's culture, as we may term it, may to no small extent be judged by his early appreciation of Ghiberti's talent. Carlo offered the young artist a permanent position at his court, and had not the famous competition been opened for the gates of the Baptistery of Florence, calling Ghiberti back from Rimini, the Florentine would have left behind him at Carlo's court something more than the large enamels with which he is known to have decorated the walls of the prince's residence. In the first years of this fifteenth century, the city of the Malatestas was already famous for the artists and men of letters gathered together on the shores of the Adriatic, in the town where the Roman arch of Augustus, surmounted by its picturesque Mediæval *merluzzi*, still stands to tell in its stones the story of the stirring history through which the city has passed.

Pandolfo III. was no less an enlightened patron of letters than his brother. He surrounded himself with distinguished men of letters. In his suite when at war he carried a company of *improvisatori*, poets and comedians. "He and his brother, Carlo," remarks M. Yriarte, "are, perhaps, before the De' Medici, the first princes who treated with noble familiarity the artists whom they protected." To Pandolfo, Sigismund, his son, erected in the porch of the Church of San Francesco at Fano the tomb a view of which we reproduce, and which from its Classic severity it is easy to attribute to Leo Battista Alberti.

With Sigismund (1417-1468) we reach the most illustrious member of the Malatesta race. With Sforza, with Alfonso of Aragon, with Piccinini and Urbino, he ranks as one of the greatest warriors of his time. With the first De' Medici, Federigo of Montepeltre, the Duke of Este, Nicholas V., and Pius II., Burckhardt places him among the initiators of "humanism." "Of all the princes of the Italian fifteenth century, he it is who perhaps best represents the tendencies of an epoch in which, under the high culture of the early days of the Renaissence, still appears the man of the Middle Ages, with his coarseness, his violence, and indomitable character." "His body was of iron," writes M. Yriarte; "repose seemed scarcely necessary for him, he remained insensible to the utmost rigours of climate; he drank brackish water, supported hunger without a murmur, and would keep in his saddle day and night. This man, terrible in his anger, implacable in his hatred, who challenged the Duke of Urbino, who attempted to poison Sforza, and, as a last resource in a difficult position, did not hesitate to call the Sultan to his aid to invade Italy, yet knew patiently how to suffer all the delays of a siege, and whilst the breach was being made or the mine dug, traced the design of an escarpment with his engineer Valturio, entrusted with the erection of the Rocca Malatestiana, or corresponded with Lorenzo the Magnificent on the subject of the decoration of one of his chapels by Florentine artists. Before Cremona, besieged by him, he wrote to the painter Piero della Francesca; before Siena, while at war, he decided with Leo Battista Alberti and Matteo da Pasti the form to be given to the dome of the Church of San Francesca at Rimini." Audacity, impiety, military talent, refined intellectual culture, are the qualities and gifts, so Burckhardt tells us, to be met with in this one man. Towards men of letters and artists he showed a courtesy usually reserved alone to women, and he was susceptible of the warmest enthusiasm for every intellectual subject. Love made him a poet, he was born an orator; his taste led him to appreciate in Leo Battista Alberti a precursor of Leonardo da Vinci, and an emulator of the greatest of the reformers in architecture, Brunelleschi. And yet this hero, the man of culture, could degenerate at a moment into a wild beast. If we are to believe Pius II. we must go back to the darkest ages to find so many crimes heaped upon the head of one sovereign. When we come to consider Sigismund Malatesta under all his various aspects, we turn by turn find ourselves hating, admiring, and loving this singular man, so full of contrasts. There is, as remarks M. Yriarte, "something generous in all this race of Atrides, stirring life animates them, they are heroes; while Europe is still plunged in the twilight of the Middle Ages we find these Italian princes holding in one hand the sword, in the other the laurel; they follow closely the initiative of Florence, and prepare the wonderful movement of the Renaissance through them, as, through the De' Medici, the Este, the Sforza, the Montepeltre, the Gonzagas, and the great Popes, Italy, already queen in antiquity, once again seizes the sceptre and the dominion of the world in the name of form and of idea."

As a military engineer, there is ample evidence that Sigismund particularly excelled, even in an age when such acquirements were common to many princes. Federigo of Urbino

* Respecting the battle of Sant' Egidio, in which Carlo was taken prisoner, M. Yriarte has inserted an interesting note relating to the Paolo Uccello in our National Gallery, believed to represent the battle. Intimately acquainted, as M. Yriarte has every right to claim to be, with the subject of Malatestian history, he fails, he tells us, to discover in the work "any sign, form, scutcheon, emblem, or *impresa*" which can justify the tradition of the picture representing the battle. "There is, unfortunately, nothing on the standard, on the arms, or the armour which would lead us to suppose any connexion with the Malatesta. The tradition, however, is strong, and must be relied upon. I should rather regard it as the battle of Ripa di Trento, or some other of the engagements of Sigismund's youth." See p. 55 (note).

was famous as an engineer, and at his palace (now, alas! a ruin), as all who know it well remember, not some of the least interesting of the many decorative sculptures represent the whole war material of the fifteenth century. Like Federigo, with his able engineer-architect, Francesco di Giorgio, Sigismund had at his court the famous Roberto Volturio, a scientific engineer, who was in addition an artist. Under Volturio's direction, Sigismund erected the once renowned Rocca Malatestiana, — now, if we mistake not, a prison,—the construction of which was commemorated by one of Matteo da Pasti's most successful medals.

BABYLONIAN SCULPTURE.

WITH its basis of fetish-worship and its creed of religio-magic, it is but natural that the religious art of Chaldæa should be rich in symbolism. The numerous representations of the gods and mythic heroes which are found on the inscribed talisman seals, and in almost every case accompanied by some symbolical emblem, show how greatly the system had become developed in the land even at the earliest period of national life. Among a people whose priests were astronomers, astrologers, and magicians, and whose writing was of a pictorial origin, we may be sure that a rich series of symbolic representations of the characteristics of the gods were developed. The greater number of the symbols which were employed by the Babylonians were of astronomical origin, and we have, in the sculpture of which we give an illustration in our present number, a very interesting series of these symbols of divine or astronomical conceptions. This series of emblematic sculptures are found on a memorial stone discovered by Mr. Rassam during his recent excavations in Babylonia, and they are extremely interesting to the student of Oriental symbolism, as they afford some entirely new forms, upon which some information is given by the long inscription engraved on the stone. The inscription is a memorial stele, about 2 ft. 6 in. in height, of basalt, and was erected by a Babylonian named "Sitti Merodach," in the reign of Nebuchadnezzar II., king of Babylon. The monarch in whose reign this stone was erected is not the great Babylonian monarch by whom the Jews were carried away captive, but an earlier sovereign of the same name, whose reign must be placed in the fourteenth century before the Christian era. There are already in the British Museum several stelæ of a similar character as regards the general arrangement, namely, bearing records of sales of estates or royal donations of land to the courtiers of some ancient king, and some of these we have previously noticed in an article upon "Babylonian Land Laws,"† and a subsequent one upon "Babylonian Foundation Stones."‡ This valuable monument, now added to the national collection, is, however, all the more important in that both in the subject matter of the inscription and in the symbols of the divine protectors of the stone it is entirely different from the previously-discovered monuments of this class. In the case of the monuments of Merodach Nadin-akhi and of Merodach Baladan I., which are now in the British Museum, the subject matter of the inscription bears little or no relation to the symbolical inscriptions which accompany it, these latter being but emblems of the gods who protect the stone. But in the case of this new inscription and sculpture we find that the former and other records of the same king serve to explain, in a most interesting manner, the symbols of the gods upon the stone. Those who have examined the monuments mentioned above as already in the national collection will see that in this tablet we have some entirely new symbols, or remarkable and interesting forms. In order to understand the nature of this interesting bas-relief, it will be necessary to glance briefly at the subject matter of the inscription, which, though not of an architectural nature, is extremely interesting.

From the inscription it appears that during the reign of Nebuchadnezzar there broke out a war with the kings of Elam, and especially in the southern portion of that empire, namely, in the province of Nagi, which was situated on the bank of the Ulai river,—the river on whose banks Daniel had one of his visions (chap. viii.), —a stream which Mr. Loftus has shown is to be identified with the modern Karun river, which is an eastern tributary of the Tigris, entering the main stream near Mohammerah. In the time of Nebuchadnezzar it is clear that the Ulai flowed directly into the Persian Gulf and not into the Tigris.

In raising the necessary army for the expedition, the king received great assistance from the man Sitti Merodach, who erected the stele, and in return granted him the rule of the cities captured during the campaign. From another inscription, which has hitherto been inexplicable until we recovered this interesting bas-relief, we learn a curious fact regarding this campaign. This inscription is found printed in "Western Asiatic Inscriptions," vol. iii., pl. 52, No. 1, and it relates to a remarkable astronomical phenomenon occurring in the reign of the king. The inscription reads :—

1. The star is hairy; its body, as the day, is bright.
2. From its body, like the creeping thing the scorpion, a tail it forms.
3. The omen foreseen is favourable, rejoicing the lord of the palace and of all the land.
4. At this time even yet a master over all the land was not.
5. Wickedness, rebellion, laws not existing.
6. A chieftain now judges, the lord of that palace and that king by law is established.
7. Obedience and peace in the land are made.
8. These things were done [when]
9. When from the northern orbit to the southern orbit [was placed]
10. Its length, like the tail of a scorpion, turning upward.
11. This is according to the tablet [written].
12. When Nebuchadnezzar the land of Elam laid hold of.

Turning now to Tableau E of the series of sculptures, we see an artistic representation of the events recorded in the above tablet.

The king is seated on his throne clad in rich embroidered robes, and wearing on his head the royal cap of Babylonian sovereigns, while before him, with drawn bow, marches the scorpion Sagittarius. The figure here given is one of the most interesting, as it is full of mythic symbolism. Not only does it serve to illustrate the curious astronomical tablet quoted above, but it throws great light on curious passages in the legends of the hero Isdubar. The scorpion was a favourite emblem in the symbolism of Babylonia. It was called "Girtab," or the insect of the double sting.

In the fragments of the eighth of the Isdubar legends we learn how, when Isdubar was journeying southwards to the house of Death at the mouth of the rivers where dwelt Tamzi, the Chaldæan Noah, he met with two terrible creatures, who guarded the pathway of the Sun, —a scorpion man and his wife, whose crowned heads reached to heaven, and whose feet were in the land of the departed, and who guarded the Sun at his rising and setting. So terrible were these creatures that even the mighty Isdubar trembled before them. It is clear, therefore, that here we have a conception of the terrible astronomical visitant whose presence in the Chaldæan heavens nearly three centuries ago was regarded as a good omen for the king, based upon the legendary account of the scorpion men met by Isdubar in his journey. It will be observed that the tail of the scorpion is, in both tableaux E and F, turned upwards, as was that of the comet. By the side of the king is crouching one of the dogs of Merodach. In tableau A, and extending over the whole stone, perhaps the most important object is the figure of the serpent; and it is extremely interesting to find the serpent mentioned as a special deity in the inscription. In the text he is called the serpent-god Subu, the son of the god of the Temple of Deir. The serpent in Babylonian mythology had a dual meaning. Astronomically it represented the Mar Gid-da or "long road,"—the milky way; and from the name here given to it the god Subu,—"it be spread forth,"—it is evident that it is here used in this sense. It was also the emblem of Hea, the wisest of the gods, and as such was worshipped as the emblem of wisdom, and corresponded to the serpent in the Hebrew Paradise story. The other emblems in compartment A are those of the sun-god, the solar dish, with the wavy rays radiating from his eyes. The crescent moon, the emblem of the goddess Istar or Astarte, and the full moon the emblem of her father, Sin, the moon-god.

In compartment B, we have three shrines surmounted by roofs, modelled after the horned caps adorning the winged bulls, and called *Pagukku* in the inscriptions. These were the shrines of the three great gods, Anu, Bel, and Hea, the Babylonian Trinity, whom the owner of the stone invokes, and for whom his reverence does not permit him to make any symbolical representation. In compartment C, we have a series of representations of the leading planets, and especially of the deity Merodach. First, as the ram, the leader of the flock, a representation which calls to mind the vision of Daniel, who says, "There stood before the river a ram which had two horns, and the two horns were high." The he-goat which comes next, with prominent horns, also may be the type of the he-goat seen by Daniel in his vision. These two forms may be taken as representations of the stars or planets which bore the names of the "flock of heaven." The scroll or papyrus roll is representative of Nebo, the scribe god. Passing to compartment D, we have some almost entirely new symbolical forms. The first, a curious form combined of the horse and the eagle, occurs on some of the monuments and cylinders, and is to be regarded as a representation of the horses of the noonday sun. These horses, we know from an inscription in the British Museum, were preserved in the Temple of the Sun-god, at Sippara, the ruins of which were discovered and explored by Mr. Rassam. The third group in this series may also be taken in conjunction with this, namely, a curious figure of a horse's head placed on an altar, the whole forming part of an engraved panel on a circular-headed stele. There seems to be some explanation of this group from the inscription. In it we read that the king went into battle mounted on "the horse of the gods," and as he suffered some reverse in the battle, and the horse was slain, the animal seems to be commemorated here. It will be interesting to classical scholars to find here a type of the double-headed Cerberus, called in the Assyrian inscriptions Assimi, or Liksal, the black dog, who had entrance to the house of death. The eagle which appears in this group is a type or emblem of the "Sun of Elam," which was called the eagle god. The bull, from whose back proceeds the thunderbolt, was the emblem of the great god Rimmor, the thunderer, who roared through the heavens, and tore the clouds with his lightning horns. The presence of this deity is well explained by a passage in the inscription which describes the battle on the bank of the Ulai:

They were placed, all of them, the kings they made war.
In their midst a fire burned.
In their array they were glorious as the Sun.
The whirlwind [came], rain rained,—the storm swept.
In the furious onset of their battle,
The lord of the chariot was borne with them.

With such a nature-drawn parallel as this, it is clear why the air-god figures so prominently in the sculpture. To students of Indian mythology the presence of the tortoise will be interesting, and possibly form some connexion with that of Manu, so well known in the Indian Cosmogonic legends. Of the lamp, the last symbol, it is impossible to offer any solution. From the foregoing description, which does not open up, by any means, all the wealth of the subject, it is clear that we have here a most interesting monument of Chaldæan symbolic art, and one which forms a unique object in our national collection.

* To be continued.
† *Builder*, vol. xxxvi. (1878), p. 351.
‡ *Ibid.*, vol. xxxviii. (1879), p. 278.

KIRKGATE BUILDINGS, HUDDERSFIELD.

OUR illustration shows one of the numerous blocks of buildings which have been erected in this town at the cost of Sir John Wm. Ramsden, bart. (virtually the ground-landlord of the town), under the direction of his agent, Major Graham, who, since his appointment, has not only conduced to the architectural additions to the town, but, by his influence with the Corporation, has been the means of securing other important improvements. Mr. Crossland is the architect. We may find an opportunity to give some account of the progress this town has made during the last fifteen years.

Mr. Samuel Trickett.—We are asked to announce the change of the name of Mr. Trickett's firm from "Samuel Trickett" to "Samuel Trickett & Sons."



KIRKGATE BUILDINGS, HUD



SFIELD.—Mr. Crossland, Architect.



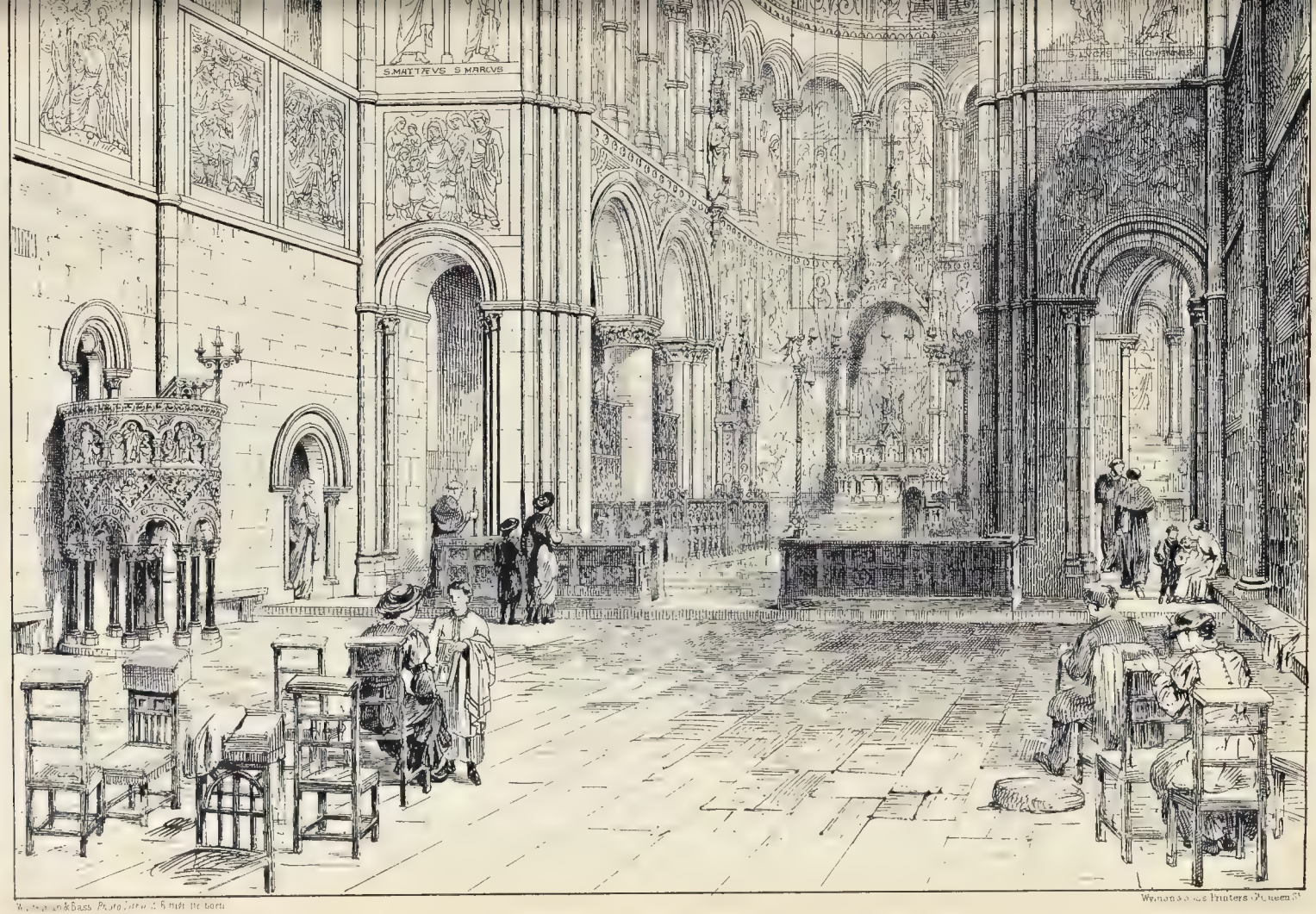
Whitemar & Bass Photo-Litho

Wyman & Sons, Printers

MEMORIAL STONE RECENTLY DISCOVERED IN BABYLON.

Date probably about Fourteenth Century B.C.





CATHOLIC APOSTOLIC CHURCH, EAST LONDON STREET, EDINBURGH.——Mr. R. Rowand Anderson, Architect.



Whiteman & Bass *Photo Litho* 236 High Holborn.

Wyman & Sons Printers 74 Queen St

ONDON STREET ARCHITECTURE: NEW PREMISES, Nos. 30 & 32, PICCADILLY.—Messrs. Archer & Green, Architects.

CATHOLIC APOSTOLIC CHURCH, EDINBURGH.

THIS church, which has been erected at a cost of about 20,000*l.*, from the designs of Mr. R. Rowand Anderson, architect, is situated at the corner of East London-street. The plan consists of a large nave, 100 ft. long, 45 ft. wide, and 45 ft. from floor to wall-head. The chancel is about 60 ft. long, and has a small side chapel on the south side, and an aisle on the north. The vestries are entered from a door on the north side of the nave. Underneath the church is a large hall and other rooms for congregational purposes. The baldacchino and other decorative features have not yet been executed, and the west end and baptistery are still incomplete.

LONDON STREET ARCHITECTURE.

NOS. 30 AND 32, PICCADILLY.

THE building which we illustrate in our present number is on the north side of Piccadilly, at the corner of Piccadilly-place, and extending eastward.

The westernmost block has been erected for Messrs. Dobson & Son, jewellers, &c.; and the block adjoining, eastward, for Mr. C. E. Clifford, the well-known picture restorer.

The fronts are of Portland stone, red Corsehill stone, and grey granite, the carving having been executed by Messrs. Foxton & Horsman.

The shop-fittings have been executed by Messrs. Yardley & Sons, of Clerkenwell.

The whole of the works have been designed by Messrs. Archer & Green, of Buckingham-street, Adelphi, whose designs have been satisfactorily carried out by Messrs. Perry & Co.

SMOKELESS FUEL.

WE are happy to welcome the adhesion of so reliable an authority as Sir John Hawkshaw in a matter which we have repeatedly advocated with more earnestness than visible effect. Sir John writes to the *Times* to urge, after the example set by New York, the use of anthracite, or smokeless coal, as the real preventive of black fog. It may be in the recollection of our readers that the outcome of some very careful remarks on the Smoke Prevention Exhibition at South Kensington, in our columns, pointed steadily in this direction. In our actual state of science, the only mode of preventing smoke, at all events from domestic fires, is to burn smokeless fuel. Hitherto it has proved impossible to consume smoke liberated by the combustion of ordinary fuel for household purposes. Of smokeless fuels there are two descriptions, viz., solid and gaseous; or, in other words, anthracite coal and gas. As to the latter, the chief drawback on its use is its cost. A ton of coal will yield only from 9,000 to 10,000 cubic feet of gas,—that is to say, 333 lb. of fuel, or less than 15 per cent. of the weight of coal. And although the value of the other 1,907 lb., or, at all events, of a large proportion of it, is enough to pay for the cost of distillation, we are still in face of a price which checks the use of clear, smokeless, and ever ready fuel. It may seem almost paradoxical, but our opinion is that it is the use of gas for lighting purposes that has been the main obstacle to its general utilisation as a fuel. For the production of light, the richer the gas is in carbon the higher is its illuminative power. On the other hand, for heating purposes, the larger the amount of hydrogen the better. All our efforts, however, have hitherto been chiefly directed to the improvement of the luminiferous quality of gas. Whether in the selection or in the treatment of coal, this object is continually kept in view. The increase of the heating power has been attempted by the Bunsen burner, and some other expedients. But we are yet at some distance from the time when we may expect to see a double gas main,—one set of pipes being intended for the conveyance of luminiferous, and one for that of calorific, fuel,—laid on to our houses. Unless, then, some revolution in this respect takes place, we must look forward for some time to come to the production of gas as rich as may be in carbon, and thus to the neglect of a cheaper and more calorific gas for the purpose of fuel. Under these circumstances the only alternative, —if we would diminish the terrible evil of fog, distressing as it is to every one, and often fatal to the aged and the delicate,—is to burn anthracite. We call attention to Sir John Hawkshaw's testimony, accordant as it is with long personal experience of the combustion of the coal in South Wales. Nor can we fail to repeat the recommendation that we before gave of the Pembrokeshire "ball fire," the balls being composed of culm, or anthracite dust mixed with clay,—as at the same time the cheapest and, taking it for all in all, the best of kitchen fires. This admirable fire, which never goes out, and on the grates containing which reliance may be placed for a supply of hot water at all times, had no advocate in the Smoke Abatement Exhibition, for the simple reason that it was only the users, and not the recommenders, of the method who would derive advantage from its adoption. Of course, London servants, or Yorkshire servants, or any but the active, sprightly maidens who hail from the anthracite districts, would rebel against the ball-fire. But in any case of improvement that kind of opposition,—and we would be the last to deny its formidable nature,—has to be reckoned with. It is, we think, however, rather the negative than the positive aspect of the case which is most hostile. When the coal-merchant's bill is set against the ill-will of the cook, there is a very powerful influence at work; and where a great economy is actually ascertained, it will, in many instances, turn the scale. But against the other difficulty, the doubts,—"who ever used a ball-fire?" "who ever saw one?" "who ever heard of one?"—the remedy is less obvious. And the fact that it is nobody's interest to introduce the best fire (unless he can get something out of it), is the real dead-weight in the matter. So simple is the ball-fire that it can be burned in the rudest form of grate. Therefore no ironmonger has any lively interest that it should be burned, and it is not a great leap to say, therefore it is not burned anywhere, except on the very verge of the culm districts, where it has been burned from time immemorial. As to the introduction of anthracite coal, clear and bright as it is, into the dining-room, there are certain objections to be weighed against the advantage of its smokeless combustion; but as to the use of the ball-fire in the kitchen we know of no serious drawback to set against its smokelessness, its great heat, and its large economy.

AN IMPORTANT, BUT NEGLECTED, ELEMENT IN THE ECONOMY OF WATER TRANSPORT.

THE unexampled increase in the traffic of the Suez Canal has been such as positively to choke that important sea-gate. From the amount of 435,911 tons, which passed through the canal in 1870, the tonnage has increased to 5,794,400 tons in 1881, thus having multiplied more than thirteen-fold in eleven years. And that the returns of 1882 will be very largely in excess of those of 1881 there can be no doubt. Under these circumstances various proposals have been made for relieving the plethora of traffic. The original plan, recommended under the French occupation of Egypt by Napoleon Bonaparte, was to ascend the Nile to near Cairo, and then to follow the present line of the Sweet Water Canal to the Bitter Lakes. Very recently this plan has been advocated in an English daily journal, while another contemporary has pointed out that if it prove practicable to cut a canal along the line of the now abandoned railway from Cairo to Suez a saving of fifty or sixty miles in distance would be effected by this route as compared with that by Port Said.

Possession, however, is said to be nine points of the law; and accordingly M. de Lesseps will no doubt carry out his present proposal of laying out a million sterling in the construction of three great stations, or basins, forty kilomètres square, in which a whole fleet of fifty or sixty vessels may anchor. These stations are to be constructed at Cantara, Timsah, and the 133rd kilomètre on the canal.

The point which here strikes us as one of great importance to the trade of the world (four-fifths of which, as far as the passage of the Suez Canal is concerned, are English), is one which has for the first time been brought into prominence by the writer of the article on "Inland Navigation" in the October number of the *Edinburgh Review* for the present year. The reviewer points out that while we have admirable experiments on the form of boats and ships, such as those by which the late Mr. Froude has entirely revolutionised the theory of propulsion at sea, we have no experiments whatever as to the other half of the problem, viz., the best form of canal. It is known that the same vessel can maintain double the speed in the open sea that she can in a shallow canal. It is also known that with increase in the depth of a canal increase in speed is gained. But the proportion, which is the point in question, has never been studied.

One of our own contributors has devoted much attention to the subject, on theoretic grounds. The relation between the flow of water and the cross section of a conduit is to some extent known, and there is reason to believe that the speed of vessels in canals may be determined by much the same formulæ. The importance of this investigation is shown to be cardinal by this very experience of the Suez Canal. The cross section of that waterway shows an area of 3,862 square feet. In this no vessels are allowed to pass one another while both are under way, and the speed maintained is very slow.

If the cross section of the Canal had been determined on hydraulic theory (and not with the sole aim of saving the banks from wash, without introducing any masonry or other protection), a cross section of the same area of 3,862 square feet might have been so determined as to allow free passage in all parts of the Canal for the largest vessels that now use it, without necessitating any stoppage at all. Not only so, but the speed attainable (with the same motor power) would have been double that now attained.

We give these points as the result of theory, requiring, no doubt, confirmation by experiment. But the importance of the investigation cannot be denied. To face the sides of the Canal (which, in fact, is now being done in some parts) with stone, of course involves a great outlay. But as this outlay (if the above calculations be correct) would involve at least a quadruplication of the utility of the Canal (with a given quantity of excavation per mile) as a conduit for traffic, it seems to us that the institution of experiments with a view of confirming or correcting the theory is a matter of very great importance to all those who are concerned in economy of transport. The country has become suddenly alive to the fact of the great economy of water transport, as compared with any other. It is only half settling the question of economy if we neglect to inquire into the relation between form and size of canals, and resistance to propulsion.

PUBLIC WORKS AND BUILDINGS IN LONDON AND SUBURBS.

IN THE SIXTEENTH, SEVENTEENTH, AND EIGHTEENTH CENTURIES.*

OUR present transcript of the Record Office Series of Accounts relating to Public Works and Buildings is that for the year 1600-1601, when 1,302*l.* 7*s.* 1*d.* was "done and bestowed" for materials and workmanship on account of the Tower, the Mint therein, the sluices, and the wharf of that historic and well-known palace-prison. The works and workmanship included:—

Masons occupied in jointing and setting up a new border for a chimney in the Lord High Constable's dining-chamber, mending the windows there, taking down the upper part of a pair of stairs going up to the Lord Constable's Tower, cutting the steps even with the wall of the staircase, taking up the freestone paving on the wall or ramper between the Lieutenant's house and Beauchamp Tower, bringing up stone, and working large holes in the wall, hewing and working in a hole of the hard stone wall in the jamb of the great gate for letting in and fitting a hook for the new water-gate, walling up the holes over the tops of sluices, covering the holes with long ashlar stones, setting hard stone for the sluices, mending and stopping the same with pitch and rozin, squaring Reigate stone for the furnace in the "fyneinge" house (query, refining-house?), with sundry other works done upon the Mint, the sluices, and other places. Carpenters employed in making two new pairs of stairs with "Cante-steppes" over the wardrobe, new joisting and planking part of the same platform, repairing an old decayed floor with boards for a prison in the privy garden, boarding part of the floor in the Lord Constable's dining-chamber, mending the "joystles,"

* See *Builder*, vol. xliii., p. 832.

making a new "foote pace" in the chimney there, making a scaffold for the beheading of the Earl of Essex, and "a court of guarde for the soldiers, with seats and rests at the yron gate, and boording upp the sides," making another court of guard for the soldiers watching and warding the Mint, setting up a watch-house under the tower wall of the Bloody Tower, making another like watch-house upon the hill, near the church; mending the seats and setting up timber bars in the church windows, setting up a watch-house in the Queen's lower garden, under the Well Tower." "Furringe" the rafters over the Lieutenant's stables, setting up a dresser with four shelves in a new larder for him, mending the wheel of the bell and brazing the frame of the same bell, working two timber frames for the sluices, making and mending doors, tables, frames, and benches in the Mint, and other places. Taking down and setting up again sundry partitions; making a portal and benches in the melting-house, with blocks for sheaves, anvils, and shuttings for the windows here; making a new table, benches, and drawers, with shelves in the balance-house; making and setting up anvil blocks and stocks for great shears in the same house; making a new foot-pace for the chimney there, framing dormers and rafters, boarding a room on the wharf; herding, squaring, and sharpening of timber piles for the wharf and driving them for a foundation, with sundry other works. Bricklayers and tilers mending walls, windows, and chimneys, and pointing and tiling over divers places, taking down the top of the ramper wall between Beauchamp Tower and the Bell Tower, making a new "vamure" wall of bricks in the inside of the same rampier; bringing up with bricks the places where the sluices shall stand, new making and mending sundry furnaces, chimneys, ovens, and sinks in the foundry rooms belonging to the Mint, with paving some floors there with bricks and other needful reparations. Plasterers new lathing and laying with loam and white mortar, a well, and stoole-house [water-closet ?], in Coleharbour. Stopping sundry holes in the stone walls, mortising the cracks and faults in sundry places, mending the plastering under the Lord Constable's dining-chamber, whitewashing and plastering two prisons in Coleharbour, lathing and laying with lime and hair sundry other rooms and lodgings, with such other like works. Plumbers soldering and mending the faults in the leads and gutters, laying two "skyrtes" of lead over the hall and kitchen, and doing sundry other needful works. "Mazer scowrers ryddinge and cleansing the vaultes and sluices about the howses"; digging holes to bury the soil in, filling up the same again, and levelling the ground. Sawyers cutting and sawing timber, planks, and boards of sundry scantlings. Joiners cutting up the new wainscot in the closet within the Assay-house, and a cupboard, a table, and shelves there, setting up a table in the Treasurer's house, mending the wainscots and windows of the new receipt; setting up a table with a frame there, making drawers under the shelves in the Assay-house to lay tools in. Gravel men with their boats, shovels, and skippets; taking up the great dam; ramming clay and helping to take up the stuff after the dam. Shipwrights occupied in boring through the sluice; shutting wainscots; attending the workmen and doing sundry needful services mete to be supplied and amended, and for sundry other works and reparations done there. The quantities, numbers, and several prices of the emptions and provisions bought and provided for the same, with the carriage thereof to and from sundry places by land and water, and wages of artificers, workmen, and labourers employed, occupied, and attendant about the same works, are hereafter particularly expressed, mentioned in manner and form following, viz.:—

Timber: 2 loads at 17s. 7d.; 8 loads, 31 ft., at 15s. 8d.; 6½ loads, 14s. 10d.; 2½ loads, 13 ft., at 14s. 6d.; 50¼ loads, 5 ft. 6 in., at 13s. 4d.; 8 loads at 11s. 8d.; and 16 loads, 11 ft., at 11s. the load. Joiners' work: 25 seats for the coiners at 7s. 6d. each; frames for the tables, 3 for 22s.; a press for the receipt, 18s.; 6 stools, 10s.; 15 balances for the clippers, 7s. 6d.; 4 pieces of wainscot at 8s. the piece; "one lease of weynscott, xij^{d}. and xlviij yardes of ceilinge at ij^{s} vj^{d} the yarde." Boards: 6,109 ft. at 5s. 2d. the 100, 734 ft. at 5s. the 100, 1,275 ft. [M^{l}cc di xxv] at 4s. the 1,000, and 300 at 20d. the 100. Melbrough deals: 44 at 14d. each. Norway deals: 30 at 10d. each. [Qy. The earliest notice of Norway deals in this series.] Quarters, rafters, and joists: 19¾ loads [xix loades iij^{c} qr.] at 19s. 4d. the load, and 8 single quarters, 18d. in all. Stone: Reigate border at 8d. the foot. Purbeck paving: 98¼ ft. at 4d. the foot. Reigate paving, 54 ft. at 6d. the foot, and a stone barrel for a chimney, 16s. Plaster of Paris, 2 cwt., 2s. 4d.; 7 quarters of charcoal for 14s. 8d. Pitch: 4 double barrels at 20s. each, 2 single barrels at 10s. the barrel, 7 barrels at 15s. the barrel, and 12 lb. weight, 18d. Tar: 1 gallon, 9d. Rozin: 9 cwt. at 10s. the cwt. Train-oil and grease to melt with pitch, 8s. 4d. Oakum: 10 stone at 8d. the stone. Ropes: 2 new for pullies, 7s., and 5 pieces of basterope at 16d. the piece. Shivers for pullies, 2, 8s. 4d. Lead: 1,583 lb. at 7s. per cwt., and for casting 600 lb. of old lead at 20d. per cwt. Nails of sundry sorts and place, 20*l*. 17s. 5½d. Ironwork of divers kinds, 94*l*. 13s. 1½d. Glass and workmanship, viz.: new glass at 6d. the foot, mending panes and casements at 4d. each, setting in lead at 4d. the foet, and stopping quarrels at 1d. each. Laths: 4 loads at 22s. 4d., 1½ load at 20s., 1 load at 11s., and hearth laths by the bundle and 100, 15s. 2d. Reeds, 1s. 4d.; 4 pickaxes, 10s. 4d.; 5 pieces of bend leather at 5d. the piece. One lather of 24 rounds at 4d. the round, 7s. 8d. Boomspars [bomesparres]: 10 at 10d., and 15 at 12d. each; 3 steel shovels at 1s. 3d., and 7 at 8d. each; 4 scoopes at 10d. each. Planks: 333½ ft. of 4 in. at 4d. the foot, 109 ft. of 3 in. at 3d. the foot, 46 ft. at 8s. the 100, and 412 ft. of 2 in. at 12s. 4d. the 100. Billets and salwood, 49s.; 20 furpoles at 10d. each [Fyrrepooles xx^{tie} at 10d. the pece]. Lime: 7,000 cwt. at 6s. the cwt. [vij^{mi} C at vj^{s} the C]; 49,500 bricks at 12s. the 1,000. Tiles: 26,400 at 12s. the 1,000. Ruff-tiles, 230 at 1d. each, and paving-tiles of sundry colours, 1*l*. 18s. 2½d.; 5 "boz" of tilepins at 1s. 4d. the "boz." Soder, 42 lb. at 6d. the lb. Hair, 158 "boz" at 6d. the "boz." Wood-ashes at 1s. 2d., and bone-ashes at 2s. the "boz." Gravel, loam, and sand: 262 loads at 12d., and 32 loads at 10d. the load; and lastly, paper, ink, quills, brooms, and other small necessaries, 2*l*. 19s. 9d.

Carriage,—viz., by land:—Timber, planks, deals, stone, and other the provisions aforesaid, from Scotland, Limehouse, and other places, 14*l*. 0s. 2½d. By water, viz.:—Boards and other provisions, from Reading, the Hawes, and sundry other places, 35*l*. 16s. 4d. Hire of lighters and boats to tow and fetch great piles and other necessaries, 17s. 4d.

Wages and Entertainments:—Carpenters, pile-drivers, and "betlemen," at 12d., 14d., 16d., and 22d. the day, and 12d. the tide. Bricklayers and tilers, at 12d., 14d., and apprentices, at 10d. each per day. Masons, at 12d. and 14d.; plumbers at the same rate; plasterers, at 12d. and 14d.; scaffoldmen, at 12d.; sawyers, at 2s. and 2s. 2d. the couple; shipwrights, at 12d. each; joiners, at 12d. and 14d.; paviors, at 2d. the yard. Mazer-scourers, at 14d.; labourers, at 8d. and 12d. Purveyors, viz., Henry Jennings, at 17½d. per day; Thomas Richards, at 16d. per day; and Robert Knight, at 16d. per day. Clerks, viz., William Salesbury, at 8d. per day, and the like allowance for five nights; John Thorpe, at 12d. per day; Henry Wicks, at 12d. per day; the surveyor's two clerks, at 20d. each per day; and John Dollinge, at 12d. per day.

Taskwork:—Nicholas Browne and other Freemasons for working and squaring hard stone ashlar for the Tower Wharf and privie stairs there, the sum of 90*l*. William Salesbury, for working two sluices into a hard stone wall, 10 ft. 4 in. thick, every wall 11 ft. deep, and in the midst 2 ft. 4 in., with working in four "Regalls" wrought out of the wall for the sluices with chisels and points a foot deep every pole, and letting in two sole plates 10 in. deep, for all which there is allowed to him, the queen finding all manner of stuff, and he the workmanship only, the sum of 11*l*. Christopher Walker and John Hole, tilers, for new lathing and laying 11¼ rods of tiling over the Mint-house, at 2s. 6d. the square rod, 1*l*. 8s. 9d. Andrew Keren, pavior, for paving a walk between Beauchamp Tower and Bell Tower, he finding all manner of stone, lime, sand, and workmanship, the sum of 16*l*. 14s. 5½d.

Rewards:—To Wm. Trappitt and Rd. Cliffe for the loan of two great copper kettles used to melt mixtures, 33s.; John Thorpe, in reward for searching timber that was floated, 12d.; Rogers Robinson for bread and drink bestowed upon the labourers, 6s.; and to sundry other persons for watching the wharf in the night season, in all, 3*l*. 1s. William Spycer, surveyor of the works, for his diet, boat-hire, and riding charge in overseeing the same and travelling about the business of the same office by the space of fifty-eight days at 4s. per day, 11*l*. 12s.; Simon Bazill, controller of the said works for his like riding charges in exercising his office by the space of twenty-eight days at 2s. per day, 2*l*. 16s. "In all the saide woorkes and repac'ons donne at the Tower of London, the Sluces, the Minte, and with iiij^{c} xlj^{ll} xiij^{s} 10^{d} for the wharfe there within the time of this accompte, as by xxxvj severall paybookes subscribed with thandes of William Spycer, S^{r}veyo^{r}; Simon Bazill, Comptroller; Cornelius Care, M^{r} Mason, and William Portington, M^{r} Carpenter, of the saide workes herevpon duelie pased, caste, tryed, examined, and remayininge may appeare, the some of M^{l}CCCij^{ll} vij^{s} j^{d}."

HOW FAR MAY SCULPTORS OBTAIN ASSISTANCE?

PUTTING the above question to one of our most eminent sculptors a few weeks ago, the following was his answer:—

The true sculptor does his own work; the tradesman-sculptor gets as much done for him as he can, and palms it off for his own. I need not say which is the most successful, for the world, especially the "Upper Ten," like to be humbugged. The man of genius starves, while the man of business thrives.

Flaxman, Canova, Thorwaldsen, did their own statues, aided no doubt, occasionally, in quite a secondary way, by assistants. But *they* were always the *principals* throughout, from the making, in the first place, of their own design, and all through to the finish. The true sculptor always makes his own design, works chiefly on the model, and even occasionally on the marble, to which also he puts at least *the last finish himself.*

Nollekens, Chantrey, and Behnes, our best portrait sculptors, completely modelled their own busts, although much and greatly assisted in the marble transcripts made from them. Behnes, however, I believe, finished in marble his own busts.

The Committee of Selection at the competition for the Byron statue, allowed to meet in the Albert Hall, made an error in their choice. They selected a design well enough in small for a clock, with a big pedestal to hold the works; but they did not see how unfit it was to be enlarged to a monumental size, and the public is the sufferer from their incompetence!

A year ago, viz., in the *Builder* of December the 3rd, 1881, we printed the following observations, which will, we think, be read again with interest:—

ARTISTS' ASSISTANTS.

To what extent may artists avail themselves of the talents of other artists in carrying out their works, without laying themselves open to the charge of imposture? This question will, in all probability, have to be legally decided. It is a question, however, less easy of solution than one would at first imagine. In this country it is chiefly by portrait-painters and portrait-sculptors that assistants are employed, for excess of commissions in these specialities falls to a few fashionable favourites.

When mural painting was at its height in Italy, the institution of scholarships was necessitated; for it would otherwise have been impossible for the great painters to have carried out their various series of works. Highly skilled assistance was imperatively necessary, and it is well known that many of Raffaelle's scholars, also eminent painters, assisted him in carrying out his great works. Michelangelo alone persisted in carrying out, unaided, his mighty performances in painting and in sculpture.

Till comparatively recently, the position of the fine arts in this country was very unstable, partly on account of defective art-educational means, partly on account of the scarcity of public employment for artists, and partly on account of the crass ignorance of all classes of the principles and practice of art. There was Flaxman, self-educated, on the intellectual side of art, but deficient,—exceedingly deficient,—in the *technique* of his art, who was obliged to have recourse to skilled assistance. There was Chantrey, with a mind above wood-carving, who was gradually inducted into the profession of sculpture, on account of his skill in making busts, and without ever having had any thorough

and systematic education as an artist, obliged to seek aid from designers, as well as technically-skilled assistants. It is known that the two sleeping children in Lichfield Cathedral, which made his reputation, were designed by Stothard. There was Behnes, who could model a bust and carve splendidly, who was nowhere in regard to composition. The public are in that utter darkness with regard to art-matters that they fancy that any one who may be at all skilled in some art speciality is capable of any art achievement, —is, in fact, a great artist. It is they, the public, who are to blame for forcing men into positions in art for which, as artists, they are not competent. And if men are so forced, what is to be done by these recipients of adulations and favours but to endeavour by hired talent to support the dignity of the positions into which, *nolens volens*, they have been thrust? And, after all, this is nothing more nor less than assuming the position of the manufacturer who employs skilled labour, the proprietor furnishing the capital and courting a demand, whilst the skilled servitors employed enable him to furnish the supply. Whether this be legitimate or not, there can, we think, be but one opinion, that it is highly reprehensible that one who has accepted pay as servitor should be permitted to hold his talent *in terrorem* over his employer. We may have our own private opinion of the merits of the head of an art-manufacturing establishment, as an artist, but this is quite another matter.

Looking at the question, however, from a purely artistic point of view, let us see if we can formulate any definition of the line which should be drawn in the employment of other talent than the artist's own, in carrying out his works, which is discreditable to him. In the case of Raffaelle there can be but one opinion, that his was the master-mind, and that he was fully capable, unaided, of carrying out any of the great works that were produced under his direction by thoroughly educated assistants. Flaxman's case is somewhat different: if he had had to carry out, unaided, his own beautiful designs, they would have been considerably marred by his want of technical skill, yet not one of his assistants could have executed works comparable with Flaxman's with any other aid but his. Chantrey's position in respect to this question is somewhat different still, for he had considerable technical knowledge, and was a bold and facile modeller, but Chantrey was no designer. In this case the question seems to be balanced: Chantrey could not have produced the work in Lichfield Cathedral without Stothard's aid, nor Stothard without Chantrey's. It would appear, therefore, from the foregoing instances, that when a work is indebted *for its merits* to the assistance of an artist of greater mastery than his whose name it bears, his artistic reputation must suffer if the fact becomes known.

ROYAL ACADEMY ADMISSIONS.

DECEMBER, 1882.

Upper School. — R. T. Blomfield, B.A., A. Hemingway, J. A. Slater, W. Toogood.

Lower School.—F. S. Capon, A. Forrester, W. J. Gibbon, J. Muller, F. P. Oakley, S. Russell, J. E. Sears, J. Thomson, W. F. Young.

Probationers.—C. H. Aitken, W. Brown, T. R. Clemence, E. L. Conder, Arthur Crow, E. Guy Dawber, A. Dovaston, R. M. D. Fell, Frank Fox, L. Littlewood, E. Herbert, C. S. Hornabrook, W. C. Jones, F. W. Lane, Henry Ling, W. E. Lymington, C. E. Mallows, J. C. S. Mummery, A. B. Pite, S. H. Seager, W. A. Thompson, J. M. Townsend, H. J. Westell, C. F. L. Yonge.

Mr. R. Phené Spiers is the Architectural Master.

Fallowfield, Manchester.—On the 30th ult., new schools which have been erected at Fallowfield in connexion with the Church of the Holy Innocents, were formally opened. The schools, which are Early Decorated in style, stand in a conspicuous position upon the Wilmslow-road. The main room is 75 ft. in length, and 32 ft. 6 in. in width, and covered by a roof of semicircular form, the ceiling being divided into panels. At one end of this room is a fixed dais or platform, in the rear of which is a back entrance leading to the church grounds, with two classrooms on either side, capable of being used in connexion with the schoolroom. The erection of the schools has been carried out from the designs of Mr. F. H. Oldham, of John Dalton-street, Manchester, which were selected in competition. The contractor for the whole of the works is Mr. James Herd, of Ardwick.

CHURCH ROOFS IN HOLLAND.

IN the Dutch towns, from Dordrecht northwards to Alkmaar, there is a series of about a dozen large churches, showing great similarity of design. They are lightsome and spacious, possessing transepts, double aisles, or ranges of side chapels, and their tall circular columns, with high bases, and capitals set round with knots of foliage, remind one of such churches as St. Jacques at Antwerp and St. Gommaire at Lierre. That at Dort is vaulted throughout, a mode of treatment that must have been in the mind of those who designed the rest. The treacherous nature of the foundations would, however, render such a mode of construction unusually hazardous. In some cases the aisles only are vaulted, or perhaps the transept or choir. At Haarlem, where the space under the crossing is vaulted, there are marks in the transept of vaults that have either been begun, or, if actually built, have been removed. Here also the nave and choir have fine wooden vaulting, in imitation of stone construction, and these parts were intended to have flying buttresses. But the common kind of covering is a plain barrel roof of wood, close-boarded and well painted. Light transverse ribs show under the boarding, and enormously massive beams, square and perfectly plain, cross the building at the level of the wall-plate. These beams are entirely out of character with the roof (where these are of Mediæval date), sometimes resting on plain wall-posts and braces, often on strong projecting cantilevers or brackets, and the whole effect of the interiors is rendered exceedingly unsatisfactory. While, however, all whom I have consulted abuse these beams, they agree in assuming that they are part of the original design, a point to which I wish to draw particular attention.

Now, without these beams, the roofs (except two or three that are known to be more modern) would be of very respectable Mediæval character, —plain, no doubt, like the rest of the fabric, but, especially if the construction was shown by the omission of the boarding, sufficiently ornamental in effect. The main transverse ribs one would expect to find resting on short projecting brackets (perhaps on light tie-beams), and these supported by moulded wall-posts carried down to the small moulded caps of the existing wall-shafts that start from the capitals of the pillars of the main arcade. In Felix Narjoue's "Notes and Sketches of an Architect" (p. 10) is a view of the interior of the Groot Kerk at Rotterdam, showing such a roof, with the addition (as I suggest) of the big tie-beams, though not with their full clumsiness of effect. This addition seems to have been made, as regards the Gothic roofs, when the walls of the several churches showed signs of serious movement, or perhaps when some churches of similar construction collapsed so as to alarm the custodians of the rest. In the case of the more modern roofs, such as that of the Nieuwe Kerk at Amsterdam, similar beams form part of the original design. Besides their incongruity with the Mediæval work, the following considerations seem to show them of more modern date.

The small caps of the stone wall shafts are usually semi-octagonal, as if meant to support moulded wall-posts of Gothic character, but the actual wall-posts are always of rectangular section and much too large for the caps, and seem to have been put when it became necessary to introduce the big beams. But where such beams would not be necessary,—as against the walls at the ends of naves and transepts,—the Gothic wall-posts in many cases remain. At Rotterdam these are enriched by small niches and statues. In the apsidal choir of the Oude Kerk at Amsterdam (where the great beams have been put,—not at the wall-plate,—but at the lower level of the tops of the great arches), good Gothic wall-posts exist, and the roof has iron tie-rods. In the transept of St. Peter's, at Leyden, some of the caps of the Gothic wall-shafts have clearly been altered to a larger size, and to a square form with Classical mouldings, so as to receive the square wall-posts, but at the gable walls the original Gothic wall-posts still exist, resting on good Gothic caps.

The only sign of moulding about these beams is on the brackets that project under them, their ends being cut usually to a decidedly Classical ogee. In a few cases, as at the Oude Kerk at Amsterdam, this moulding looks decidedly Gothic, but so do some of those in the church at Gouda, which was rebuilt after the fire in 1552, and a painting in the local museum shows the roof before the fire without tie-beams. A painting in the Trippenhaus at Amsterdam shows the interior of the Oude Kerk at Delft, about the middle of the seventeenth century, with the existing beams, and I saw beams dated as late as 1757. It seems likely that the whole of these great beams came into existence from purely practical considerations since the middle of the sixteenth century.

In the excellent papers on Dutch architecture by Mr. Brewer (*Builder*, 1876, p. 334), and Mr. R. P. Spiers (1881, p. 385), very faint praise is awarded to the churches, except as regards some three or four magnificent buildings that are not characteristically Dutch. But these first-named churches have quite as much of local character as one could expect to find, and if we could see them with all their original fittings, and without modern disfigurement, they would take a high,—though far from the highest,—place among the examples of Mediæval architecture. THOS. BLASHILL.

WORKS IN EDINBURGH.

THE idea of adding a chapter-house, after the manner of the ancient cathedrals, to St. Giles's Cathedral, has been abandoned, it having been found that the plan prepared by Messrs. Hay & Henderson, in the form of an octagon, with large traceried windows and high-pitched roof, would occupy a greater space than could be found within the enclosing railing, and it being highly probable that any encroachment upon Parliament-square would meet with strong opposition. A new arrangement was therefore rendered necessary, and it has been finally settled that the requisite accommodation will be obtained by utilising three vacant spaces within the precincts. The organ-chamber is to be placed to the east, and the vestry to the west, of the south transept, and the session-house between the two chapels which project from the north aisle of the nave. All these additions are to be of a very simple and unpretentious character, in strict subordination to the body of the building. They may, in fact, be mistaken by future visitors as a portion of the work executed under the direction of Mr. Burn. There is one pleasing feature, however, connected with these additions, viz., the re-erection of an ancient doorway, which has fortunately been preserved, and which will form the entrance to the organ-chamber. This doorway is a characteristic example of Scottish Mediæval work, and is of the round-headed description, similar to the west doorway of Haddington Abbey, and is decorated with the crisp foliage largely used by the later Mediæval builders of Scotland. The new west doorway is the only part of the exterior alterations in which the architects for the restoration have had free scope, and a very handsome and elaborate design it is. The elliptical-headed broad opening, adorned with blank shields and shallow mouldings, designed by Burn, has been entirely obliterated, and a pointed and deeply-recessed doorway of more contracted span takes its place. The mouldings are richly decorated. The opening is divided into two by a stone mullion, and the heading filled in and decorated with sculpture. There are two tiers of crocketed niches filled in with statues, and there are three gablets, with cusped crocketing, similar to that on the flying buttresses of the tower. The centre gablet contains a bas-relief of St. Giles, with the stag, and the minor flanking gablets figures of angels holding shields. The north doorway, as designed by Burn (similar to that already described) is to be left untouched, but the wide elliptical opening is to be divided into two parts.

In the interior, the north transept is to be fenced off by a richly-decorated stone screen, having two tiers of niches, with statues and a crocketed open parapet. The royal pew, a large and richly-carved oak structure, will occupy a similar position in the south transept.

The circumstance that an owl's nest, containing bones of birds and frogs, was found within the church embedded in plaster, shows that, prior to the alterations carried on under Burn, the building must have been in so neglected a state as to admit of free access at all times to the fowls of the air. The restoration is expected to be completed in May next, when a remarkable interior will be opened up. Within this interior there will be ample scope for monumental memorials, and most probably this

facility will be taken advantage of, and if carried out under proper supervision may be productive of a happy result. Probably, also, the exterior may, in course of time, assume a more artistic aspect than at present, and the new west doorway may be considered as the prelude to this.

The old Infirmary buildings were some time ago acquired by the Town Council, and it has been resolved to retain the Surgical Hospital,—a comparatively recent erection,—as a hospital for the treatment of contagious diseases such as are not treated in the Royal Infirmary. The extent of ground which is to be allowed for the hospital, including its site, will be fully an acre and a half, leaving about an acre and a quarter on the west side free after the demolition of the old buildings. This ground it was proposed to utilise for building purposes, but this project is opposed on the ground of the confined nature of the site, and that it would prevent the future carrying out of an improvement, at one time contemplated, of forming an open place in front of the University. A portion of this ground has been applied for by the lessee of the Princess's Theatre as a site on which to build a new theatre, and to the erection of such a building there the Medical Officer of Health is said to offer no objection.

NEW ARCHÆOLOGICAL AND ART SCHOOL BUILDINGS AT CHESTER.

A NEW building for scientific uses is about to be erected at Chester, and at the meeting of county magistrates on Monday the Chairman drew attention to the subject. He stated that it was proposed to erect suitable buildings for the purposes of the Chester Archæological Society, the School of Art, and the Natural History Society. The buildings were proposed to be erected on land near the castle, partly owned by the Duke of Westminster (who offered to give his portion if the others could be secured); also by another gentleman who would sell his portion at a nominal price; and by the county. With the view of facilitating the project, and completing the obtaining of the site as soon as possible, he proposed that instructions be given to the county surveyor to value the property and report thereon to the adjourned sessions at Knutsford.

The proposal was unanimously agreed to.

THE INTERNAL DECORATION OF THE RATHHAUS AT BERLIN.

ACCORDING to the *Tribune* of Berlin, the recent magisterial deliberations on the above question have resulted in the selection of the following subjects, the recommendations of the deputation which lately made representations on the matter having been to a great extent regarded:

1. A subject from the time of the Margraves, illustrating the importance of the citizens of Berlin at that period.

2. The overthrow of the robber-knights by the Elector Frederic I.

3. The municipal council of Berlin taking the Sacrament in both forms, on November 1st, 1539, as a memorial of the general acceptance of Luther's doctrines by the citizens of Berlin.

4. The reception of the French refugees by the Elector Frederick William the Great. The culture and skill of these immigrants exercised an important effect upon various local industries of Berlin.

The above four pictures are to be in the anteroom of the magistrates' session-chamber. Along the corridor, as far as the main staircase, come the following:—

5. A picture recording the influence which the electress, afterwards Queen Sophia Charlotte, exercised in the foundation of the Academy of Sciences.

6. King Frederick William I., surveying the buildings erected at his own suggestion in the Friedrichstadt quarter.

7. Frederick the Great, when at the height of his popularity, riding down the Avenue Unter den Linden.

8. A picture commemorating the acquisition in 1808 of the right of self-government by the Prussian cities.

9. The inhabitants of Berlin on the battlefield of Grossbeeren, giving refreshment to the Prussian troops after their victory over the French, and tending the wounded.

10. The opening of the first Industrial Exhibition at Berlin, in the year 1844, by King Frederick William IV.

As to the execution of these ten pictures, the details will be decided by a commission, which will be empowered to make a free selection of the artists who are to be entrusted with the work, without there being a competition. The commission will also have the power of arranging with the artists, and of fixing a price for each separate picture. It has, however, been resolved to allow all the German artists of the day to send in designs in competition for the painting which is intended to ornament the staircase, the subject of which is to be a commemoration of the promotion of Berlin to be the capital of the German Empire.

MONUMENT IN THE CATHEDRAL OF MÜNSTER, WESTPHALIA.

A LITTLE slip may easily occur when a Saturday half-holiday, a Sunday, Christmas Day on Monday, and a bank holiday on Tuesday all fall together, and this is probably the reason why one of our smaller cuts, a mural monument in Münster Cathedral, was spoken of in our last number as from Breda.

The monument, of which we gave an illustration,* is a very remarkable example of the mural tablet form of memorial, dating from the end of the sixteenth century.

Mural tablets have gained a bad name in this country, and our church restorers have generally made war without quarter upon them. Now, although it is terrible to see the way in which ancient walls, arcades, tracery, panels, &c., have often been cut away to receive modern "tablets"; yet, there is nothing either offensive or in any way objectionable in that form of monument, and very frequently these tablets are real works of art, and deserve more consideration than they generally receive at the hands of the restoring architect. Only a few weeks back we saw two examples of the works of the elder Bacon stowed away behind the organ of a church. It not unfrequently happens that even from an architectural point of view these mural tablets improve a building, and give interest to an otherwise blank wall-space.

Even where monuments are not an ornament to a church, they should not be removed without good reason. Where they absolutely disfigure a building and cause positive inconvenience, they may, of course, be removed to more convenient situations; but in this case it is advisable to place a small inscription on the original site, stating the fact that the monument has been removed. This should *always* be done when the person to whom the monument has been erected is buried beneath. We wish strongly to impress this upon all architects, clergymen, &c., as without it the removal of monuments from one site to another may lead to great confusion in legal questions; in fact, it is certain sooner or later to lead to trouble of one kind or another. The plan of carting away mural and other monuments out of a church, and making a clean sweep of them, leaving no trace of their existence, is a practice which cannot be too strongly condemned; and it is to be doubted whether the clergy have even the *right* to do this.

"STOLEN BY GIPSIES.—THE RESCUE."

SUCH is the title of the engraving prepared by the Art-Union of London for its subscribers of the current year. As a delineator of Spanish scenes, Mr. J. B. Burgess, A.R.A., the painter of the work now under notice, is considered by judges to walk worthily in the steps of the late John Philip. After distinguishing himself at the Royal Academy, Mr. Burgess took advantage of certain family connexions in Seville to visit that place, and the general character of the subjects chosen for his pencil was thus determined. The work by which he first fixed the public attention was entitled "Bravo, Toro," depicting the effect on the spectators of some incident in a bull-fight, in which the bull has particularly distinguished himself.

In the work now mentioned, a gipsy crew has carried off a pretty little girl, and, having stripped her of all her ornaments and some portions of dress, which two women in the background are examining, two of the gang are engaged in teaching her to dance; anticipating an addition to their funds by the public exhibition of her performance. The bewilderment and terror in the countenance of the little maiden; the mocking and insolent air of the two men attempting to teach her; the amused interest of two men sitting at a table smoking; and the compassion in the countenance of a gipsy woman, who nurses a child of her own, are all most forcibly rendered by the artist.

Not the least interesting incident in the scene is the appearance of a couple of gendarmes just descending the staircase in the background, who, followed, no doubt, by a strong party, opportunely arrive to the rescue of the little victim.

This is an engraving which, from the unmistakable way in which the story is told (always an important element with the public), from the touching incident skilfully depicted, and the masterly way in which the work is translated by the engravers, is likely to prove popular with the members of the Art-Union.

We have also received the Society's almanack, which contains much information in reference to artistic and literary societies, in addition to the usual contents of the calendar.

* Vol. xlii, p. 849.

CAPE TOWN.

ECCLESIASTICAL ARCHITECTURE.

MR. W. H. REID, architect, of Crewes-buildings, in this city, has furnished the plans for the new Church of St. Michael, Queenstown, of which the memorial-stone was laid by the Premier, on his late visit to that town. The following description of the building, described as equalled by very few throughout the whole colony, is given by the local *Free Press*:—"Accommodation will be provided for seating about 800 persons comfortably. The interior will comprise, besides the church proper, a nave, north and south aisles, and transepts, a chancel, an organ and choir vestry, a vestry for the minister, and a baptistery. The building will be 150 ft. long and 45 ft. wide. The transepts will measure 21 ft. wide; while the organ-vestry will be 17 ft. by 17 ft., and the minister's vestry, 13 ft. by 10 ft. A screen of Gothic tracery will be placed between the organ-vestry and the chancel, and there will be another dividing the north transept from this vestry. The main entrances will be from the south side, through large folding-doors made of teak. There will be two arcades, supported by columns of polished marble, from Devonshire, England, and there will also be two columns at the main porch, of polished Peterhead granite, which, along with other ornamental work, will help greatly to give the front an effective appearance. A prominent feature of the building will be a tower and spire, rising 140 ft. There will be eight windows in the north and south aisles, three in the chancel, two in the organ-vestry, one in the baptistery, and two in each of the transepts. The ceiling will be diagonally boarded, stained and varnished, and the height from the floor will be 50 ft. The building will be erected at a cost of about 13,000*l*."

CRYSTAL PALACE ENGINEERING SCHOOL.

LAST week concluded the tenth year and the thirtieth term of the existence of this school. Mr. J. W. Wilson, the principal, took advantage of the occasion to give some interesting statistics touching the operations in the school during the ten years. There had been 1,100 lectures delivered in regular course, and without a single intermission, on "Railways: their Construction and Appliances"; on "Materials and their Manufacture"; and on "Steam," and other subjects. 425 students had passed through the school, 135 of whom had gone through the full two years' course, 196 through the mechanical course of one year, and the remainder for shorter terms; 193 past students were now holding good remunerative positions, as resident or assistant engineers on important works. During the ten years, 4,880 drawings, designs, &c., and 4,050 surveys, had been prepared and made by the students, who had also sent in 129,000 written answers to lecture questions that had been examined and signed. The students had turned out twenty-eight four-horse-power engines in the fitting-shop; they had made eighty-four trips by water for the acquisition of knowledge and practice in marine engine-driving; 170 trips had been made on locomotive engines; fifty-three had gone

through a practical course in diving; and there had been thirty public examinations, in each instance conducted and presided over by eminent engineers. Twelve former students were Associates of the Institution of Civil Engineers, and fifty-two were Students of that Institution.

Mr. B. Baker, Mem. Co. Inst. C.E., presided, and delivered an interesting practical address to the students, to whom he presented the certificates awarded by Messrs. A. G. Fenn, C.E., and John Dixon, C.E., the examiners.

THE ELECTRIC LIGHTING ACT AND BOARD OF TRADE APPLICATIONS.

THE powers conferred by the recently-passed Electric Lighting Act are just now exciting much interest in different parts of the country, but more especially in the metropolis. The Act being compulsory as respects lighting by electricity of at least certain portions of a district where a provisional order may be granted by the Board of Trade, the number of applications which are about to be made to the Board in upwards of 150, of which no fewer than thirty-four have reference to proposed electric lighting in different parts of the metropolis. The Act empowers either local authorities or electric lighting companies to make application for provisional orders, but, with one exception, no notice of such intended application has been given by any metropolitan authority, the exception being the parish of St. Pancras. The whole of the rest of the applications are by electric lighting companies, of which twenty-seven are by the Brush Company. These include applications for the requisite powers in the Strand district, Camberwell, St. George, Hanover-square, St. James, Westminster, Kensington, East London, Lambeth, St. Giles-in-the-Fields, St. Martin-in-the-Fields, Marylebone, Paddington, Islington, Hornsey and Highgate, Tottenham, Hampstead, Willesden, Finchley, Wandsworth, Newington, St. George-the-Martyr, St. Saviour's, the City, Clerkenwell, Bermondsey and Rotherhithe, Hackney, Bethnal-green, Shoreditch, and Fulham, Chiswick, and Acton. The other companies applying for similar powers within the Metropolitan area are Ferranti, Thompson, & Co., who apply in reference to certain districts in Chelsea, and in St. John's, Hampstead; by the Pilsen-Joel Company in Holborn, St. Giles's, St. Pancras, and the City of London; by the Edison Company, in the City of London and Westminster; and by the Swan Company, in the Victoria, South Kensington, Hanover-square, and Strand districts.

It appears from the proceedings of several metropolitan vestries that the intended applications of the various companies for provisional orders and licences are to be opposed on the ground that the electric light, as an illuminant, is as yet in an immature state, and that under the circumstances it would be unwise to incur the expense of its compulsory introduction into any given district. On the other hand, it is noteworthy that in the provinces the municipal and other local authorities, in upwards of forty of the large towns, have given notice of their intention to apply for powers under the Act. Amongst the Corporations who are applying for the requisite provisional order, with the view of producing the new light, are those of Manchester, Liverpool, Brighton, Sheffield, Leicester, Nottingham, Newcastle-on-Tyne, Plymouth, Portsmouth, Bradford, Preston, Bolton, Oldham, Swansea, Leamingtpn, Norwich, Warrington, Carlisle, Blackburn, Southport, Wigan, Halifax, Scarborough, Birkenhead, Rochdale, Stockton, Darlington, and many other places. The Brush Company are likewise applying for similar powers in twenty towns in the provinces, in addition to their applications in the several Metropolitan districts already named.

A special feature in the applications is that several bodies in connexion with some of the railway companies seek powers to introduce the light along the districts through which the respective railways pass. In these bodies are included the Great Western, the South Staffordshire, the North-Eastern, and the Lancashire and Yorkshire Railway Electric Lighting Companies.

The Victoria Institute.—A full meeting of this Institute took place on Monday, when a paper upon "Design and Nature" was read by Mr. W. P. James.

BUILDING PATENT RECORD.*

APPLICATIONS FOR LETTERS PATENT.

5,851. F. A. Binney, Bowdon. Ventilating-shaft or chimney. Dec. 8, 1882.

5,855. T. E. Parker, London. Open fireplaces, &c. Dec. 8, 1882.

5,876. T. H. Thompson, Manchester. Ventilating buildings. Dec. 9, 1882.

5,879. J. E. Walsh, Halifax. Joints, bearers, and coverings for building material. (Com. by M. G. Mitter and L. A. Hoffman, Berlin.) Dec. 9, 1882.

5,890. A. Shelmerdine, Manchester. Doors to exclude draughts, dust, and weather. Dec. 9, 1882.

5,892. J. White, Edinburgh. Chimney and ventilating cowls. Dec. 9, 1882.

5,915. J. M. Hooker, Sevenoaks. Method of construction for protecting buildings against fire. Dec. 11, 1882.

5,924. J. H. Johnson, London. Decoration of wall and other surfaces. (Com. by C. Juncker, Paris.) Dec. 12, 1882.

5,960. C. Brothers, London. Combined ventilating and fire-extinguishing apparatus. Dec. 13, 1882.

5,971. H. Hawgood, Richmond. Method of covering stairs with carpet. Dec. 14, 1882.

5,982. T. Smith, Brockley, and J. Drewitt, London. Brackets for curtain-rods, &c. Dec. 14, 1882.

5,992. H. Hoyles, Sheffield. Stove-grates. Dec. 15, 1882.

5,996. C. W. Gauntlett, Southsea. Flushing apparatus for water-closets. Dec. 15, 1882.

6,017. W. Ferguson, Guernsey. Glazing roofs, &c. Dec. 16, 1882.

6,035. G. T. Ball, London. Window-fasteners. Dec. 18, 1882.

6,049. R. H. Leask, Dublin. Water-closets. Dec. 19, 1882.

6,068. E. R. Hollands, London. Open fire-grates. Dec. 19, 1882.

6,078. L. A. Grotte, London. Window-blind. (Com. by H. Olausen, Christiania, Norway.) Dec. 20, 1882.

6,101. C. Major, Bridgwater. Dies for the manufacture of roofing-tiles, &c. Dec. 21, 1882.

NOTICES TO PROCEED

have been given by the following applicants on the dates named:—

Dec. 12, 1882.

3,775. J. C. Bloomfield, Blen-y-lung, and J. McGwm, Bally-Maqharan. Manufacture of bricks, tiles, &c. Aug. 8, 1882.

3,793. J. S. Willway, Bristol. Door-mat and scraper combined. Aug. 8, 1882.

Dec. 15, 1882.

3,811. C. H. Southall, Leeds. Apparatus for cleaning and polishing windows. Aug. 10, 1882.

3,829. J. S. Wilson and H. T. Johnson, Manchester. Apparatus for ventilating sewers, &c. Aug. 11, 1882.

3,844. E. A. Brydges, Berlin. Reed fabrics for ceilings. (Com. by P. Strauss and H. Ruff, Cottbriss, Prussia.) Aug. 12, 1882.

3,921. S. Fisher, London. Fabrics for covering walls. Aug. 16, 1882.

4,078. E. Barnes, London. Spring hinges for swing doors. Aug. 25, 1882.

5,598. F. Greatrex, Uxbridge. Stoves and fireplaces. Nov. 24, 1882.

Dec. 19, 1882.

3,900. W. J. Henry, London. Smoke-consuming grates. Aug. 15, 1882.

4,369. W. A. Macleod, Birkenhead. Window sash-fasteners. Sept. 14, 1882.

5,772. R. W. Hitchins, London. Construction of fire and sound proof ceilings and floors. Dec. 4, 1882.

Dec. 22, 1882.

3,990. E. Tomlinson, London. Apparatus to facilitate the lighting of fires, &c. Aug. 19, 1882.

4,000. A. Keim, Munich. Rendering wall-paintings weather-proof, &c. Aug. 21, 1882.

4,002. R. W. Crabtree, Leeds. Kitchen ranges. Aug. 21, 1882.

ABRIDGMENTS OF SPECIFICATIONS

Published during the Week ending December 16, 1882.

1,827. W. P. Thompson, London. Slate slab or tile roofing. (Com. by H. Prodhomme, Brussels.) April 17, 1882. Price 2d.

The slates, &c., instead of being laid over one another as usual, only just overlap (Protection not allowed).

2,121. T. W. Helliwell, Brighouse. Water-closet basins, &c. May 5, 1882. Price 6d.

These are so made that they can be used both as water-closet basins and as urinal basins.

2,133. F. J. Duggan, Bristol. Construction of stoves and lamps. May 6, 1882. Price 10d.

This improves the construction of stoves and lamps for burning petroleum oils, &c., in a variety of details the description of which is not capable of being condensed.

2,150. A. Tweed, London. Self-closing valves for closets, &c. May 6, 1882. Price 2d.

These are diaphragm valves, and the pressure of the water closes them. (*Pro. Pro.*)

2,157. J. M. Gray, Kingston-upon-Hull. Composition for cleaning, colouring, &c., stone stairs, hearth-stone, &c. May 8, 1882. Price 2d.

This consists of pipe-clay, Paris white, whiting, and china clay, to which mixture is added a little ultramarine and yellow ochre. (*Pro. Pro.*)

2,170. G. W. H. Brogden and B. Clasper, London. Kilns. May 9, 1882. Price 2d.

This is an improvement on patent No. 654 of 1879, and consists in dispensing with some or all of the doors therein described. (*Pro. Pro.*)

2,179. A. Foster, Watford. Squeegees. May 9, 1882. Price 2d.

This adapts squeegees to clean windows, &c. (*Pro. Pro.*)

2,244. J. Thallon, London. Floors and treads of stairs. May 12, 1882. Price 2d.

Iron rods are run through rows of blocks of wood, which are then laid on the old floors, &c., being held in position by staples over the rods between the blocks. (*Pro. Pro.*)

2,266. W. Newell & T. Tollett, Birmingham. Combined letter-box and name-plate. May 13, 1882. Price 6d.

The letter-box plate has openings and frames for holding the name of the occupier of the house, the same being built up of separate letters.

2,272. J. M. Hale, London. Stench-traps. May 15, 1882. Price 6d.

This is a gully or trap, with an overflow in the upper part, while below is a conduit leading therefrom, and the outlet is at the bottom for connexion to the pipe or drain.

2,273. C. H. von Ullmer, London. Syphonic ventilating chimney-top, &c. May 15, 1882. Price 2d.

This is an improvement on Patent No. 2,622 of 1879, in employing an air-expansion chamber and a wind-guard. (*Pro. Pro.*)

2,307. F. Versmann, New Charlton. Earth-closets. (Com. by H. Kleucker, Brunswick.) May 17, 1882. Price 6d.

These are so constructed that coarse moss-peat powder may be used therein. A definite quantity of this coarse powder is delivered every time the closet is used.

* Compiled by Hart & Co., Patent Agents, 186, Fleet-street.

COMPETITIONS.

Municipal Buildings for Nottingham.—The Corporation of Nottingham have issued an invitation to architects to send in plans for municipal buildings, which it is proposed to erect on the site of the cattle-market adjacent to the University College. Provision is to be made for a Council-chamber, with committee and waiting rooms, for offices for the Town Clerk, the Borough Engineer and Surveyor, the Borough Accountant, and for the Gas and Water Departments. The buildings are also to include two magistrates' courts, with the necessary waiting and other rooms, and accommodation is to be provided for a police establishment, with cells for prisoners. There are also to be School Board offices, auditors' rooms, and residences for the office-keepers. The erection of the buildings, which, it is said, will probably cost over 100,000*l.*, will involve the formation of a new cattle-market, which will most likely be provided in the neighbourhood of a railway station. Premiums to the extent of 600*l.* are offered. The competition was advertised in the last number of the *Builder*.

Roofing the Quadrangle of the Royal Exchange.—A generation ago this project was talked of. A few years afterwards something really was done. A prize competition was held for the best plan, and an admirable design by Mr. Frederick Sang (which was commended in the *Builder*), won it. But nothing more was attempted. In the summer of 1881, the subject was revived. The prize plan was not adopted, but instructions were given for another, and (says the *City Press*) as a sort of concession to public feeling in the City, the plan, when prepared, at the instance of the surveyor of the Gresham Committee, was exhibited at the Royal Exchange for public inspection. Mr. Sang's premiated plan was made the subject of a counter-

exhibition on a limited scale, with the result that the new design was allowed to drop out of memory for awhile. The feeling created, however, was so strong that the Gresham Committee was induced to take some apparently serious steps, and to spend some money in the attempt to secure a roof for the quadrangle. It was resolved to invite eight architects to send in designs for selection, and it was agreed that each was to receive a sum of 75*l.* for his design, whether it was accepted or rejected. A further sum of 100*l.* was, however, to be awarded to the design selected should it be ultimately adopted by the Gresham Grand Committee. The architects who sent in designs for the latter competition were:—Mr. G. Aitchison, A.R.A., Mr. C. Barry, Mr. E. A. Gruning, Mr. E. I'Anson, Mr. C. E. Powell, Mr. F. Sang, Mr. H. Stock, and Mr. J. Whichcord. According to the stipulations, each design was to be marked by a motto, and the name of the architect was not to be revealed to the sub-committee, who, under the guidance of the surveyor, were to consider the merits of each and make the selection. After some delay, the Gresham Sub-Committee has completed its work, and the design selected is the one marked "Civis," the author of which is stated to be Mr. Charles Barry. Beyond inspection by the sub-committee, no opportunity of studying the designs sent in has been accorded to any of those interested. It is advisable that before the final selection is made all the eight designs should be publicly exhibited. Suggestions to that effect have already been made to the committee. It is also suggested that the advice of some eminent architect, not a competitor, or of a small committee of architects, should be taken on all the designs before any of them is carried into execution. In any case, it is important that the covering of the Exchange should be proceeded with, and that the hall of commerce of the greatest commercial city in the world should be roofed in in consonance with the general architectural features of the building.

Ulster Reform Club, Belfast The plans of Messrs. Maxwell & Tuke, 29, Princess-street, Manchester, and Bury, have been accepted. They are instructed to immediately proceed with the building.

THEATRES BURNED DOWN IN 1882.

HERR AUG. FÖLSCH, of Hamburg, supplies the following formidable list of theatres (no fewer than forty-one in number) destroyed by fire during the past year:—Jan. 6, 1882, Owensburg, Ky., U.S., the Opera House; Jan. 16, Mankato, Minn., United States, Opera House; Jan. 19, Bucharest, Circus Kremser; Jan. 31, Sofia, Theatre in Government House; March 8, Richburg, New York, United States, Baum's Opera House; March 17, Marseilles, Cristal Palace Theatre; March 18, St. Petersburg, Theatre Winter, Livadia (commenced during representation); March 20, Minnesota, Texas, United States, the Opera House; March 20, Algiers, National Theatre; March 21, Middleport, New York, United States, Compton's Opera House; April 1, Portsmouth, Ginnett's Circus; April 9, Red Wing, Minn., United States, the Opera House; April 14, Titusville, Penn., United States, the Opera House; April 15, Bolton, the Temple Opera House; April 16, Schwerin, Hoftheater (commenced during representation); April 17, Pernau, Bürgerclub Theatre; April 21, Hagen, Theater-Saal; April 24, Franklin, Ind., United States, the Opera House; April 25, Portsmouth, the Princess's Theatre; May 7, Nevada, Mo., United States, Moore's New Opera House; May 19, Leadville, Col., United States, Academy of Music; June 26, Riga, the German Theatre; July 4, St. Petersburg, Arcadia Theatre; July 6, Madrid Teatro de los Recreos; Aug. 29, Red Oak, Iowa, United States, Bishop's Opera House; Sept. 1, Staraja Russa, Summer Theatre; Sept. 5, London, Philharmonic Theatre; Sept. 11, Louvain, Theatre Beriot; Sept. 13, Tambov, Russia Theatre; Sept. 26, Orebroe, Theatre (commenced just before the representation); Oct. 8, Brighton, Mellison's Theatre; Oct. 26, Salem, Oregon, United States, Reed's Opera House; Oct. 30, New York, Abbey's Park Theatre; Oct. 31, Barcelona, Teatro Massini; Nov. 1, New York, Alhambra Theatre; Nov. 3, Baltimore, Arlington's Variety Theatre; Nov. 12, Frankfort, Ky., United States, Major Opera House; Nov. 16, Wloclarock, the Theatre; Nov. 28, South Shields, the West-end Theatre; Nov. 30, Metropolis, Ill., United States, the Opera House; Dec. 6, London, the Alhambra Theatre.

Total fires from Jan. 1 to Dec. 6, 1882:—In the United States, 17; England, 7; Russia, 5; Germany, 4; France, 2; Spain, 2; Belgium, 1; Sweden, 1; Bulgaria, 1; Roumania 1:—41.

IRON AS AN AGENT OF FIRE-RESISTING CONSTRUCTION.

SIR,—Iron if properly protected can be used with perfect success for purposes where a continuous temperature of even as high as 1·600° Fahr. is necessary. The writer has, indeed, used the valuable agent as a constructional support for furnace work in which carbon-monoxide was oxidised in close proximity to the iron, and the temperature evolved by the chemical action mentioned could not be far short of 2·800° Fahr. Of course, had the iron been unprotected, it would have failed in its purpose, but it was protected with 3 in. thick fireclay tiles, and although it has been in use for over twelve months, is apparently as strong as ever. What is necessary in the construction of floors and roofs is, as the writer pointed out in the *Times*, that iron should be entirely protected from actual contact with the flames by means of some refractory material, such as concrete formed of Portland cement and calcined aggregate, or with fireclay blocks, and with proper allowance for expansion and contraction, as in Mr. Northcroft's system. (For a description of Mr. Northcroft's admirable system of fireproofing, *vide* the writer's work on "The Fire-resisting Arrangements of Factories, Warehouses, &c.," published by Spon). Mr. Northcroft arranges a series of movable rollers running on cast-iron bed-plates built in the walls. The iron girders rest on the rollers, and move freely on them as they expand and contract. A similar system is used in some of the large girder bridges, with success. If the floors were thus constructed, there would be no necessity for the more or less Quixotic schemes of girder water reservoirs, or water-tanks on roofs, which on the outbreak of fire,—as in the example of the destruction by fire of one of the Paris Opera-houses,—either leak or are empty, and are destroyed before water can be poured into them, or the water is frozen in the mains, not to mention the dampness that might accrue, and the weakening oxidation set up in the iron. The only real cure for these terrible conflagrations is the universal adoption of perfect systems of fire-resisting construction for floors, roofs, and walls. B. H. THWAITE, F.C.S.

P.S. The writer has experimented with fibrous asbestos, and finds that when exposed to a temperature of 1·600° Fahr. for a few hours, although unaltered in colour, it loses its fibrous quality, and crumbles into powder at the least pressure. What, therefore, would be the effect upon a heavy drop-curtain when exposed to the enormous accumulation of heat produced by a great fire? As a water-resisting finish to the suggested deck roofs of concrete and iron, Claridge's fire-resisting asphalte may be used with advantage.

OBITUARY.

Mr. J. S. Lee.—The death is announced of Mr. John Swanwick Lee, of Craven-street, at the comparatively early age of 54. As a building surveyor his practice extended to all parts of the kingdom, and also to France. His association with the late Sir Gilbert Scott and other leading architects for upwards of thirty years brought him into connexion with the largest public and other works of his time. Mr. Lee came from Macclesfield, and was a pupil of the late Mr. Charles Balam, surveyor. He leaves three sons, two of whom are partners in his firm. His second son is Mr. Thomas Stirling Lee, sculptor.

Mr. Firbank.—Mr. Firbank, of the firm of Baker & Firbank, railway contractors, died somewhat suddenly at his residence at Washingborough, Lincoln, on the 21st ult. At the funeral the coffin was carried by stalwart navvies in the employ of the firm. In addition to the members of the family the mournful procession was joined in by the Mayor of Lincoln, Mr. S. Abbott, C.E., Mr. Cooper, C.E. (Westminster), Mr. Drage (locomotive superintendent Great Northern Railway), and other friends of the deceased, while a very large number of the workmen of the firm followed. Mr. Firbank was a member of several Masonic Lodges, and had long taken an active interest in the work of Freemasonry. Accordingly the Lincoln Lodges were represented on the occasion.

THE FALL OF A MILL CHIMNEY AT BRADFORD.

THIS terrible disaster, which took place on the 28th ult., has resulted in a much greater loss of life than was known at the time we went to press last week. Instead of twenty-four persons having lost their lives, as stated in the paragraph on p. 856 of our last volume, the number of fatalities is upwards of fifty.

The following particulars are given with respect to the construction of the chimney:—It was built in 1862 by Messrs. William Moulson & Sons, of Bradford, from designs by Messrs. Andrews & Delaney. Previously to its erection, as it was known that there had been some coal workings in the neighbourhood of the site, it was deemed advisable to sink a pit so as to ascertain the exact condition of the foundations. A pit was accordingly sunk, and showed that there had been some coal removed from the site. In the places from which the coal had been removed stone packing was placed, and the pit filled up with concrete. The foundations for the chimney were then laid, and its erection went on until it reached the height of 80 yards. At that point it was noticed that the chimney was getting out of the perpendicular, and the work was suspended. Mr. Woodcock and Mr. Andrews were called to examine it, and they came to the conclusion that the alterations in the condition of the chimney were due to the sinking of the foundations, which were still deemed to be satisfactory. To remedy, however, the deviation of the chimney from the perpendicular, the late Sir Henry William Ripley called in a man named Woodward, who was deemed an expert in straightening chimneys. He cut out some of the mortar from the side opposite to that in which the deviation had taken place, for a distance of about 15 yards or 20 yards from the foundation. He was by this means successful in causing the chimney to become straight. It had been intended to raise the chimney to the height of 100 yards, but after this examination only another five yards were added, and at the time of the disaster the total height was 85 yards. Part of the outside shell of the chimney, for about 20 ft. next to Castle-street, came out, and it is thought that this, with the strong wind blowing on Thursday morning, caused the disaster. At its base the chimney was 24 ft. in diameter, and its sides were 7 ft. 6 in. thick. The slope was about 1 in. to a yard. The chimney was built with an inner flue of brick and an outer covering of stone.

One of the workpeople at Messrs. Haley & Co.'s states that the chimney was not in a good state, and that pieces of stone kept falling on the side next Ripley & Haley's engine-house. Ten minutes before the chimney came down there was a big fall, and they could see the holes where stones had fallen out. During the ten minutes between the three or four tons falling and the whole stack coming down, there was no sound from the chimney. Thomas Conwell, one of the masons who had been engaged in repairing it, states that they began the work on Saturday. The chimney had burst out at one corner where it was weakest, and they intended to pull the corner out and rebuild it. The weak place was about the height of the mill. Alfred Brayshaw, of 96, Baird-street, alleges that while the workmen were putting the scaffolding up on Wednesday a portion of the chimney near the centre came down and took away the scaffolding. When it fell, the men who were at work refused to continue work that day.

On Wednesday afternoon Lieutenant-Colonel Seddon, R.E., who represents the Government in the inquiry, visited the scene of the disaster, in company with the coroner (Mr. J. G. Hutchinson), the jury, and a number of other gentlemen. After going generally over the wreck, the different sections of the base of the fallen chimney were examined. These consisted of one thickness of fire-bricks on the inside, then a layer of dried bricks, next a thick mass of packing made up of rubble mortar, and outside a shell of stone. A number of labourers were set to work to detach portions of these, and several of the jury carried away with them samples of the mortar. Some of the

heavy coping-stones were also turned, broken, and examined. The foundations of the chimney will be uncovered to permit of further inspection. To expedite work to this end, an extra number of men have been put on. There is, however, an immense quantity of *débris* still to be removed, and its clearance will involve a great deal of hard work.

SMOKE ABATEMENT.

SIR,—I have not seen in your columns or elsewhere any expression of opinion on the subject of awards at the late Smoke Abatement Exhibition; yet there cannot be the slightest doubt that those awards are received without the slightest satisfaction by practical men, and can have no permanent influence on the public. The reason is not far to seek. The awards were made on the faith of certain reports of "tests," the different appliances being tested in certain test-houses for one or two days only in each case. The testing was altogether unsatisfactory, the time being inadequate, and the chimneys in some cases too small.

The subject of testing was distrusted from the beginning by practical men, as they knew very well that the all-important thing to consider was, which scheme would best stand the test of time, and win the approval of the public. I will say nothing about the relative value of gas-stoves and those for burning anthracite coal. The public will decide whether to use one description of combustible or the other, irrespective of any awards. We all know that gas is costly for heating purposes, and that anthracite generally gives a dull fire. The most interesting and practically useful of questions relates to the use of our ordinary bituminous fuel without smoke. For effecting this there are two well-known systems: one that of burning a body of fuel from the top downwards; the other, that of introducing coal in small quantities from below the fire. The first was introduced in 1815 by Mr. John Cutler, and known since as Dr. Arnott's principle and that of the *Builder* fire. This principle has stood the test of nearly thirty years. Some thousands of grates have been used, and some hundreds of kitcheners. Of its substantial success there cannot be the slightest doubt, as chimneys scarcely ever require sweeping, and there is little or no visible smoke.

That there were some practical objections to Dr. Arnott's grate is undoubted. The sunk ash-pit, the lifting machinery, the heavy appearance of the coal-chamber, and the falling of cinders in front, were all against it; but these objections do not affect in the slightest degree the leading principle, that of burning one supply of coal from morning till night without smoke. A grate on this principle, but without the objectionable features mentioned, was exhibited in action during the whole time the exhibition was open, and never failed to present a smokeless and cheerful fire, even when burning till late at night.

The second system was introduced in 1816 by Dowson & Hawkins's patent feeding shovel, and again in 1856 by Mr. Young's patent. This, you will remember, consisted of a metal trough, containing a powerful screw fixed on the hearth below the bars. A shovelful of coal sufficiently small was thrown into the trough when fresh fuel was required, and by the action of a screw and a lever the fuel was forced into the fire from below. A modification of this system has received the highest award the Smoke Abatement Committee could give it; while the principle of Dr. Arnott, of the *Builder* fire, and of my own grate, has been passed over altogether. Comment is needless. My own grate has been taken up by the well-known firm of Messrs. Benham & Sons, although the grate is so honourably distinguished. You and your readers will probably be glad to know if there is any possible justification for the action of the Smoke Abatement Committee.

FREDERICK EDWARDS.

CHURCH-BUILDING NEWS.

Frodsham.—The parish church of St. Lawrence, Frodsham, has been re-opened, after restoration. The fabric is built of red stone, and consists of a nave, chancel, side aisles, and tower containing six bells. In the repairs that have been done, considerable alteration and improvement has been made. The whole church has been re-roofed with substantial oak timbers. The walls have been cleansed of their whitewash, the floor has been laid with small square oak blocks, and the aisles with stone tiles. The old pews have disappeared, and chairs now occupy their place. Gas has been introduced instead of the flickering candle, and a warming apparatus has been introduced. A large stained window, by Messrs. Burlison & Grylls, of London, and representing the Ascension, has been placed in the east end of the chancel, at a cost of 400*l.*, by Mrs. Pickering, of Frodsham, to the memory of Robert Wainwright Ashley and John Rigby Pickering. Another window, by the same firm, and representing Mary and Martha, has been placed on the left hand of the small door on the south side to the memory of Mrs. Mary Higson. A stone pulpit has been given by Mr. James Reynolds, J.P., and the lectern by Mrs. J. Reynolds. The old gallery is completely gone, and the monuments and tablets have been cleaned and replaced. Among the brasses fixed to the wall is the following:—"Near this place lies the body of Peter Banner, carpenter, of Frodsham, who died of a dropsy, Oct. 21, 1749, aged 50. In thirty-three weeks he was tapped fifty-eight times, and had 1,032 quarts of water taken from him." The cost of the work is given as upwards of 8,000*l.* The restoration was entrusted to Messrs. Bodley & Garner, architects, London.

Plymouth.—A chancel-screen has just been erected in the new Church of St. Peter, Plymouth. It is of wrought iron on an alabaster base, designed by the architect of the church, Mr. G. Fellowes Prynne, the son of the vicar. The ironwork is wrought from beginning to end. In the screen itself there are over 8,000 different pieces. In one of the gates alone there are 800 separate pieces, and the little collars which bind together the lower decorative part number altogether 3,000. A brass cornice sets off the top of the screen, and parts of it will also eventually be picked out in gold and colour. The ironwork was wrought by Messrs. Ellis & Rice, of London, and it stands upon a low base wall of alabaster, worked by Mr. Harry Hems, of Exeter. Quatrefoils along the front are to be filled in with angels on a gold ground holding scrolls, upon which will be the words, "We praise Thee," "We bless Thee," "We glorify Thee," "Lord God Almighty." The chancel has also been fitted with new choir-stalls of old English oak, with both ends and front carved by Mr. Webber, of Plymouth, Mr. Steer being the joiner.

Streatham.—Mr. G. Fellowes Prynne has just been appointed architect for the re-building of St. Peter's Church, Streatham, Surrey.

Nettleham.—All Saints' Church, Nettleham, Lincolnshire, was reopened on the 21st ult., after restoration and enlargement. The chancel has been considerably lengthened, and tracery of Late Decorated design inserted in the windows. The work of restoration was entrusted to Messrs. Bodley, A.R.A., & Garner, of London. The restoration is mainly due to the energy of Mr. Hood, and the liberality of his family. The east window has four lights filled with figures of saints (St. Hugh, St. Mary, St. John, and King David), and the centre light with a Crucifixion. It was designed by Mr. Bodley, and is the gift of various members of the Hood family; and a small window (representing St. Francis), is by Mr. Kemp. A brass lectern, the gift of Mrs. Swan, sen., of Sausthorpe, was also designed by the architects. The cost of a complete restoration was estimated at 3,000*l.*; but of this, exclusive of the private gifts mentioned, and many lesser ones, only about half has, as yet, been subscribed and spent. The roofs of the chancel and nave have been coloured; the end of the north aisle has been thrown into the tower, a new organ-chamber and vestry added, and the whole fabric strongly and solidly repaired. Chairs have replaced the high pews that disfigured the nave.

Rotherby.—All Saints' Church, Rotherby, Leicestershire, has been re-opened, after restoration. The early origin of the church has been fully established, and its history confirmed, by the discoveries made during the restoration. In the west wall of the nave a semicircular arch of the Norman period has been laid bare. In the south wall of the south aisle a very ornate piscina, of the Early English period, with dog-tooth ornament in the hood-mould, has been cleared from plaster, and cleaned and carefully restored. The south doorway and all the southern and eastern windows carry the date through the thirteenth and fourteenth centuries, and the windows at the west end, and those of the tower and north wall of the nave, continue the history of the fifteenth and sixteenth centuries. The works of restoration include new, roofs to the chancel, nave, and south aisle following the traces of the original work wherever they presented themselves; a new east window, of which the proportions and designs were directed by the jambs and sill found in the work; careful restoration of the remaining windows; the insertion of new clearstory windows on the north side; and the substitution of new windows in the north wall and western gable for the two debased and dilapidated ones, which dated from the seventeenth century. A new south porch replaces the old half-timbered one, which was in a ruinous state. The inconvenience of using the tower for a vestry has been removed by the building of a new vestry on the north side of the chancel, which also forms an organ-chamber. Nothing remained of the old font but the massive cylindrical bowl of early date, but so cracked and damaged as to be beyond restoration. The new font, which is the gift of Mrs. P. P. Goodchild, is designed in the style of the original one. The oak carved lectern is also a gift from Mr. Thomas Brooks, of Barkby Hall. The pulpit, reading-desk, chancel seats, and the seats in the nave and aisle, are of oak, and chiefly made from the timbers of the old roof. The organ was built by Mr. Taylor, of Leicester. The work of restoration has been done throughout by Mr. Bickmore, of Bingham, Notts, under the supervision of Mr. Millican, architect, Leicester. The cost, including chancel and vestry, has been upwards of 1,000*l.*

STAINED GLASS.

Penrith.—A three-light Munich window has just been erected in Greystoke Church, near Penrith, in memory of the Rev. H. A. Askew, fifty-four years rector of the parish. The work is from the studios of Messrs. Mayer & Co.

Beverley.—A window illustrative of the Raising of the Widow's Son at Nain, has just been added to St. Mary's Church, Beverley, as a memorial to the late Rev. A. B. K. Campbell, son of the Bishop of Bangor, who was a curate there under the Hon. and Rev. E. Carr Glyn. The window was furnished by Messrs. Hardman.

Bradley (Yorkshire).—A stained-glass memorial of the late Rev. Abraham Smith, M.A., has just been erected in the Church of St. Thomas, Bradley, of which deceased (formerly principal of the Huddersfield Collegiate School) was the first officiating minister. The two-light window embodies four subjects, viz., Christ the good Shepherd, St. John the Evangelist, Christ's charge to Peter to feed his sheep, and Christ blessing little children, with appropriate texts. Around each light is a rich bordure, and over each subject an enriched canopy. In the central quatrefoil tracery light above is the emblematic Lamb bearing the banner of the Cross. The style is that of the fourteenth century. Messrs. Powell Bros., of Leeds, are the artists.

PROVINCIAL NEWS.

Brighton.—At the meeting of the Brighton Town Council on Wednesday last, a special report was submitted from the Works Committee, embodying a scheme for improving the western esplanade and sea front from opposite the Bedford Hotel to the western boundary of the borough. It is proposed to form a range of enclosures in front of the sea-wall, to be laid down with grass and planted with shrubs, two of the enclosures being 200 ft. long and one 300 ft. long. The earth will be sloped from the south to protect the plants from the sea-breezes, and the south sides will be protected by a sea-wall 5 ft. high. Long ranges of covered seats will be provided, and in the central enclosure there will be a raised platform for a band, with balconies. Lavatories are also arranged for. The cost of the work is estimated at 6,000*l.* The report was unanimously agreed to, and the Town Clerk was instructed to apply for sanction to borrow 6,000*l.* It was also stated that the committee intended to bring forward a plan for the improvement of the promenade between the Grand Hotel and the Aquarium. Another plan for the improvement of the Madeira-road, at the east end of the town, has already been mentioned.

Salford.—At a meeting of the Salford Town Council, held on Wednesday last, the following recommendation of the General Baths Committee was taken into consideration, and a resolution moved thereon:—"That the resolution of the committee, passed on the 29th ult., recommending the adoption of the site at the junction of Broad-street and Brindle Heath-road be rescinded, and that the Council be recommended (subject to the approval of the Local Government Board) to adopt the site at the corner of Broad-street and Frederick-street for the erection thereon of public baths for Pendleton, and to purchase for that purpose 1,500 square yards or thereabouts of land, at 9d. per yard." Alderman Bailey, in moving

the resolution, said the Frederick-street site had always been considered the best for the proposed baths, and it was only set aside because 1s. per yard was asked for it, while the other site was offered at 8d.; but the Frederick-street site had now been offered at 9d. per yard, and at that price it was not only the best but the cheapest site for the purpose. After the discussion had proceeded for some time the meeting was adjourned for a week.

Miscellanea.

Fatal Scaffold Accident at the New General Post Office.—Mr. W. J. Payne, the City Coroner, has held an inquiry at St. Bartholomew's Hospital into the circumstances under which Henry Buck, aged 36, of Parker-street, Story's-gate, Westminster, came to his death. Mr. Ashmore was present to represent her Majesty's Office of Works; and Mr. Thomson, solicitor, was for Messrs. J. Mowlem & Co., contractors. At the opening of the inquest Mr. Thomsen, for Messrs. Mowlem, expressed regret at the accident which had overtaken the deceased, and promised every facility in their power for the purpose of ascertaining the cause of the accident. E. Terry said he and the deceased were in the employ of Messrs. Mowlem, who were building an additional story to the Telegraph Department of the General Post Office, St. Martin's-le-Grand. They had erected a scaffold which extended from the rear of buildings across Bath-street, and from that scaffold they had raised, by means of a derrick, a baulk of timber 40 ft. long. They succeeded in getting it partly over the ridge of the roof of the permanent building, when the deceased, who was standing in the middle of the structure, went away to get an iron roller. Upon returning with an iron crowbar, he stepped from the roof on to the scaffold, on which one end of the baulk rested, when almost immediately, from a cause unexplained, the timber moved, swerved round, and pitched down a well-hole, carrying the deceased with it. His fall would be about 67 ft. The scaffolding was quite secure, and neither it nor the machinery broke. There were four men getting the timber into position, and that number was quite sufficient for the work. Wilson, one of the men at the crane, said no one touched the machinery to cause it to move the timber. Mr. John Jackson, foreman of works at the General Post Office, said the work was being done properly, and he could not account for the timber shifting. The jury, in the end, returned a verdict of "Accidental death," and expressed the hope that in future greater care would be exercised.

Fall of a Church Tower.—The *East Anglian Daily Times* states that on Friday evening the tower of the parish church at Freckenham, near Mildenhall, fell down with a tremendous crash. The tower was a square one, and contained five bells, which were rung as usual at Christmas-time. It had been for some time past in a dilapidated state, and was patched up occasionally. The rector, the Rev. W. S. Parrish, has for some time past been endeavouring to collect funds for the restoration of the tower, but without success. Fortunately the tower fell away from the church, or its fabric must have been considerably damaged. The wind was high at the time. No one was injured.

Tuesday last was the anniversary of the establishment of the Institution of Civil Engineers, it having been founded on the 2nd of January, 1818. According to official returns, there are now on the books 1,321 members, 1,585 associate members, 525 associates, twenty honorary members, and 759 students, together 4,210.

Proposed Art and Industrial Exhibition at Huddersfield.—The Council of the Huddersfield Technical School and Mechanics' Institute have decided to hold a Fine Art and Industrial Exhibition during the summer of 1883, in connexion with the opening of the new building in June next.

London Stock Exchange Additions.—Mr. A. D. Dawnay, A.M. Inst. C.E., has been entrusted with the execution of the whole of the extensive constructional ironwork, transepts, roofs, and dome, a description of which we may give on a future occasion. Mr. J. J. Cole is the architect, and Mr. Geo. Shaw is the contractor.

Another Country Mansion Burned Down.—A very serious fire occurred early on Saturday morning last at Woodbastwick Hall, Norfolk, the seat of Mr. Albemarle Cator. The fire broke out in the chimney of a small laundry on the second floor of the old hall, to which considerable additions had been made of late years, principally by the erection of wings. The fire rapidly extended along the roof, and soon attained alarming proportions. To add to the difficulties of the moment, it was necessary to remove four of Mr. Cator's children, who were confined to their beds by an attack of scarlet fever. These children were carefully wrapped up and were removed with as little loss of time as possible to a neighbouring farmhouse. There was a strong south-west wind blowing, and this fanned the flames, so that the efforts of the servants and villagers who had collected to extinguish the fire proved quite unavailing. The assistance of the Norwich Fire Brigade was obtained, after some delay, but by this time the hall was a mass of fire. After the firemen had been at work about a quarter of an hour the roof of the hall fell with a great crash, and the fire appeared to attack with increased fury some parts of the building which had hitherto partially escaped. The firemen only succeeded in saving a semi-detached billiard-room and the stables. The remainder of the mansion was reduced to a mere wreck. The damage is estimated at from 20,000*l.* to 25,000*l.*

Tramways for Gateshead. On the 28th ult., the first rail of the new tram-line in Gateshead was laid by the Mayor of Gateshead, who said that the trams had been a long time in getting a start, but he believed that, in the end, they would prove beneficial. Perhaps the delay had also been for the good of the people of Gateshead and neighbourhood, because of late there had been a greater development in the engines which were now being constructed by Messrs. Black & Hawthorn. They were manufactured upon a much later design, and were considered to be well adapted for the work required of them. The line is to run to the George the Fourth Inn, at Low Fell, to the Swan Inn, Heworth, and to the end of Askew-road, Teams Bridge, the terminus being the High Level Bridge. The first line will be constructed to the Low Fell, after which Felling and Askew road lines will be commenced. It is intended to work the lines by twelve steam engines, six of which are ordered. The engines used will be Wilkinson's Wigan patent, and they will be manufactured by Messrs. Black, Hawthorn, & Co., of Gateshead. The cars will be supplied by the Starbuck Company, Birkenhead. The total capital of the Gateshead Company was to be 80,000*l.* Messrs. W. & J. Dyson, Leeds, are the contractors for the work.

Proposed Central Railway Station at Lincoln.—Mr. S. Abbott, M. Inst. C.E., has submitted a plan for concentrating all the railways running to and through Lincoln at one central station, and says there is a possibility of doing away with the level crossings if the railway companies will unite. The proposed station is on the Holmes, not far from the Great Northern pumping-engine and locomotive shed. By this scheme all the lines are dealt with on the low-level. The scheme does not require any house property, except, perhaps, the "Derby Farm." The present Great Northern and Midland Goods Yards would remain as they now are; the Manchester, Sheffield, and Lincolnshire Company's Yard, between High-street and Durham Ox, could be reinstated on their ground east of Durham Ox crossing. By doing away with all stations, sidings, &c., between High-street and Durham Ox, the land would become available for building land, a good central cattle-market, close to all the railway stations, or new residential streets, thus, Mr. Abbott thinks, more than compensating the existing railway companies for the change. There are other schemes talked of, such as a high-level line.

City of London College.—In connexion with this useful educational institution, we note that a course of lectures and field-work in land surveying and levelling is to be given by Mr. Henry Adams, Assoc. M. Inst. C.E., commencing on Wednesday next, the 10th inst. The syllabus is a comprehensive one, and the fee is moderate in amount.

George Cohen & Co., the well-known iron and metal merchants, having admitted some additional members of the family to the firm, the business will henceforth be carried on under the title of George Cohen, Sons, & Co.

Cost of Improvements.—It seems that the area in Wood-street which was burned out was 370 ft. long by 80 ft. wide. That the thoroughfare is to be widened is a matter for satisfaction, for the roadway is inconvenient, and the footway positively dangerous; whether the widening is to be to the extent of 5 ft. or 10 ft. remains to be seen, though so far the former has been agreed upon. When it is stated that even that extent of widening will cost from 40,000*l.* to 50,000*l.*, it will be seen how costly an improvement of this kind is. In favour of the larger proposal, however, has to be set the fact that such an opportunity will not readily occur again, and it is sincerely to be hoped that it never will from the same cause. The same may be said of the Ludgate-hill widening, which Mr. Treloar actively and very properly interested himself in the other day. The estimate for the completion of that was given as 100,000*l.*,—a sum which one almost feels inclined to think was mentioned to create alarm. By the way, it is suggested that in rebuilding in Wood-street a courtyard should be formed in the centre of the warehouses, which would doubtless be of immense convenience to all the holders of property in the block, though the space to be taken out of the centre would represent a large amount of money.—*City Press.*

Serious Landslip at Liverpool.—A serious landslip occurred on the 26th ult., at the Central Station, Liverpool, the terminus of the Cheshire lines of the Midland and Great Northern Railway Companies. About seventy yards of heavy wall lining the side of the station abutting on Back Bold-street fell into the station, covering for a considerable distance the two lines of rails, and a narrow passage at the rear of the shops in Bold-street was rendered impassable. About three minutes before the accident took place, a train from Manchester passed over the line. It has been deemed advisable to close the Bijou Opera-house, which abuts on the place where the landslip occurred. The central station is situated in the rear of Bold-street, and has been excavated out of yellow sandstone, to the depth of about 30 ft., a wall being built up to the height of 10 ft. above the level of the adjoining thoroughfare, named Back Bold-street. It is stated that for over a week previously there had been subsidences of the latter street, and the wall presented the appearance of giving way at its foundation. The mishap is accounted for by the continued rains during the last few days, and to the bursting of drains and waterpipes, causing an accumulation of water behind the retaining wall.

Fatal Fall of a Chimney Cornice at Plymouth Gasworks. A lamentable accident took place early on Friday morning at the Plymouth Gasworks. The relief of stokers entered at five o'clock, and while the men were at work in the retort-house, about half-past six o'clock, the north-east cornice of the centre chimney fell. The brick masonry, weighing at least a ton, descended 60 ft., alighting on the iron roof, which is 30 ft. in height, and carried away a space equal to 20 ft. by 15 ft. An elderly stoker named Woodfin was caught beneath, and received such serious injuries that he died in three-quarters of an hour, without having recovered consciousness. Two other men, Kerswell and Stevens, were injured, the latter somewhat seriously. At the inquest the jury returned a verdict to the effect that the death was accidental, adding a rider expressing a hope that the directors of the Gas Company would early see to the reconstruction of the chimney.

"La Semaine des Constructeurs."—In the last number of the year of this well-conducted serial, after giving a brief sketch of the report made by the first holder of the Godwin-Bursary to the Institute of British Architects, Mr. Gale, says,—Is it not to be regretted that this practical side of things is not regarded amongst us as it is in England, and is it not time that we also should have a prize to be awarded for useful works where art and æsthetics do not play the most important parts?

The General Ironfoundry Company, Limited, having purchased all the patent rights appertaining to, and the plant required for, the manufacture of "Harris's" patent wrought-iron windows, are prepared from this date to execute with promptitude any orders with which they may be favoured.

Pandora Theatre, Leicester-square.—The whole of the gas engineering here has been placed in the hands of Messrs. Vaughan & Brown, of Kirby-street and Farringdon-road.

The Fatal Fall of a Railway Bridge at Bromley.—Colonel Yolland has reported to the Board of Trade the result of his inquiry into the circumstances which attended the falling of a portion of a bridge over the London, Chatham, and Dover Railway between Bromley and Bickley Stations, in November last, by which seven out of eight persons who had taken shelter in a hut standing under the southernmost arch of the bridge were suddenly killed. The Inspector reports:—

The failure of the Ivy Bridge was due to a subsidence of the north pier between the down main line and the gasworks siding. The base of the pier appeared to have passed through the footings on to soft yellow clay, and then commenced to slide northwards on some blue clay, so that the base of this pier had moved laterally to the north about 12 in., and had sunk vertically about 14 in. I think it probable that the subsidence of the north pier, after having stood for about twenty-four years without exhibiting any weakness of any kind, may have been facilitated by the removal of the earth under the north arch, and that the water during a somewhat wet season had passed down to the clay under that arch, softened it, and permitted the clay to be pushed upwards, and lifting up the rails of the gasworks siding to the extent of about 4 in., and allowing the north pier to settle down, and then slide towards the north. I attribute the fall of the south pier and south arch to the vibration caused by the running of the traffic on the up line, as it will have been seen that it fell without apparently giving any warning whatever to the parties who remained at the bridge, thirty-two minutes after the running of the traffic had commenced and within five minutes of the passing of the first down train at 6.47 a.m. It is greatly to be regretted that steps were not taken to enforce the orders of the Inspector of Permanent Way (Mr. Archer) that no persons should be permitted to go into the hut under the south arch. I consider that great credit is due to the ganger of platelayers, E. Pearce, in having so early as eleven o'clock on the morning of the 23rd of November discovered that something was wrong with the bridge, and enabled steps to be taken for the protection of the traffic along the line.

The Fire in Jamaica.—A Jamaica paper, describing the late destructive fire at Kingston, says: "At about 2·20 p.m. Mr. Feurtardo's yard and dwelling-house were in one large flame, which licked the roofs off the adjoining houses, and by 2·30 p.m. the Government Savings Bank had caught fire. While it was burning, the telegraph offices caught fire, and also the premises at the corner of Water-lane and Duke-street. The fire was uncontrollable at 3 p.m. By that time it had swept along Water-lane to King-street, and by 10 p.m. the whole of Lower Kingston was reduced to ashes. The whole of Port Royal-street is reduced to ashes. All the lumber wharfs, from Feurtardo's to the Ordnance Wharf, have been destroyed, with all the goods they contained. Nearly all the stores in Harbour-street are in ruins. From Duke-street to Mr. Nathan's store is level to the ground. All the booksellers' shops have been destroyed. The offices of the *Gleaner*, *Standard*, and *Budget* are destroyed. The Colonial Bank, the two Jewish Synagogues, Messrs. Ford Brothers' store, and hundreds of dwelling-houses and shops in Little Port Royal-street, Port Royal-street, Harbour-street, Water-lane, Tower-street, Barry-street, John's-lane, Church-street, Temple-lane, King-street, Luke-lane, Orange-street, Peter's-lane, Princess-street, Matthew's-lane, West-street, and Pechang-street have been levelled to the ground."

Engineering at University College.—Some of our readers may be glad to be reminded of the course of lectures to be commenced by Professor Kennedy on Tuesday next, January 9th, and which have been advertised in the *Builder* for some weeks past. The subject is "The Strength of Materials," and the special feature of the lectures will be that the lecturer will intersperse them with practical demonstrations on the testing-machines in his laboratory. There are so many men interested in construction who seldom get a chance of seeing materials actually tested to destruction that these demonstrations are likely to prove both interesting and useful. The first lecture is open to the public.

City of London Court.—The *City Press* states that the authorities are alive to the urgent necessity of reform at the City of London Court, and that a scheme has at last been matured for pulling down the whole of the existing block of buildings and erecting on the site a new court-house, suitable to the public requirements. The expense, it is said, will not be far short of 40,000*l*.

International Art Exhibition at Munich, 1883.—We have received the programme and regulations for this Exhibition, which is to be held in the Crystal Palace, Munich, from the 1st of July to the 15th of October next. The Exhibition is to be similar to those held in 1869 and 1879. Exhibits admissible are works of art of all countries, whether of painting, sculpture, architecture, drawings, or examples of the reproductive arts, and works of art-industry if they are entitled by artistic invention and execution to rank as real works of art. The admission of these last-named works is conditional on a personal invitation, issued in Germany by the central committee, in other States by the collective commissioners. The distribution of medals will be purely objective,—that is to say, it will be decided by the international jury exclusively on the artistic value of the exhibit. All considerations for distributing awards according to nations or to cities are excluded. In general one first-class medal is to be given upon every three or four second class, and one prize upon every forty or fifty works exhibited. The number of medals to be awarded to the several branches of art will be decided by the jury according to the artistic value and the number of exhibits of each branch. The hon. president of the central committee is Herr Carl von Piloty, director of the Royal Academy of Fine Arts. The time fixed for the delivery of intended exhibits is from the 1st to the 31st of May. We published in the *Builder*, for November the 18th last (p. 649), the address of the Artists' Society of Munich, inviting artists to participate in the exhibition.

District Surveyors.—A sheet almanack was published as a supplement to the last number of the *Metropolitan*. It contains, among other useful matter, a complete list of District Surveyors under the Metropolitan Building Acts.

Paris.—The whole of the English and American bar-fittings, cabinets, and beer-engines at the new Eden Theatre, Paris, were supplied and fixed by Messrs. Sanders & Sons, of Oxford-street.

TENDERS

For rebuilding Nos. 36, Wood-street, and 1, Love-lane, E.C. Mr. Thomas Chamberlain, architect. Mr. S. B. Wilson, surveyor:—

Holland & Hannen	£3,385 0 0
J. Morter	3,124 0 0
Hall, Beddall, & Co.	3,056 0 0
Rish, Prestage, & Co.	3,037 0 0
R. Conder	3,035 0 0
Ashby Bros.	3,023 0 0
W. Brass	2,957 0 0
Mark Patrick & Son	2,873 0 0

For the erection of a new bakery, Dawes-road, Fulham (first portion), for the Albion Bakery Company, Limited. Quantities by Mr. H. Lovegrove. Mr. George Edwards, architect:—

Martin, Wells, & Co.	£2,400 0 0
Lucas & Son	2,116 0 0
Scrivener & Co.	2,100 0 0
Chappell	2,043 0 0
Nightingale	1,954 0 0
Tarrant & Son	1,930 0 0
Stimpson & Co.	1,922 0 0
Green (accepted)	1,919 0 0

For alterations to No. 2, Bath-place, High-street, Kensington, for the Albion Bakery Company, Limited. Mr. George Edwards, architect:—

Dove & Cadman	£543 0 0
Hockley	543 0 0
Simpson & Co.	510 0 0
Canning & Mullins (accepted)	495 0 0

For re-instatement after fire at 2, Scarborough-street Tenter Ground, for Mr. S. Josephs. Mr. Lewis Solomons, architect:—

Whitlow & Son	£160 0 0
Langmead & Way	149 0 0
Martin & Goddard	137 0 0
Triggs	122 0 0

Accepted for enlarging for 250 children the Alexandra-street Board schools, at Goole. Mr. William Watson, architect, Wakefield:—

Excavating, Brick, Stone, Slating, and Plastering.

Jackson Bros.	£399 16 0

Carpentry and Joinery.

Robert Colan	272 5 0

Plumbing, Glazing, Ironwork, and Gasfitting.

Francis Johnson	90 0 0

Painting

M. Baron	14 0 0

Accepted for enlarging the Market Hall Buildings at Goole. Mr. Wm Watson, architect, Wakefield:—

Excavating, Brick, and Stonework.

Jackson Bros.	£798 10 0

Slating.

E. J. Rawlins	71 0 0

Plumbing, Glazing, Ironwork, and Gasfitting.

Charles Nelson	515 0 0

Painting.

M. Baron	35 0 0

For building new Kettlewell Convalescent Home Swanley, Kent. Mr. Edward I'Anson, architect. Quantities supplied:—

Lathey Bros.	£15,390 0 0
Holland & Hannen	14,270 0 0
McLachlan & Son	14,200 0 0
Adamson & Sons	13,971 0 0
Patman & Fotheringham	13,970 0 0
Ashby & Horner	13,869 0 0
Trollope & Sons	13,823 0 0
Rider & Sons	13,358 0 0
Jerrard	13,269 0 0
Funnett	12,988 0 0
Brass	12,966 0 0
Birtnell	12,958 0 0
Nightingale	12,880 0 0
Fish	12,792 0 0
Shaw	12,600 0 0
Naylar (Rochester)	11,983 0 0

For building St. Peter's Church, Limehouse. Mr. Ewan Christian, architect. Quantities supplied:—

		Pennant Stone.*	Plaster Ceilings.†
Brass	£5,798	£28	£137
Manley	5,610	15	45
Roberts	5,196	20	73
Shaw	5,162	30	60
Dove Bros.	4,975	20	85
Julian	4,920	38	67
Nightingale	4,833	16	70

* Add if Pennant stone is used for columns.
† Deduct for plaster ceilings in lieu of wood.

For rebuilding No. 54, Finsbury-pavement. Mr. E. T. Hall, architect. Quantities by Messrs. Evans & Deacon:—

Greenwood	£5,600 0 0
Dove Bros.	5,575 0 0
Adamson	5,395 0 0
Larke & Son	5,304 0 0
Julian	5,185 0 0
Brass	4,998 0 0
Lawrence	4,889 0 0
W. Oldrey	4,800 0 0
Woodward	4,500 0 0

For building Christ Church Vicarage. Mr. J. E. K. Cutts, architect. Quantities by Mr. J. E. Cutts:—

Tyerman	£2,188 0 0
J. Higgs	2,179 0 0
W. Oldrey	2,136 0 0
Julian & Co.	2,120 0 0
Adamson & Sons	2,115 0 0
Lathey Bros.	2,090 0 0
W. T. Hook	1,975 0 0

For the erection of eight houses and shops in High-street, Peckham, for Mr. Earle Bird. Mr. J. E. Saunders, architect:—

Pack Bros. (accepted)	£9,000 0 0

For the erection of seven houses and shops in High-street, Peckham, for Mr. Earle Bird. Messrs. Fowler & Hill, architects:—

Pack Bros. (accepted)	£6,950 0 0

For plasterers' work at the Rusbden Coffee Tavern, Higham Ferrers, Northamptonshire:—

Woodford, Northampton	£123 0 0
Miller, Northampton	114 0 0
Dix, Northampton	105 0 0
Jay, Market Harborough	98 0 0

For alterations and small addition at the Romford Union, for the Board of Guardians. Mr. G. Hamilton, architect:—

Dowsing, Romford	£105 0 0
Davey, Romford	98 0 0
Argent, Barking	97 0 0
Sibthorpe, Horncburch	94 0 0
Drake, Barking (accepted)	93 0 0

For alterations and repairs to No. 9, 10, 11, and 12, Harrington-gardens, South Kensington, for the National Freehold Land Society. Mr. W Lee, architect:—
W. Shurmur (accepted).

For new branch Banking Premises at King's-cross, for the London and County Banking Company, Limited. Messrs. Glover & Salter, architects:—

Williams & Son	£4,675 0 0
Perry & Co.	4,639 0 0
T. Boyce	4,600 0 0
Higgs & Hill	4,584 0 0
Patman & Fotheringham	4,573 0 0
W. Shurmur	4,536 0 0
Dove Bros.	4,475 0 0
J. Rider & Son	4,428 0 0

For alterations and additions to the Hammersmith Branch of the London and County Bank. Mr. E. Evans Crouk, architect:—

T. Chappell	£1,996 0 0
T. Boyce	1,964 0 0
Higgs & Hill	1,854 0 0
Adamson	1,750 0 0
J. Rider & Son	1,718 0 0
W. Shurmur (accepted)	1,638 0 0

For alterations to 59, Bishopsgate-street Without, for Messrs. Piggott Bros.:—

	Granite Front.	Portland Stone.
Stevens Bros.	£1,029	£852
Anley	1,016	891
Matterk Bros.	977	819
Johnson & Co.	974	894
Woodward	935	—
Thomerson & Son	830	700
Dunford & Langham	815	670
Harper	809	698
Richardson	789	752
Shurmur	783	644
Larke (accepted)	760	649

For extra story and new front to upper part:—

Larke (accepted)	£450 0 0

For fittings to No. 26, Lawrence-lane, for Messrs. Sugden & Co.:—

Brass	£237 0 0
Sage	236 5 0
Lascelles (accepted)	234 0 0

For the erection of the new school for infants, for the Carshalton School Board. Mr. Hayton, of Carshalton, architect. Quantities by Mr. Gough, of Whitehall:—

Hersell, Peckham	£1,876 0 0
Baikie & Smith, Lower Norwood	1,629 0 0
Pritchard, Southwark	1,590 0 0
J. R. Meley, Herne Hill	1,417 7 0
G. Burrage, North Carshalton	1,367 0 0
Henry Clark, Wallington	1,361 0 0
Rowe, Clapham	1,347 0 0
Beale, Westminster Bridge-road	1,329 0 0
R. & H. Pickersgill, West-st., Soho	1,315 0 0
Smith & Bulled, Croydon	1,298 0 0
Howe & White, Wallington	1,296 0 0
R. Al raham, North-street, Poplar	1,296 0 0
J. H. Jarvis, Surbiton, Surrey	1,293 0 0
J. & C. Bowyer, Upper Norwood	1,290 0 0
E. J. Burnand, Clifton-rd., Wallington	1,276 10 0
Arney, Sutton	1,275 0 0
W. H. Lorden & Son, Upper Tooting	1,266 0 0
H. Winter, Sutton-grove, North Carshalton	1,253 0 0
E. W. Whitlock, Lambert-road, Brixton-rise	1,230 0 0
Le Gassick & Co., Balham-hill	1,215 0 0
J. W. Hobbs, Streatham	1,199 0 0
G. Sharpe, Malmesbury-road, Bow	1,198 0 0
Holloway, Lavender-hill, Clapham	1,183 0 0
H. R. Wagner, Victoria-road, Battersea	1,186 0 0
T. Bochar, Camberwell	1,170 0 0
C. Colls, West Croydon	1,157 0 0
A. M. Deacon & Co., Lower Norwood	1,145 0 0
Morris, East Grinstead	1,143 0 0
F. R. Jennings, Croydon	1,139 0 0
H. Knight, Norbiton	1,134 15 0
Brown Bros., Carshalton	1,127 0 0
Scharien & Williams, Gloucester-terrace, South Kensington	1,120 0 0
T. W. Smith & Son, Isledon Works, Essex-road	1,118 0 0
F. Higgs, Station Works, Loughborough Junction	1,098 0 0
D. Stewart, Wellington	1,098 0 0
R. Wood, Warlingham	1,098 0 0
R. J. Humphries, Sutton	1,083 0 0
Cawson & Son, Camberwell	1,073 0 0
Dawson & Son, Beddington	1,055 0 0
J. B. Potter, Sutton	1,025 0 0
Priestly & Gurney, High-street, Camden-town	1,025 0 0
S. F. Evans, Carshalton	1,017 0 0
Ard, Sutton	996 0 0
Pearson, Croydon	986 0 0
E. C. Ackerman, Wimbledon	945 9 11

For the erection of ten almshouses, Park-road, Buskey, for the Reveley Trustees. Mr. W. H. Syme, architect, Watford, Herts.

Dove Bros.	£2,675 0 0
C. Monk	2,183 0 0
G. Kirby	2,109 0 0
W. J. Beale	2,092 0 0
D. C. Jones & Co.	2,085 0 0
J. Andrews & Sons	2,038 0 0
J. E. Sharman	2,024 0 0
F. Larter	2,020 0 0
Scales & Norris	2,017 0 0
T. Turner	1,951 0 0
J. P. Donne	1,950 0 0
Clifford & Gough	1,889 0 0
Willmott & Sons	1,877 0 0
E. George	1,859 0 0
Balaam Bros.	1,800 0 0
G. Foreman & Son (accepted conditionally)	1,795 0 0
W. Lissaman	1,725 0 0

For pulling down and rebuilding Nos. 14 and 16, Goodge street, for Mr. G. T. Cox. Messrs. A. H. Rowe & Peck, architects. Quantities supplied:

M. Gentry	£2,510 0 0
R. Perkins	2,413 0 0
M. Manley	2,331 0 0
S. Godden	2,195 0 0
Williams & Son	2,172 0 0
Rider & Son	2,118 0 0
C. Cox	2,059 0 0
McFarlane Bros.	2,000 0 0
H. Burman (accepted)	1,897 0 0

For the erection of new warehouses in Charlotte street, Shoreditch. Mr. Walter Stair, architect.

Staines & Son	£6,972 0 0
Newstead	6,864 0 0
Canning & Mullens	6,797 0 0
Falkner	6,647 0 0
Chessum	6,500 0 0

For Mission Church, Marshes-road, Newport, Mon. Mr. E. A. Lansdowne, architect:—

John Williams, Newport	£625 0 0
W. Richards, Newport	618 0 0
C. Miles, Newport	610 0 0
L. Moore, Newport	595 0 0
W. Blackburne, Newport	575 0 0
F. Williams, Newport	573 0 0
W. Jones & Son, Newport	567 0 0
J. Linton, Newport (accepted)	545 0 0

For Mission Room, Clive Vale, Hastings. Mr. W. Hay Murray, architect.

Pitch	£857 10 0
Eldridge	850 0 0
Horn & Garner	825 10 2
J. Stubberfield	780 0 0
J. & P. Phillips	763 0 0
C. Tanner	761 7 0
A. Vidler	746 0 0
Friend	660 5 10

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The Builder.

VOL. XLIV. No. 2084. SATURDAY, JANUARY 13, 1883.

ILLUSTRATIONS.

Rimini: Lateral Façade of San Francesco; Doorway of San Domenico de Pesaro; Interior of the Temple of Rimini; Tomb of Sigismund Malatesta, in the Temple 41, 44

Main Saloon of the Steam Yacht *Boadicea* 46

Proposed Public Buildings, Middlesbrough (Double-page Engraving).—Mr. G. G. Hoskins, Architect 48, 49

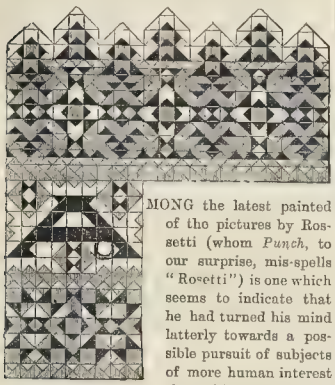
Illustrations to Article "On Vaulting" 51

New University Buildings, Lund, Sweden.—Helgo Zetterwall, Architect 53

CONTENTS.

Further Notes at Burlington House 33
On the Desire for, and Supposed Need of, a New Style of Architecture 34
The Progress of Hastings at Last Awakes 36
Portland Cement: its Manufacture and Uses 36
Cleveland Iron in 1882 38
School Planning: Notes at Finchley 38
Discovery of Egyptian Papyri 39
Obituary 40
Alterations at the Guildhall 40
Rimini 40
The Steam Yacht *Boadicea* 42
Public Buildings for Middlesbrough 42
New University Buildings, Lund, Sweden 42
Vaulting 52
Paint for Floors 56
Kensington Town-hall 56
The Ventilation of Dwelling-rooms 56
Construction of Floating Docks: Civil and Mechanical Engineers' Society 57
Peterborough Cathedral: Dangerous Condition of the Central Tower 58
The Case Belt v. Lawes: Bolting the Matter to the Brain 59
Stone-working Machine 59
Building Patent Record 59
The Fall of a Factory Chimney in Bradford 60
Provincial News 61
Offices of the Cheltenham Gas Company 61
Jupiter Pluvius 61
Overhead Wires 61
"Short Quotations": The Late F. Walker and Others 62
Metropolitan Building Act 62
Arbitration: Anwell v. The Everton Burial Board 62
Books: New Year's Art, 1883 (Sampson Low & Co.) 2
The Contractors for the New Law Courts 62
Miscellanea 62

*Further Notes at Burlington House.**



AMONG the latest painted of the pictures by Rossetti (whom *Punch*, to our surprise, mis-spells "Rosetti") is one which seems to indicate that he had turned his mind latterly towards a possible pursuit of subjects of more human interest than his Fiammettas and their full-lipped kindred,—that entitled "Found" (287), painted in 1882, in illustration of a ballad of Mr. W. B. Scott's. It is the finding of an unhappy stray sheep of a country girl, by her former lover, at the end of one of the London bridges. There is a great deal of pathos in the girl's face, and a fine aërial effect in the town and bridge which form the background; the figures are curious in drawing, the man very unsteady on his feet. The calf, which is cooped up in his hand-cart behind, is finished, with all its surroundings, with a minuteness and hardness which recall the early practice of the "P. R. B." The large work entitled "Dante's Dream" (318), is one of the most ugly and repellent works in colour, and in the attitudes and countenances of the figures, which one could well see; it impresses us as the result of a desire to produce something exceedingly tragic and pathetic, without the power to execute it adequately; it has the finest *motif* of any of the larger works, and yet upon most spectators who are not among the clique of the adorers its predominant impression will probably be a ludicrous one. This latter work we had not before seen; with a considerable proportion of the rest we had made acquaintance some time back, and, therefore, speak from second, not from first, impressions. That Rossetti had remarkable powers as a painter in a certain direction there can be no question, but both his imagination and his power of drawing seem in reality to have been very limited, and he made great demands on both, and very extravagant professions both in person and by deputy through the mouths of the *dilettanti* who are among his followers, and who have lavished upon his works an amount of extravagant adulation and what is best characterised as "gush," which it is positively nauseating to read. The result of the collective exhibition, we imagine, will be to reduce both the critics and the pictures to something more like their true value in general estimation.

Coming to the other pictures, we are conscious that at last there seem to be signs that the available resources on which to draw for annual exhibitions of "Old Masters" are beginning to fail. The two rooms not occupied by the Linnell and Rossetti pictures at Burlington House contain some fine and interesting works, but there is a larger proportion than there has ever been before of paintings of only moderate interest and merit. Some of the Reynolds portraits here are decidedly weak as specimens of his work; for instance, the "Miss Milles" and "Miss Wynyard" (162, 247). His five figures of "Virtues" are interesting, and the well-known "Faith," so often engraved, fully vindicates its repute when seen in its original form. It is instructive, in regard to the higher aims of artistic expression, to compare the really noble and intellectual type of face here with the Rossetti type in the other gallery. The other figures are somewhat weak; "Hope," with ecstatically uplifted hands, is the best, but the pose of the lower limbs is ill conveyed in the mass of drapery, of which the colour is probably much faded. Of the other Reynolds's, the most interesting are the portrait of himself, the second one (209), with spectacles,—a well-known portrait, belonging now to the Rev. W. H. Cooper; there is a more youthful portrait of himself, lent by the Earl of Normanton (207), which is not a favourable specimen of the painter, and has no very marked character. The "Boy Reading" (221), also belonging to the Earl of Normanton, is one of that small but very interesting class of paintings in which Reynolds set himself to paint a momentary aspect of girlish or boyish expression; it is momentary in this case really, for the boy is not reading, he is glancing up over the top of his book. This belongs to the same class of work as the "Laughing Boy" and the "Strawberry Girl," though not equal to the latter. The portrait of Miss Beauclerk, daughter of Topham and "Lady Di" (see Boswell), is a pretty specimen of a young girl's portrait, thrown out bright and shining against a rich dark landscape; it was a mistake of Sir Joshua to paint her as Una with the lion; Una must necessarily, by the legend, be an adult heroine, not a child. His portrait of "Lady Di" herself appears also (164), a beautiful stately woman looking far too dignified to have made a runaway match with wild Topham Beauclerk, which was what she actually did. A slight but charming portrait of Mrs. Abington (265) shows some of the best characteristics of a Reynolds portrait in regard to natural but piquant attitude and expression.

As with Reynolds, so with Gainsborough, we are beginning to find specimens which do not represent the artist to advantage. His portrait of the Right Hon. Wolfran Cornewall (219), a former Speaker of the House of Commons, is, however, a very fine specimen of a portrait painted in a much more grandiose and stately style than was usual with Gainsborough,—a style suitable, however, to what is essentially a State portrait. It represents the Speaker, an elderly gentleman of fine and dignified countenance, in his robes of office, and apparently looking at his watch in a fit of what may be called courtly impatience at the inordinate length of one of the speeches. It is a very highly-finished work, and an example of the versatility of Gainsborough's powers in portraiture. His half-length of "William Pitt" (205) is an interesting and carefully-painted work.

Among the other portraits, Titian's "Caterina Cornaro" (191) suggests the idea that it has been furbished up to a certain extent, and some of the Titianesque richness of surface cleaned away out of it, though this has not affected the delicacy of the flesh tints in the face. It is a dignified portrait of a beautiful woman, which grows upon one, though it is not a first-class Titian. The other most noticeable portraits in the large gallery are the "Lady and Child," by Cornelius de Vos (165); Tintoretto's "Venetian Admiral" (180), a picture with a good deal of the *bravura* element about it, but striking enough in its way; Vandyck's "Charles II. when a Boy" (171), and the same painter's "Strafford" (200), a full-length, the upper half of which seems nearly identical with the powerful half-length portrait at Warwick Castle, which, however, is more forcibly painted, and shows more marked character. The effect of the full-length here is somewhat weakened by the rather stiff and mannered posture of the figure.

In the small room Reynolds's interesting bust portrait of his sister (280) should be noticed, and also a more powerful work by Ferdinand Bol, "Portrait of a Girl" (261), belonging to the Marquis of Lothian. If we include among portraits the picture by Rembrandt (235) of a woman raising herself in bed to look round the edge of the curtain, this may be called one of the most striking and characteristic among the portraits exhibited; but it is an unpleasant picture. Imogen in bed may well have been as lovely a sight as Jachimo imagined her, but one does not care to look behind the bed-curtains of Rembrandt's neither clean nor comely female friends.

Among the few figure-pictures, not portraits, which are noticeable, are Vandyck's "Ecce Homo" (172) and one under the same title by Titian (182); the latter, if we mistake not, one of several repetitions of a type. The Titian is by far the more pathetic work, even painfully so; the half-length of Vandyck is a powerful figure study, of which the face, for motives of

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* See p. 2, *ante*.

expression, is thrown into a deep shadow which seems irreconcileable with the strong light on the torso; the effect is rather theatrical. A very interesting comparison between the natural and the conventional treatment of a church subject is afforded by the contiguity of the two Madonnas by Andrea del Sarto and Lanini (174, 175). The former has more of human interest and expression, but it is expression of a feeble kind; the Lanini painting, stiff and formal in comparison, is a work of more special interest both in regard to feeling and colour. This represents the Milanese school, and the two serve to show how separate and diverse were the aims of painting as carried on then in places which we should now consider as in such close local relation. It is difficult to believe that the Milanese work is by a painter twenty years later than Del Sarto; it rather looks fifty or a hundred years earlier. Raffaelle's small decorative panel (for such it really is), with figures of the Virgin and the Angel of the Annunciation in medallions, is very interesting. There is a fine "Pietà," by Perugino (188); Tintoretto's stagy picture of "Moses striking the Rock"; a fair example of Nicolas Poussin, "Mars, Venus, and Cupids" (194); two landscapes by Gaspar Poussin, showing more of his shortcomings than of his finer qualities; and a good Paolo Veronese. The smaller room contains one or two Jan Steens, which, though not in his finest style, are unusual and interesting, especially the "Village School" (249); there is a group of Teniers and his family, by Teniers, which lets us into a little bit of the every-day life of the painter; and there are several small specimens of Stothard, which evoke the feeling that the works of this painter so often raise in us, of surprise at the reputation which he once had. Compare these faded and feeble figures with the forcible painting of "still life," buckets and brass vessels, by Cuyp, in "Interior of a Dutch Cottage" (252). It is the painter that makes the interest of most pictures, after all, more than the subject.

The chief glory of the collection is more in the three Turners that hang in the long gallery than in any of the figure paintings. Here are three phases of Turner's art, each in perfection; "Fishermen on a Lee Shore" (214), "Ehrenbreitstein" (24), and "The Burning of the Houses of Parliament" (215). The first of these is dated 1802, the last is 1834; the Ehrenbreitstein is not dated, and may be about the same date as the Houses of Parliament, or even later. It looks earlier, but the peculiar subject of the other work, the conflagration reflected in the water, leads to a species of effect which more resembles Turner's latest style than the date would lead us to expect. It may even be that this circumstance in actual effect, which must have greatly impressed Turner, had some hand in giving him the taste for glowing effects of colour and reflection which, in his latest work, led him into some superb exaggerations. Nothing could shew more forcibly what a world of landscape-painting Turner included in himself than the contrast between the early work and either of those hung on each side of it. The three fascinate the spectator, and it is difficult to break away from the spell.

There are some other pretty bits of landscape by Vanderneer, Ruysdael, &c., but nothing worthy of special comment. The reflection suggested by the whole is, will these delightful exhibitions run out from exhaustion of loanable paintings, or is there a possibility of "beginning over again"? The public would be willing enough to accept the latter alternative, but we fear owners can hardly be expected to take the same view.

The Amsterdam Exhibition, 1883.—Owing to the large demands for space from Germany and other European States and various Asiatic countries coming in, the executive committee have been obliged to extend the building in several directions. The space originally allotted for the British section in the main building having been very early filled, the British commissioner has now obtained an increase of space, which will enable him to accommodate most of the tardy applicants who were shut out. The mechanical engineering and general industrial departments being well filled, attention is now being given to the applicants for space in the fine arts and horticultural sections. A jury of artists will be formed to pass works of art. Only those executed since January 1st, 1879, are admissible.

ON THE DESIRE FOR, AND SUPPOSED NEED OF, A NEW STYLE OF ARCHITECTURE.

A FEW considerations against the often-heard and even lately-expressed wish for a new style of architecture, our great desideratum according to more than one eminent man, which I have not seen urged before, as they may have a tendency to promote that contentment with our old styles which is essential to progress, are here offered.

The advocate for the invention of a new style should be asked, Is there any hope that a new style could be invented equal to or bearing any comparison with the old ones? Or, by what other entirely different or absolutely new elements St. Paul's Cathedral, the Louvre, or Grimani Palace would have been equal to what they are? Supposing our English Palladio, instead of studying ancient and modern architecture in Italy and devising masques and courtly pageants at home, had devoted the many years so spent to the invention of a new style, and employed it in his design for the Whitehall Palace; and supposing Wren, abjuring both that and the old styles, and, resolving to have his great work absolutely original, had depended on geometrical and abstract beauty of form in voids and solids with what moulding and panelling, pronouncing of joints, and decorating of courses he could devise, what would have been the result in each case? Nay, what would the mighty Buonarotti himself have made of St. Peter's had he followed either of those courses?

I do not believe a door or window opening could be so beautifully framed and fashioned by any other elements as by members of the columnar ordinance. I am not here speaking of window-tracery, in which the Gothic is pre-eminent.

Columns or pillars of some kind would be deemed essential to a new style; but would any other type of form be equal in beauty to the Græco-Roman? Some additions might possibly be made to it, as the bracket-capital, for instance, but it is as difficult to imagine columns with any pretensions to beauty, of a different type to the Doric, Ionic, and Corinthian respectively, as to imagine handsome men and women with other features than eyes, nose, and mouth, or with these in different relative positions.

But the great argument against the course in question is not the difficulty or impossibility of producing a new style equal to the old, but that no new style would be generally accepted. The greatest objection to a new style would be that it was new. I believe if a new style were invented, based on a deep study of nature and geometry, and perfectly beautiful, it would come still-born into the world. A building in such a style would be an architectural monster, with which we could have no sympathy. It could not come home to men's bosoms like one on which their eyes, and through them their whole souls, had long gazed. Its absolute originality would be a fatal defect. There is an instinctive feeling in the human breast hostile to the introduction of a new style. The same sentiment of veneration that disposes us to reverence ancient birth too often more than virtue itself; or, if I may quote in so serious a connexion the passionate exclamation of *Hardcastle* in "She Stoops to Conquer," to love everything that is old,—old friends, old times, old manners, old books, old wines,—the feeling that leads the dying to "cast one longing, lingering look behind,"—inclines us to prefer old styles of architecture to new. "The mind," says Sir Joshua Reynolds, "can bear with pleasure but a small portion of novelty at a time. The main part of a work must be in the mode to which we have been used . . . . where all is novelty the attention and exercise of the mind is too violent." And now we are so rapidly leaving other traditions of the past behind us through the material progress of the present age that there never was a greater need to cling to our ancient architectural ones.

"The past fills the urns of the future at the fountain of life," and the new in architecture must flow out of the old as it has ever done. Connexion with the past was never cut by any nation at any period of the world. There has been no stopping and no beginning again,—inventing a new style, and abandoning the old one for the sake of novelty. The styles have merely changed,—changed spontaneously by adaptation to new circumstances; as the Byzantine and other contemporary styles in various countries changed into the different Saracenic styles; in which case the new circumstances were the old styles falling into the hands of a new race holding a new religion, with the peculiar well-known prohibition to represent the human form.

Even the Greeks who, in such a matter, must be held above suspicion of error, did not invent an absolutely new style, but developed one out of the Egyptian and Assyrian; and the styles we are now using, whether Classic or Gothic, may be said to have a genealogical relation to the two oldest styles in the world,—to have, so to speak, Egyptian and Assyrian blood in them. They are so many links connecting our present practice with the whole history of architecture, and London and Paris of to-day with the buried and lost cities of antiquity, so that every genuine new edifice is related to every other in the world,—related as no poem, or picture, or statue, is related to its kind. Great books make foot-paths for the thought of nations but they are not so linked in a descending chain from age to age as great typical buildings,—examples of styles,—through which the last erected columnar door-case or portico may prove its descent from the temple of Karnack.

The introduction of the old styles into America and Australia has assimilated those new worlds to the old countries of Europe more perhaps than anything else.

There is immense advantage æsthetically in retaining the old styles. The Classic styles, for example, are so many lines of truth and beauty coming down to us from dark antiquity and becoming brighter and brighter, giving every new building the advantage of its predecessor by the accumulating wealth of the style from the minds of the practitioners in all ages. Architecture differs in this from all the other fine arts: a piece of sculpture or a picture may have no mind beaming from it but its author's; but a modern neo-classic building of merit is not only an exponent of the mind of its designer, but is also, through its component elements, an embodiment of Greek and Roman genius, and has more power or virtue than its author put into it. The most interesting creature of architecture is that in which the old style is fully adapted and appropriated to the situation and purpose. It has not only an æsthetic interest, but an historic; while it is instinct with the mind and heart of the designer, and adorns nature, it is breathing of other days. It has come legitimately into the world, and is a legitimate offspring of art.

A new style is, therefore, not called for by the eternal law of intellectual progress under which the world lies, and of which we hear so much. That law is best obeyed by carrying on the old styles and handing them down to our successors enriched and exalted; in doing which conservatism and liberalism are alike served.

It appears evident to me that no new style that would respond to our multitudinous wants could be so completely based on nature, and so beautiful at the same time, as the columnar system; for the column is the natural pillar of necessity moulded, adorned, and raised into an element of art. With the entablature, which includes the frieze, designed as a girdle or zone of illustrative sculpture, and the modern pilaster, an echo of the column, and the Italian baluster or miniature column, it composes a system the possible variations on which are all but infinite; and which may well be called, as it was by Goethe, a second or ideal nature.

The development and perfecting by the Greeks in the Grecian Doric, more especially of the Parthenon, by the generalised imitation and idealisation of nature, of a combination of forms constituting the columnar ordinance, of such beauty, elasticity, and adaptability, and such power to charm a building into architecture, acting on it like an incantation, that it has become, in whole or in part, the omnipresent and everlasting concomitant, the bones and muscles and nerves of civil architecture, was one of the most fortunate operations of genius, and important events in the history of art.

That it has been misused, and not always applied structurally,—wrought into the warp and woof of the building,—is its misfortune and not its fault. It reminds me strongly of the identity in the fundamental principles, pointed out by Dr. Buckland, of the construction of animals and plants, and the uniform adoption of analogous means to produce various ends, with so much only of departure from one common type of mechanism as was requisite to adapt each instrument to its own special function, and to

fit each species to its peculiar place and office in the scale of created beings.

It determined the main course and history of architecture through all ages and lands. The Parthenon in which it appeared in perfection is the Iliad of architecture.

No architect, I think, should need anything more systematised than the Græco-Roman architecture, a glance at which by a man of any imagination must be sufficient to show its capabilities and susceptibilities, and its proper application, without any other guide or help from the mode or manner of any particular period or place. He who should wish a more marked-out or definite road must be indebted to the great Italian architects, who, guided by the analogy of nature and their own powerful instincts, not only recalled the architecture of their forefathers out of the ruined baths, palaces, and temples as from chaos, and organised it into an inexhaustibly copious system (more copious in combining harmoniously the two principles of construction, the beam and arch, than either Greek or Gothic), but bent it to almost every purpose that modern European life and institutions could require, and showed different modes of using the ancient orders.

The elements of this style, taken by architects into different countries of Europe, as seed is carried by the winds we know not whither, producing varieties of the same plant according to the climate and soil, have in different countries given birth to different varieties of the style, and struck deep root here in England; and our Anglo-Italian has been already fully acclimatised and embodied by Inigo Jones, Wren, and their followers, in structures of various classes which stand like finger-posts pointing in every direction.

There is not only any amount of scope for genius within the limits of this style, but the style, beautiful in itself and prone to beauty, has the power of inspiring forms and images of beauty and sublimity. It suggests beautiful ideas, and expands and intensifies those of the architect. No poet ever had so beautiful a language in which to express his ideas as the architect of the present day. Some poets have had almost to create the language in which they wrote. Dante, for instance, had to purify, and polish, and fit for his "Divine Comedy," the popular dialects of his country, and all but create the after-language of Italy. But the condition of the architect is the very reverse of this. He has a rich language, the accumulated stock or fund of the art, that no individual Cadmus, however inspired, could have composed,—a language invented by Egyptian, Assyrian, Athenian, Ionian, and Roman, and reorganised into the most copious and elastic system ever framed, by a constellation of men who may each of them be said to have bestridden the world of art like a Colossus, and who touched nothing that they did not exalt.

No introduction of a new constructive principle, as the tensile, into architecture can supersede this style in favour of a new one. A new decorative style is necessary to that class of buildings, which are chiefly of iron, and in which the great leading constructive principle is the tensile, a search after which is laudable as a search after truth; but the introduction of the tie along with the arch and beam into stone buildings will not overthrow the laws of stone architecture, and generate the style of the future, as I have seen it somewhere asserted. It can only dictate the style of a class of buildings of which the railway-shed is a prime example, in which the tensile covering is fully displayed.

With such a system as this acclimatised Italian style, which has been ruralised and embodied in villas and mansions of every grade, and shown itself capable of application to cottages and the very humblest residences, and to brick construction as well as to stone, we need no new style nor any backsliding to a past period, however refined, for models. In view of its all-sufficiency I cannot imagine how any want could have been felt for the style that prevailed in the reign of Queen Anne,—a period which, however otherwise interesting for richness of literature and eloquence, was certainly not the Augustan age of art. When the painter is taught to eschew the imitation of ordinary nature as unfitted to raise the conceptions or warm the heart of the spectator, and to imitate a more perfect image of beauty fixed in his own mind, approaching to that central form of the species or class every deviation from which is deformity, is not the imitation by the architect of the imperfect works of man of a non-artistic and limited period a still greater mistake and degradation? Is the style of Queen Anne's day the central or ideal form of architecture?

This new practice has been called designing. I doubt not its leaders will find some scope in it for the exercise of their taste and skill; but it is not properly designing; and in the hands of the younger men it will be imitation of single buildings, or copying, resulting too often in caricature.

A building, it is true, might be consistently copied, though I never saw it suggested,—as a great sculptor would copy a human form with correction and idealisation,—for by so doing a man with a little artistic power could produce an original work of art greater than its prototype. But we do not hear of any operations of this sort in the Queen Anne school.

The fact of their narrowing themselves to a period exposes them to the suspicion that it is for imitation merely of the picturesque gables and dormer windows (which, by the way, are well-nigh obsolete features, come of the obsolete steep roof) of certain old buildings, ignoring the epochal character and true nature of architecture, which, like Nature herself, works from within outwards, and clothes the architect's preconception with material form of true expression and character, as far as within the power of architecture or sculpture; and which is as essential in architecture as expression of the character and passions of men in an historical picture. The movement in question appears to me to be a deviation from the true path of architectural progress, to save the labour of thinking and designing, and to evade the difficulties of art. Its authors resemble the two characters, Formalist and Hypocrisy, in the "Pilgrim's Progress," who, instead of ascending with Christian the Hill Difficulty, turn, for greater ease, each into a by-path on either hand, leading far away from the Celestial Gate.

It has no right to the name of a revival, or bringing to life, for it can have no artistic life in it. Totally unlike the Italian revival, which was a resurrection of the Roman in a new and more radiant form,—in its general character it will be architectural mimicry of the air and manner of another age, than which there is nothing more contrasting with the life-giving operations of true art. There is no object in nature so devoid of interest as the produce of such operations. It is neither new nor old. It has proceeded neither from head nor heart. It is dead,—

"Dead as old Chaos before motion's birth."

A preference of brick to stucco seems to be some way concerned in this movement. But the claims of brick depend in a great measure on its colour,—an important matter, especially in country or suburban houses, which should make harmonious contrast with the scenery around. Brick, as it has generally appeared among us, is a mean material, and not so fit to do the honours of architecture as could be wished. I allude to the London bricks of the clay-coloured hue, and to the generally harsh crude red brick. But bricks might be coloured to be worthy of any situation or purpose, and capable of adding grace to the finest natural scenery. I remember, in some of the older houses about Liverpool, bricks of a pale orange-red, which is the most beautiful of all colours, and the chief ingredient in the richness of autumnal scenes, and infinitely superior to the red stone hue, which can only be redeemed by the tonings of time, or, for the moment, by sunset glows, when it becomes a rich orange. Bricks of this colour, combined with warm grey stone dressings, are fit for any building. The light stone is valuable for contrast with the generally dark foliage of the landscape; mention of which reminds me that the designer of country residences, to become part of the scenery of nature, which is sometimes such as no landscape-painter has ever done justice to, has a difficult task. He will be best fitted for it who is conscious of those delicate relations which exist between the beauties of nature and his deepest emotions. But this is somewhat digressive.

If love of the picturesque had aught to do with the "Queen Anne" movement, let me say that picturesqueness is not a legitimate aim in architecture. A dwelling-house is to be made as beautiful in form and composition as due attention to its purpose and expression of its purpose will permit. If that leads to a picturesque outline, it is well,—and Gothic being more in sympathy with the arboraceous forms of nature, will be more picturesque than Classic. But picturesqueness is a quality not to be sought. It arises from fortuitous forms and colours, the result of sun, rain, wind, time, change, and accident, which are the creators of the picturesque both in nature and architecture. The effect of the latter agent,—accident,—is strikingly seen in the picturesque disposition of mountain chains and groups, which have been caused by repeated throes and convulsions of nature. Beauty, grace, grandeur, sublimity are the qualities to be aimed at in architectural design according to the class of subject; not picturesqueness, which, indeed, is not a term in architecture, but in painting.

The follower of the Queen Anne style is not in the way on which to acquire the reputation of being a man of genius, which, according to Sir Joshua Reynolds, is the highest ambition of every artist; nor to gratify the higher and truer ambition of enlarging the boundaries of his art and raising it to its highest dignity. He is moving, in fact, in the diametrically opposite course to that by which the Greeks achieved the Parthenon,—by which they became the arbiters of form and exponents of the ideal both in sculpture and architecture. That the productions of this new school are a great improvement on the monotonous stuccoed blocks of the preceding period I readily admit, and credit the school with the introduction of some pleasing and much-needed qualities into their works, especially with what was a great desideratum in streets and suburban rows,—individuality in the houses by which a man is not in danger of knocking at his neighbour's door or walking in to his neighbour's house instead of his own. They have got into a better way; but what I must maintain is that it is not the right way. It is a by-path, not the broad highway of architecture,—the way of truth and progress marked out and hallowed by the footprints of genius in all ages.

It is boasted that the Queen Anne style is likely to hold its own for some time to come, which is in reality an acknowledgment of its temporary character, for if it were true art it would hold its own, not for some time, but for all time to come. But men have a natural taste for truth, and only genuine architecture retains its place in their affectionate veneration.

They order this matter (of architecture, I mean) better in France, if I may judge by glimpses of Parisian doings I have now and then had. But I see no reason why we could not order it better in England. Certainly English architects could if they would, *i.e.*, if they were true to their own gifts and did themselves justice. It should, however, be borne in mind that every sane educated man will not make an architect, which a man cannot be in the true sense of the word without imagination and art feeling, nor a very great one without sound judgment and pure taste also; a combination of qualities which nature seems not very fond of making up. Architecture requires a broader intellect in its professors than some other of the fine arts. A man may go farther, for example, in painting, with the mere faculty for drawing than in architecture. Drawing alone will make some sort of lanscape-painter, but it will not make an architect worth the name, even when guided by insight into the principles of art. The poet is born, not made: the architect is born and made.

The fully endowed architect is one who to vigorous reasoning powers, well disciplined in the mathematics, adds a lively imagination, with a good measure of æsthetic feeling or sensitiveness, which together is the most glorious gift of Heaven. He has also a due measure of æsthetic culture, by which alone can be developed all his faculties and sympathies, and which Schiller deemed preliminary to moral culture; and a memory stored with all literary and scientific lore. He has that sublime ennobling desire for truth which marks the philosopher, and that perception of the beautiful and appropriate, and sympathy with the aspirations and hopes of humanity, which characterise the poet; qualities which insure the utmost amount of both truth and beauty in his work, which will have all the moral power, purifying and elevating, which it is possible to enshrine in stone. As it is his highest glory to so far imitate his Creator as to breathe the breath of artistic life into senseless matter, so it is his highest ambition to have spectators and witnesses of his achievements, fit though few, among his contemporaries and posterity.

The highest gift, says George Eliot, the hero leaves his race is to have been a hero; and I may say the highest gift an architect could leave his profession is to have been an architect in this high sense of the word,—to have shown the possibilities of his art, and the way to advance it, not by inventing new styles, but by illustrating, enriching, and expanding the old ones, by the creation of new designs; and shedding his own independent spirit to future ages.

This, however, is the high-water mark of the architectonic soul, which all architects cannot, and need not, reach; and I doubt not there are among the leaders of the profession in the metropolis and elsewhere men of sufficient natural endowment so to lead the way, at least, in which their juniors should go, that when they are old they will not depart from it. Let me say to all earnest students, young or old, in the words of Wordsworth on a still more important subject than the present one, but equally applicable to it,—

> "Access for you
> Is yet preserved to principles of truth,
> Which the imaginative will upholds
> In seats of wisdom, not to be approach'd
> By the inferior faculty that moulds,
> With her minute and speculative pains,
> Opinion ever changing."

Let them work in sincerity and truth, which will secure sufficient of unity of aim, uninfluenced by popular taste or fashion, and, however thin their ranks, their works will be like a little leaven in the mass of the national production, which, if it do not leaven the whole lump, may yet exert much influence upon it.

SAMUEL HUGGINS.

THE PROGRESS OF HASTINGS AND ST. LEONARD'S.

FEW places have increased more rapidly in the last ten years than Hastings and St. Leonard's, or, as we will say, for the sake of brevity, since these places are, in fact, one town,—Hastings. Nor, so far as we can see, is this progress yet slackening, for the town still continues to spread to the northward, and building operations are everywhere to be seen in progress. Of course, these marine "playgrounds" and convalescent homes of London, as Hastings and other watering-places on the south virtually are, grow correspondingly with the growth of the metropolis. Still there are not wanting signs that building is being overdone at Hastings, and just as the depression in trade, which yet continues, was largely caused by an over-supply of manufactured goods to various parts of the world, so there is likely to be depression among house-owners at Hastings, if it does not already exist. There is no question that even in favourite localities, such as Robertson-terrace and Eversfield-place, which are the spots to which invalids are chiefly sent, there are many more apartments vacant than was formerly the case, and except in the very height of the short summer holiday season the same characteristic is visible in a larger extent in other parts of the town. There seems, too, to be a consensus of opinion, as might be expected, among house-owners, that building has been overdone. Over-building in such a place as Hastings is distinctly a misfortune for everybody, for it necessarily causes new houses to be erected at the least possible cost, and watering-place houses are never too substantially built or too well planned or drained and ventilated. It further causes less money to be spent on the repair and improvement of older houses. In some places also we have been struck with the narrowness of the streets compared to the height of the houses. The result of this is to produce coldness and gloom, which are just the very things which are most disliked by those who leave the metropolis to seek change in a seaside town. Nor, again, can the town be congratulated, on the whole, on the character of the newer buildings. Many of them are small, and hardly any, except some of the large detached houses outside the town, have any architectural character. Some of these are very good specimens of domestic architecture, but it is sad to see such admirable opportunities as the slopes of the hills which run down to the sea at Hastings at present not better utilised. Thus, the western side of Church-road, on which are placed some of the older houses of the town semi-detached, with neat gardens in front, and with a certain amount of unpretentious rustic character about their gables and bow-windows, are far more effective than the monotonous rows of town houses which are springing and have sprung up in many places. It would be interesting, too, to know the percentage of houses in which the main principles of sanitary effectiveness are attended to; in which drains are properly ventilated, sinks disconnected, and waste-pipes cut off from connexion with the sewers. We fear there can be little doubt that the proportion of houses properly equipped in this respect would be lamentably small compared to those which are full of sanitary defects. Every house, and especially every house to which persons resort for the benefit of health, should, for example, have a ventilating shaft to the soil-pipes, but not 10 per cent. of the houses in Hastings possess this necessary piece of sanitary arrangement. We have said before, and we repeat, and shall continue to repeat, that in all watering-places the sanitary authority of the place should provide a sanitary inspector, who should annually inspect every lodging-house for a small fee. He should give a certificate of the house being in a good condition, and a list should be kept at the public offices of the certified lodging-houses, and duplicates might be supplied to one or two of the most frequented places in the town. The fact of the existence of such a list should be widely promulgated, and then any person who was about to take apartments would inquire of the house-owner if the lodgings were certified, or would look for himself. If they were not, a prudent man would have nothing more to say to them; if they were, he would engage them with the fullest sense of security, having taken such precautions as a reasonable man should. We cannot too strongly press upon the authorities of our watering-places the necessity of such periodical inspection and certificates as we have mentioned; for of all people in the world, lodging-house keepers are those who pay least attention to sanitary matters; and any town which takes the lead in this matter will do an inestimable service to the country.

In touching on the progress of Hastings, it would not be fair to omit mention of the swimming and other baths which have been constructed in the esplanade opposite White Rock-place. They have the great advantage of being at once quite handy, and yet out of the way, being constructed, as we have said, beneath the favourite walk of visitors to Hastings. Another material feature in the progress of Hastings is the hotels which are springing up. For a long time the Queen's and the Victoria had it pretty much their own way. Now not only is there the Alexandra, in Eversfield-place, but in Verulam-place, opposite the pier, the Grand Hotel, which will be the most striking hotel in Hastings, is on the point of being opened. The more accessible Hastings is made to London, the better will these hotels flourish; and, considering the size of the town, there should be plenty of room for this new venture.

But if most things have made rapid progress in Hastings, there is one thing that has not, and that is the St. Leonard's Station. It is disgraceful that a flourishing railway company, such as the South Eastern, should so long have been content with the dirty little sheds which form the station for St. Leonard's. It is often unjustly said that railway directors do not consult the convenience or comfort of the public, but when it can fairly be stated that such is the case, it cannot too strongly be insisted on. We say, then, that this station is small, inconvenient, and dirty, and is utterly unfitted for a place such as St. Leonard's. Moreover, any person who leaves the arrival-platform in a vehicle for the east side of St. Leonard's is obliged to go up the opposite hill, to descend it, and finally ascend the hill where his destination may be, simply because there is no exit on the east side, although a road passes close at hand. The detour may be compared to that which a person would make who wished to go to Westminster from Charing Cross, and was obliged first to go to Somerset House and then on to the Victoria Embankment, and so arrive at Westminster. It would be an equally roundabout route. One of the drawbacks to Hastings is also the badness of the train service between it and the metropolis, which is a distinct bar to visitors for a day or two; and we may quit the subject by saying that the third-class carriages on this line are fit only for pigs and cattle, certainly not for human beings.

The many natural attractions of Hastings, the bold Fairlight Head, the Castle still, as of old, protecting the ancient port; the charming country by which it is backed; the fine promenade, which can be used in all weathers, render it too useful and pleasant an offshoot of London for its defects not to be pointed out when they are apparent, and in the criticisms which we have made on its progress we trust there are truths which, if attended to, may enable it still to remain, as it has heretofore been, the most attractive watering-place near London.

PORTLAND CEMENT:

ITS MANUFACTURE AND USES.*

THE use of Portland cement in the construction of buildings and public works is extending so rapidly, and it is so superior to all other known cements, that I believe some short account of its manufacture and employment will be found interesting, and I therefore venture to lay before you the following remarks, which do not pretend to go beyond my own experience of the material, or to describe the manufacture as carried on abroad, but only to give a short description of the practice on the banks of the Thames and Medway, with some account of the difficulties met with, and of the ways in which the material may be employed. Most valuable papers have been read before the Institution of Civil Engineers by Messrs. Scott and Redgrave, Bernays and Grant, on this subject; and there are books by Messrs. Reid and Faija, treating of the same matter, and I fear that I can offer you nothing new which you cannot read about elsewhere, but may be able to put some points before you in a new light, and you may, I trust, learn something from my remarks, and more from the discussion to which I hope they will give rise.

Without any further preface or apology for asking you for your attention, I will proceed with my paper. Portland cement is a comparatively new material, having been accidentally discovered in 1824, and it was not until long after this time that its manufacture at all approached in uniformity or strength the cement of the present day. The name of Portland cement is taken from a real or supposed resemblance to Portland stone.

Materials.—The materials used in the manufacture of Portland cement are white or grey chalk, and mud, and the fuel employed is gas coke and coal. The process of manufacture may be divided as follows:—

Process.—1. Getting the chalk and clay.

2. Mixing the chalk and clay in certain proportions, and producing slurry, as it is called.

3. Drying the slurry.

4. Burning the slurry into clinkers.

5. Crushing the clinker.

6. Grinding the crushed clinker, and thus producing the finished cement.

The analysis of the materials is, in general terms, as follows:—

White chalk found on the banks of the Thames.—Water, 25 per cent.; silica, ·455; alumina, ·639; carbonate of lime, 73·755.

Grey chalk from the Medway.—Water, 25·00; silica, 4·09; alumina, 2·12; carbonate of lime, 66·44; oxide of iron, ·79; soda and alkalies, 1·96.

Mud from the Medway.—Water, 60·00; organic matter, 2·14; silica, 27·82; alumina, 4·96; oxide of iron, 3·60; carbonate of lime, 1·00; alkalies, ·76; the analyses are obtained from the works of Messrs. Faija and Reid.

Analysis of chalk and clay mixed.—The analysis of the mixture of chalk and clay used in the manufacture of Portland cement will then be somewhat as follows, varying according to the quality of the materials and the amount of water present in them, and the temperature of the atmosphere:—Water, 35·00; organic matter, ·61; silica, 8·35; alumina, 1·87; oxide of iron, 1·02; carbonate of lime, 52·97; alkalies, ·21. From the above analysis we find that taking the average of all weathers, 35 per cent. of water present in the chalk and clay has to be got rid of.

Wash-mill.—According to the old system of manufacture, the chalk and clay in certain proportions, namely about 2·5 of chalk to 1 of clay, and with the addition of about 300 per cent. of water, are filled into the wash-mill, the

* A paper read before the Civil and Mechanical Engineers' Society, Dec. 21, 1882, by Reginald E. Middleton, A.M.I.C.E.

most common form of construction of which is a circular brick tank, about 12 ft. diameter and 4 ft. deep, in the centre of which revolves a vertical shaft carrying four or more horizontal arms, from which depend cast-iron frames, carrying steel harrow tynes, which stir up the mixture until it is reduced to particles which will pass through a gauze sieve having 24 meshes to the lineal inch.

Settling Backs.—After passing through the sieves the slurry is pumped into channels which deliver it into large backs or reservoirs, the bottoms of which are formed by the natural ground or by chalk filling, and should preferably be pervious and easily drained; here the particles are allowed to settle by gravitation, and the supernatant water is drawn off by means of penstocks until the slurry is thick enough to be dug out. This process occupies from four to seven weeks, and the specific gravity of the particles not being the same, their tendency is to settle in layers, and this must be counteracted by constant stirring or luting. Heavy storms of rain seriously affect the time of consolidation, which is at best long. When the slip or slurry is sufficiently consolidated, it is dug out and wheeled on to the drying floors, where the remaining moisture is removed by heat. The time occupied by the process of settlement in backs being so long, and the result being uncertain, and the amount manipulated at one time being large, and, therefore, any error in its composition is a serious matter, it has been the object of cement-manufacturers to shorten the process of mixing and drying; and with this end in view Mr. Gorham patented a process in which the same wash-mill is used, but without the gauze strainers, and with the addition of water to the extent of only about 12 per cent., so that the resulting slurry is in a state of thick paste, or not containing much more water than when in the other process it is dug out of the settling backs. When mixed, the slurry is lifted by means of an elevator or otherwise to a pair of burr stones and there ground, after which it is dried as before. The logical sequence of this arrangement is that patented by Mr. V. de Michele, in which a similar wash-mill is used, and about the same amount of water is added to the materials to be mixed, but the grinding process is carried on simultaneously with the washing by means of two cast-iron plates about 9 in. broad, one of which is fixed to the edge of the trough of the wash-mill, and the other rotates with, and at the same speed as, the arms which carry the harrows. The slurry having been mixed in the mill, and passed between the grinding surfaces of the cast-iron plates, is collected in a sump, and passed, either by gravitation or pumping, or otherwise, on to the drying-floors.

Drying Floors.—The usual form of drying-floor is a coke oven, 8 ft. wide by 45 ft. long or thereabouts, covered where the greatest heat strikes with tiles of fireclay, 3 in. thick, and along the flues with cast-iron plates 1 in. thick. For economical working just sufficient slurry should be washed on to the floors to be dried in twenty-four hours or a little less, so that the slurry washed one morning may be quite ready for removal the next morning. The quantity of coal required to dry sufficient slurry to make one ton of cement is about 6 cwt., and each oven should produce from a charge of 8 cwt. of coal 3 cwt. of coke, which is used for burning in the kilns.

Chamber Kilns.—As the consumption of fuel is a large item in the cost of manufacturing cement, and as the repairs of these ovens, from the burning and buckling of plates, and from displacement caused by expansion, amount to a heavy charge, the attention of manufacturers has been directed to utilising the spent heat from the kilns for the purpose of drying the slurry, so that each kiln in burning may dry a charge of slurry for itself. To this end the kiln is arched over, and from the level of the top of the kiln a platform of concrete is carried, of the width of the kiln, and of sufficient length to dry the required quantity of slurry, this length depending on the system of drying employed. Mr. T. C. Johnson arches over this platform with a brick arch having about 6 ft. rise, and the slurry is pumped on to the concrete floor, and the spent heat from the kiln passing over it, on its way to the chimney, dries it, and when dry, and the kiln drawn and clear, it is shovelled, along with a certain proportion of coke, into the kiln. In order that they may work to the best advantage, the arches of these chambers should be made thick, or the tops and spandrels should be filled in with cinders or other nonconducting material. Mr. V. de Michele uses an arch with about 4 ft. rise, and dries the slurry not only on the concrete floor inside the chamber, but also on the top of the arch, which should in this case be made as thin as is compatible with safety. In this arrangement the cover of the chamber is flat, and made of concrete or fire-bricks in an iron frame, so that it is movable, and the slurry can be got at and removed when dry, the flues or chambers in this case being of small depth; or narrow flues are used with cast-iron plates, as in the coke oven. It is obvious that there is a considerable saving to be made in fuel by any of these arrngements, but, on the other hand, the first cost is much heavier, as the floors must be made on a level with the top of the kiln, and it is only in a very few situations where this advantage can be gained without considerable extra cost, and a very large chimney is required; the charge for pumping is heavier, both on account of the great length of the pipes, and the extra height to which the slurry must be forced, and, the slurry being very thick, the pipes are liable to be choked and stopped, especially in frosty weather; and the kilns do not burn off so quickly as is the case with the open-topped or bottle kiln, and thus there is a large outlay on all sides for a less production, though at a cheaper rate in working; also, whereas the ovens are always drying slurry, the chambers are only working about half their time, and so a certain amount of capital is lying idle. It is stated by the advocates of this system that the cost of manufacture is considerably reduced by its use, and under favourable conditions, that is to say, when the foundation is good, and especially when the chambers can be constructed on a bench of chalk or other firm basis at, or nearly at, the level of the tops of the kilns, I have no doubt that such is the case; but when the circumstances are unfavourable, it is, I believe, an open question which arrangement should be adopted. The kilns used with the drying-ovens are those known as bottle kilns, and vary in capacity from 13 to 30 tons each of finished cement. They are circular in plan, with square drawing eye about 3 ft. 6 in. across, and are loaded through openings in the sides and in the dome which covers the kiln. The dried slurry is put into the kiln along with a certain proportion of gas coke, about 8 cwt. to the ton of cement, and the whole is fired by means of a few faggots laid on the furnace-bars in the drawing eye. Small kilns of a capacity of 15 tons of finished cement may be got,—that is to say, loaded, burned, and drawn about once in from three to four days; but the larger kilns of 25 tons capacity and upwards, especially when worked in connexion with chambers, can seldom be got more frequently than once in from seven to eight days. From this it appears that the smaller kilns are more advantageous than the large kilns, as 30 tons can be got from the small kilns in the same or a shorter time than 25 tons from the large kilns; but, on the other hand, it must be remembered that, as the smaller kiln is loaded and burned off twice while the larger one is only burned off once, the lining of the former will suffer more than that of the latter, and it will sooner require repairs, though, again, the cost of re-lining is smaller in the case of the 15 ton kiln than in that of the kiln with a capacity of 25 tons; but, as kilns are very unequally burned, it is impossible to say what would be the comparative cost in each case. Chamber kilns are sometimes built oval, the major axis of the ellipse being in the line of the chambers, and the grate is in this case made with bricks, and not with iron bars, which is the usual practice; these kilns are generally made to hold about 30 tons of cement, and are said to clear themselves well,—that is to say, the clinker does not hang to the lining and tear it down when it falls,—and to give satisfaction, but I have no personal experience of their working.

Running Kilns.—Running kilns are such as are constantly kept burning, what is drawn from the eye being replaced by an equal amount of dried slurry and coke introduced at the top; they are built without domes, and the draught in them is consequently not so good as where domes are used, and the clinker is liable to be lightly burned; they are, however, useful for making up small differences in the daily quantity. They cannot be used as chamber-kilns.

Hoffman Kilns.—Hoffmann or gas-kilns, where there are many charges, one of which heats the next, and so on, have been tried in this country, but I believe without success, though they are said to give satisfaction in Germany. The clinker produced by them here is of inferior quality and irregularly burned.

Clinker.—The clinker, when burned, should be of a greenish-black colour; there will always be a certain proportion in every kiln which is pink or yellow, and therefore under-burned, and this should be loaded into the next kiln and burned again. If there is much dust, the clinker is over-clayed, and the resulting cement will be weak. Under-burned clinker slacks and heats when wetted, but this is not the case with well-burned clinker.

Weighing.—When the clinker is drawn it is wheeled on to a weighing-machine and weighed; it is then thrown into one of Blake's, or some similar stone-crusher, and reduced to about 2-in. cubes. I believe it would be advantageous to break the clinker much smaller than is generally done, if any machine could be found to do this satisfactorily and at a moderate cost; but, so far as I know, no such machine exists, though I hope shortly to hear of one which will do this work.

Clinker Elevator.—After being broken in the crusher, the clinker is carried by an elevator to the hopper of the mill-stones. Formerly these elevators were made with link-chains and cast-iron buckets with steel lips, but both buckets and chains wore badly on account of the dust, and now indiarubber belting is used with light wrought-iron buckets, running at a speed of about 90 ft. a minute.

Mill Stones.—The stones used for grinding the cement are French burr stones, and are generally 4 ft. 6 in. in diameter, and are driven at a speed of from 120 to 130 revolutions per minute. The quantity of cement turned out by a newly-dressed pair of stones should be from fifteen to seventeen tons in ten hours.

Fine Grinding.—Fine grinding being the order of the day, it is much to be desired that some substitute for the French burr-stones should be found for re-grinding the portion of the cement which will not pass through the sieve, but though rollers running at different speeds, steel or chilled cast iron in place of the stones, and cast-iron balls rotating freely at high speed in a mortar, have been tried, none have as yet been able to compete with the ordinary mill-stones.

Sieving.—Some manufacturers sieve the cement and return the coarser particles which will not pass through the sieve to the mill-stones, by an elevator and endless band, or some such arrangement, while others trust to their millers to grind the cement within certain limits.

Storing.—After the cement is ground it is passed into the store by means of barrows, endless bands, or archimedian screws, and it remains there until it is wanted, when it is filled into sacks or casks according as it is required for home or foreign consumption, and it is then ready for transit.

On paper, the process of manufacturing cement seems wonderfully easy and simple; but this appearance is illusory, and no one who has not had experience in the manufacture of Portland cement can know the constant watching necessary, and the anxiety and trouble which it entails. The materials are accurately weighed, the weighing-machine itself and the weight of the barrows is tested almost daily; surely, then, the result should be equally accurate. An analysis of several samples of chalk and clay will show that the materials themselves vary largely in their composition, and that at different times they contain very different amounts of water; and it will be easily understood that the weighing of the raw materials does little more than certify that a certain amount of chalk and clay has gone into the wash-mill; and in order to make good cement it is necessary, not only to watch the quality of the chalk and clay most carefully, and so alter their proportions as circumstances require, but also to take several samples of the contents of the wash-mill during each day, mix them together, and from this mixture take a sample at random, dry it, and test it for carbonate of lime, so that the average amount of carbonate of lime contained in each day's washing for each wash-mill may be known on the following day. This test is by no means a certain one, nor does it insure good cement, but it is a guide by which to work; and if the temperature of the atmosphere be taken into consideration, and the burning of the clinker is carefully carried out, it is a considerable help

towards the manufacture of good cement. After the cement is ground a sample from each day's grinding, taken by throwing a handful from the spout of the mill-stones into a box, say every quarter of an hour, is collected, and from this sample three or more small pats, about 3 in. square by 1½ in. thick, are mixed with water, and laid on pieces of glass or slate, and so soon as they are set, say in one hour's time, they are immersed in water, and remain there three days. They are examined daily, and if they show signs of cracking this is an indication that the cement is over-limed, and the washing must be altered accordingly. These pats also show the strength and tenacity of the cement approximately by the manner in which they come off the slates or glass. If it is good, strong cement, it will leave the plate with great difficulty, and if it is weak or over-limed it will leave the plate easily, and will, in the latter case, very probably free itself.

Weight Test.—After every day's grinding, a sample of the cement in the store, from that grinding, is measured in a bushel measure, and weighed, to test the burning. The usual requirement is that the cement shall weigh 112 lb. per striked bushel. This test is in some ways rather illusory, as the more finely-ground cement will weigh less per bushel than that which is coarsely ground, and it is, therefore, necessary to burn harder to obtain the same result if the cement is to be finely ground than is requisite when fine grinding is not required. When the cement has been stored some time, and has cooled, it will have expanded to the extent of about 5 per cent.; therefore, the cement which weighed 112 lb. per striked bushel when it was ground, will evidently weigh only 106·4 lb. per bushel; and to obtain cement which will pass the 112-lb. test, it is necessary that it should weigh, when ground, at least 118 lb. per striked bushel. The manner of filling the bushel measure also considerably affects the result, and as there is no standard angle of inclination for delivering, nor height from which the cement should fall, the results obtained by different manufacturers are not the same; and besides all this, the test is illusory, because the weight may be produced by a large amount of lime, by hard burning, or by both combined.*

CLEVELAND IRON IN 1882.

AT the close of a year that seems marked by a partial collapse of the American iron trade, it is interesting to ask what is the condition of the greatest of our iron-making districts, and how events have in it tended to the improvement of the trade during the year. Just about two years ago the revival in the iron trade was at its highest, and it sprang on that occasion from the sudden demand for iron and steel from the United States. Last year the demand had fallen off, and the producers of crude iron entered into a combination to lessen the production of the native iron of Cleveland, which will in due course soon expire. The trade, therefore, has been done this year under the changed condition of the course of events under that combination, which has fostered the production of iron from imported ores, and has materially lessened the production of iron from the ironstone of Cleveland. As a total, the production of iron during the year 1882 is not very much changed from that of its predecessor, but it is more largely made up of hematite and other iron for use in the steel manufacture. Putting an estimate into figures, the total production of crude iron in the Cleveland and Durham district in the year 1882 will be about 2,500,000 tons, or substantially the same as that of last year. But its proportions will be altered in favour of that from imported ores, because of that change of furnace-use that has just been referred to. This iron, so far as the stock returns show, has been all sold, and the stocks that had accumulated in the hands of the makers have been very largely reduced reduced to the extent of probably 100,000 tons. It is true that these stocks do not show the change in the holdings of the iron smelted from imported ores, but so far as the native iron is concerned they prove that there has been a very great reduction during the year, and over nearly every month of it. The price of the crude iron has been stationary in some degree; that is to say, in the early part of the year the tendency was towards a slight increase of the price, and in the latter towards a reduction, so that the movement, on the whole, has not been so great as in most recent years, and it has been of a favourable kind. Under the sliding scales that have become so common in the Cleveland district, the position of the workmen has been materially improved during the year, there having been successive increases of wages both of miners and of others concerned.

There is a somewhat similar current of events in the manufactured iron trade. In it production has been very materially increased, and prices have risen surely and more rapidly than in the crude iron branch, whilst there has been no declension in the prices up to the latest date of which we have the records. The output of some of the different kinds of manufactured iron is the highest that has ever been known in the North of England. That briskness has caused the production during the year of probably 600,000 tons of manufactured iron by the associated makers, mainly in the form of plates and of angles, which have been in request for the ship-building yards of the north. It will probably be found, when the official figures are attainable, that the production of iron and steel vessels has been the largest that has been known in any one year. To that production the north-eastern district has mainly contributed the iron, its steel output suitable for ship-building being still very small; and it is to that cause mainly that the briskness in the finished iron trade is due, whilst that briskness has been carried back to the crude iron industry and to that of iron mining, whilst it has had a reflex action on the production of coal and of allied northern industries. In the manufactured iron trade there was one labour disturbance during the year; the sliding-scale that had been in vogue was suspended, and an after arbitration was rebelled against by the men. But though, after a few months, the increase of wages that had been given was withdrawn as the result of the second arbitration of Sir Joseph Pease, yet the ironworkers retain the whole of the advance which was given when the sliding-scale was abrogated. There are, it is understood, now general dispositions to renew the sliding-scale system, and though it must be confessed that the action of the men weakened the hold that arbitration has had on the district, yet it may be said that, on the whole, that principle of settlement of trade disputes has been more in favour, though its sphere has only been extended to limestone quarrymen, who supply the blast-furnaces of Cleveland.

In addition to the large use of iron in the North for the production of shipbuilding material, one of the most noticeable features of the year has been the increase of the shipments of crude iron to other iron manufacturing districts. For the year, it may be estimated that over a million tons of crude iron have been shipped from the ports of the Tees and of Durham. This vast shipment has not been upheld so much as in past years by the demand from the United States of America, but despite the falling off in that direction, there has been a sensible increase in the total, and this because of a general, though not a universal, enlargement of the requirements of customers over a very wide area. It is singular that Cleveland is so largely a producer of iron for other districts and countries to use; it is singular that she does not attempt to use more of her own productions; but whilst that is the case, it must be a matter of consequence to her to obtain plenty of customers for her crude iron. These customers have come in the year, and the result is that prices have been maintained, and that there is a reduction of stocks with a large concurrent production.

* To be continued.

The Croydon Technical Carpentry Classes.—The members of these classes,—between twenty and thirty in number, for the most part apprentices and their friends,—spent an enjoyable evening at the Sunflower Coffee Palace on the 6th inst. Mr. Staynes, the teacher of the classes, showed and explained some interesting experiments with the microphone and telephone. The microphone and a watch being placed on the piano upstairs, whilst some one played it, the ticking of the watch and the tones of the piano were plainly distinguished at the same time by those in the class-room two stories below. Mr. Staynes also performed some experiments with the arc and incandescent electric lights produced by a bichromate battery of sixteen cells with very fair success; and at intervals readings were given.

SCHOOL PLANNING.

NOTES AT FINCHLEY.

THE competition for Board schools at Finchley may serve as a text in calling attention to one stream of tendency as to primary schools; not a very strong stream at present in England, but very likely, unless something unforeseen occurs, to become stronger as time goes on. The awards in the competition will probably be known by the time that our present number appears. The competitors were specially invited,—being, however, one must say, unnecessarily numerous for a work of this size, involving a probable cost of only 15,000*l.*; for this, however, the Board is very likely not wholly to blame. Several of the designs submitted are well above the average, and few below it; the problem has been actively and intelligently worked at, and capable solutions of different kinds are put forward. The site is about an acre, with two frontages, each about 140 ft. The form and restricted area of the site, and some other special conditions, have hampered the designers,—some more than others,—in dealing with the graded school, in the distinctive features of which we are, for the moment, specially interested. The result of the competition may fairly depend on the balancing of all sorts of merits and defects in the different designs, as in most human efforts and judgments not dealing with abstract propositions. Only one-half of the accommodation is required at the present time, which is an awkward thing to provide for, as the first half of the building must have a certain comeliness, and may happen to be the whole for a goodly number of years. The whole accommodation ultimately required is a graded school for 840 boys and girls, and schools for 600 infants. The schools are thus of a kind which only good-sized towns can, as we now look at things, erect or use; at present, no one can fancy that it will, at any time, be held desirable to supersede smaller schools, and to sweep into a single building the whole juvenile population, male and female, of a small borough which happens to have its streets and dwellings packed pretty tightly. The infants' schools present little novelty, being simply a junior school for 300 infants, with a schoolroom for 150, and class-rooms for 150, and a similar school for senior infants. The graded school is to have a central hall and, communicating with it, fourteen class-rooms, each for 60 children, half of them for boys and half for girls; the partitions dividing the class-rooms from the central hall to be movable, with the view of giving the children in the class-rooms, "as far as practicable," the opportunity of seeing and hearing what is going on in the central hall. It is suggested that as no desks are required in the hall, but only sitting accommodation, 3 square feet per child would give sufficient area in the hall itself. The idea of the Board seems to be that the central hall should receive that name, because it must have a name and for the sake of politeness, but that it is merely a necessary something, as small as possible itself, without which the class-rooms could not be used together, or easily looked after by the head master; the whole being a cheap form, specially adapted for a primary school, of the modern middle-class school of a good type, which must have a large hall of assembly, and numerous thoroughly-separated class-rooms.

The idea is, of course, not a new one. Mr. E. R. Robson designed a school for New North-street, Shoreditch, which he illustrates in his book,—describing it as an endeavour to carry further the science of school planning, by uniting or fusing together the best points of the class-subdivision system, and those more exclusively English; providing means for throwing hall and class-rooms together into one great space, where great assemblies of children,—the children of several neighbouring schools being collected,—might at times take place for special purposes. The erection of the large building was abandoned in favour of a more modest scheme, and since then the London School Board has worked a good deal towards separate class-rooms, 29 ft. 4 in. by 22 ft. each, containing sixty children; the large school-rooms being divided into portions of that size also by sliding glazed partitions. In the New North-street scheme, which was considered at the time a bold experiment, only the two school-rooms for boys and two class-rooms,—accommodating 260 children in all,—would have been thrown into the hall, which was to be 57 ft. by 35 ft., that is, containing an area of about 2,000 superficial feet. The Sheffield School Board

held bolder views when they arranged for the competition of architects for a mixed school of combined class-rooms, in which Mr. C. J. Innocent won honour;—his three plans were illustrated in the *Builder* of February 14, 1882. His design "Dux A," which has evidently inspired some of the competitors at Finchley, had very great merits. Accommodation was provided for 740 boys and girls in eleven class-rooms for sixty and one class-room for eighty children,—the central hall having an area of 3,600 superficial feet, or 5 square feet per child. The length of the inclosure behind the teacher's desk was 85 ft., and that line bisected a figure of fourteen,—not all equal,—sides. It is needless, however, to accumulate instances. The Finchley Board contemplates a bigger school than that at Sheffield. Perhaps, after examining the Finchley designs, a critic might hint that the twelve class-rooms at Sheffield were quite as many as any one need wish for. It should be remembered that, in both cases, the central hall and class-rooms are all on one floor,—Mr. Robson had contemplated putting his schools one above the other, and only connecting one school with his hall.

Hazy, undecided instructions, are answerable for a good deal of the indecision shown by the competitors, as to the proper size and shape for the hall, and as to the proper number, out of the whole number of class-rooms, to be furnished with partitions "movable at a few moments' notice," and put in such a relation to the central hall that the removal of the partitions will give the children the opportunity of seeing and hearing what is going on in the central hall. "As far as practicable," (the words in the supplementary conditions) may mean so much or so little: it is properly a task for an educationalist, and not for an architect, to decide the questions which arise when the architect begins to feel the real nature of the problem; that is when the difficulties and the divergent courses come trooping into his view. Is the efficient grouping to be the first consideration? or is the serviceableness in every way of every class-rooms of prime importance, and the grouping of secondary importance as far as half the class-rooms are concerned? or four of them? or some other number? however important their fusion, "as far as practicable," may be in the case of the remaining seven,—or ten? Is, in fact, as much facility for joining together the rooms to be secured as can be managed pretty effectively, when everything else has been managed? May, for instance, children be moved into the hall from class-rooms in which they would be awkwardly placed for a lecture, however conveniently they might be within reach for the occasional inspection of the head teacher? If moving of the children in this way is not a serious drawback, may other shiftings take place,—may the children's seats be moved when required? The seats in the class-rooms on one side of a rectangular hall being arranged so that the light from the outer walls may come to them on the left, and the seats in the class-rooms on the other side of the hall being also arranged so that the light may be from the left,—the children, when seated, will necessarily look towards opposite ends of the hall. Therefore, with such an arrangement one set of seats must be moved at times so as to suit the position of the platform. If the seats in the class-rooms are placed parallel to the axis of such a hall, they will have their main lighting behind the children, and in no case will more than a few of the class-rooms be lighted from the left, unless from dormers or skylights.

The more effectively class-rooms can be incorporated with the hall the less need there will be for it to be spacious,—at least for ordinary working-day uses, in respect of which it primarily exists; and yet it will be bigger to a certainty, almost in proportion to the number incorporated. No 3 ft., nor even 5 ft., per child, will make a hall large enough, if every child in every class-room is to stand a good chance of seeing the platform well. Several of the architects have not attempted to provide for joining all the class-rooms to the hall. The following indication of the types of design will show why and how this occurs; and the queries we have put above will show that we think they should not have been in doubt whether they were going against their instructions when they did it.

1. *Class-rooms all round a rectangle.*—Five class-rooms on each side and two at each end ("*Prêt d'accomplir*") results in canted-off corners to the eight class-rooms which come at the angles. Four at each side, four at one end, and two at the other ("Three R's"); nine class-rooms are incorporated with the hall in an able way, and the head teacher has little difficulty in reaching the others. The hall, 105 ft. by 42 ft., equal to 5·3 ft. per scholar, runs away with a good deal of space and money. Four at each end and three at each side gives the power of using eight with the hall ("Lux"). A design with six on each side and one at each end has consequently a most prodigious hall, 168 ft. long. It is true it is only 24 ft. wide, and that it strictly conforms to the most exacting reading of the letter of the instructions, but the most careful framer of instructions can never imagine that his mere wording will have a sacredness which will debar students from an intelligent construction of their real significance.

2. *Class-rooms grouped round a space, rectangular at one end and finished at the other with a many-sided apse.*—This is the Sheffield plan before spoken of, *mutatis mutandis*. Five on each side and four in the apse ("A in a circle") makes a very large hall, 120 ft. by 54 ft. So large a building is expensive, very awkward to use with comfort to voice and ear, and supervision is not so easy as it might be. In the Sheffield plan no class-room has its door more than 40 ft. from the teacher's platform. "Advance" has six in the apse and a shorter hall. Some designs with class-rooms only at the end furthest from the teacher's platform, but without the apsidal arrangement, give more shapely class-rooms. "Plan" is a good specimen, the hall only 83 ft. long, and the erection of the structure in two parts rather easy to manage, not that in this, as in so many others, anything but a "temporary building" would be the result.

3. *Class-rooms round a polygon.*—"Experience, 1882," stands practically alone in grouping his class-rooms round a polygon of fourteen sides. This very logical piece of work commends itself as a vigorous attempt to grapple with the problem at first hand. The hall is 66 ft. across, and its area only (as the author states) 3,473 superficial feet. There are eight class-rooms treated as pairs, for 120 when the two are joined, and six single ones round about the platform. If the polygon had been a little larger, and of fifteen sides, the passage to the laboratory might have been dispensed with. Two entrances and two cloak-rooms for each sex, which are provided in several designs, would be desirable in so large a school. This is a plan which might be carried out all at once; the first half would necessarily be that containing the entrances and cloak-room, and most of the motive of the design would be missed when that half stood by itself.

Most teachers, who have been used to class-rooms well walled round, seem to think meanly of all movable wooden partitions. Still, attempts of this kind will probably be in favour, on several grounds. Mixed schools for the older children have perhaps been unduly depreciated of late years; in America and among Wesleyans, and managers of British Schools, they have stanch advocates. The large Hope-street School of the Birmingham School Board is pronounced a decided success as a teaching establishment. This is a class-room school, with a large central hall, and the entire school is under the superintendence of a head-master, three masters teaching the older boys, and assistant mistresses all the other classes. "There is great difficulty in obtaining a sufficient number of experienced head-mistresses,—the great majority of female teachers get married before twenty-five years of age, and, therefore, before they have had time to acquire mature experience. The girls, as well as the boys, are under the superintendence of the head-master, who undertakes the work of teaching as his profession for life, and whose services are, therefore, valuable after he has had the experience which is so much needed in dealing with large numbers."

The system of separate thoroughly divided class-rooms, and nothing else, meets with unsparing criticism at times. Some look askance at the cost of providing the requisite teaching power; others lament inefficiency if extremely ample teaching power is not provided; others regret the want of unity in such schools. Mr. S. N. Stokes, in his general report as to Southwark, for 1881, regrets that a Board school is in truth a group of small schools lying contiguous to one another. "The link between these contiguous schools is supposed to be the head-teacher, but numerical difficulties in the teaching staff often render his influence all but nugatory. A qualified adult teacher should be appointed for every separate school-room, large or small, and a skilful head-teacher employed as overlooker, to see that the class teachers are regular and efficient in the discharge of their duties, to strengthen whatever may be found weak, to maintain discipline, to attend carefully to all parts of the registration, to make returns when required, and to receive parents and other visitors. A head-master who is the only teacher in a school-room cannot possibly perform these functions; he may be either a class-teacher or a head-teacher, but he cannot be both. Yet in many schools not only is the head-master bound down to service in one room, as the only teacher provided for it, but the number of teachers on the staff, including the head-master, falls below the number of separate school-rooms to be taught; hence, one or more rooms must be left without proper teachers. What large rooms were originally built in the School-Board schools are now subdivided, and the evil is increased." The ease of supervision of a well-arranged set of grouped class-rooms will commend school buildings such as are proposed at Finchley to many. It is also thought that the place of an absent adult teacher can be supplied for a time, without serious evil, by a younger teacher, if, the partitions being opened at times, he has moral support from others.

DISCOVERY OF EGYPTIAN PAPYRI.

ABOUT the time when Arabi Pasha was issuing his *pronunciamiento*, it was reported that a distinguished Oriental scholar of Austria had come into possession of a very extensive and valuable collection of old papyrus documents, and had succeeded in obtaining from these a number of very important facts relating to the history of the country, its civilisation, and economical conditions. In the years 1877 and 1878 certain fellaheen of the district of El Faijûm, long celebrated for its ottar of roses as well as its linen fabrics, discovered a large number of papyri. Most of them, unfortunately, fell into the hands of those who did not understand their value; nor had anything been done till recently to ascertain their nature and contents. One or two of them, however, had been sent to Vienna, and this attracted attention to the subject. Through the efforts of a Vienna merchant, M. Theodor Graf, who has more than once had occasion to visit the Land of the Nile, it has been brought about that an immense number of these papyri, nearly ten thousand separate writings, has been rescued from oblivion, and probably from destruction. They are supposed to be a complete set of archives. They are now in Vienna.

The documents, according to Professor Karabacek, of Vienna University, who is engaged in examining them, and who intends, as soon as possible, to publish some of them, consist exclusively of manuscripts belonging to the first half of the Middle Ages. It is found that, in accordance with the mixed character of the races who have occupied Egypt, these papyri contain documents in several languages,—Greek, Arabic, Coptic, Hebrew, Syriac, and Persian. Many of the papyri contain the same words or records in two or three languages, as, for instance, an Arabic text with translation into other tongues. There are also some pieces given both in Persian and Coptic, a circumstance of very rare occurrence hitherto in literary history. These documents are likely to be of the greatest interest and value to Persian scholars, as they belong to a period in the development of Persian with which hardly any extant manuscripts are connected. This is the so-called Pehlevî period. They are expected to throw much light on this era. They prove the interesting fact that, during the years 615 to 618, as Arabic writers had stated, though modern critics had doubted the statement, Egypt belonged to the Persian Empire.

With reference to Arabic papyri, five of which Professor Karabacek has published, in a small treatise, entitled, "The Papyrus Discovery of El Faijûm," almost all the relations of the public and private life of Islam are touched on. Among these papyri there are some state documents, which, although only fragmentary, afford an insight into the hitherto unknown formal business and phraseology of Arabic public offices. There are also some valuable land

registers, dating from the notorious survey of Egypt at the beginning of the eighth century. They not only present us with a picture of a land registry, descending to the minutest detail, and mention a large number of new names of places, but they also accurately fix the position of many localities already known by name, and make us familiar with the peculiarities and specialities of numerous places. By help of these registers, Professor Karabacek has, after long calculations, succeeded in ascertaining that the method of land surveying in Egypt has remained identical during the last 1,000 years, and that it is based on the method followed under the Byzantine Empire.

Another interesting portion of the collection consists of the receipts given in the name of the governors and collectors of tribute, and belonging to the end of the eighth and the beginning of the ninth century. One such receipt gives evidence that a joke of Haram-al-Raschid was actually carried out,—a joke such as could only have been imagined in the fabulous atmosphere of that court. The caliph's all-powerful minister, Jafar, had picked up one of his early acquaintances, a fellow in rags, out of the back slums of Bagdad, and had proposed him to the caliph as Governor of Egypt. Haroun actually appointed him to the post, and instructed him to proceed in his rags to Egypt, and in that condition to present to the then governor his letters of recall, the caliph wishing thus to humiliate that functionary, because he had been refractory. And all this was really carried out. Of the *parvenu*, Omar-ibn-Mihrân,—for such was the name of the lucky ragged fellow from Bagdad,—no written document had hitherto been extant. But among the papers found in Faijûm, there is one belonging to the year 791 or 792.

The collection further contains a number of very instructive private documents, such as marriage-contracts and farming agreements, bonds, and other similar documents certified by notaries. There are also receipts for sums allowed for alimentation and for rents of land and tenements. There are all sorts of bills, some referring to the incomes from estates or rent-rolls, others relating to the irrigating canals, others for goods delivered. Then there are lists of conscriptions and of the occupants of Coptic monasteries; passports and personal cards, letters of introduction, lists of wages, and all sorts of private correspondence, some of which betrays the secrets of jealous and quarrelsome wives; miscellaneous notices, exercises in writing with marginal remarks, studies of the calendar, recipes, stories and traditions, together with other writings of a religious character, as prayers; but there is not a trace to be found of the Koran.

From this mass of documents Professor Karabacek has selected a land registry, a land-rent receipt, a house-rent receipt, a medical recipe (*medicamenti ventrem laxantis*), as well as a prayer with a political colouring, and has published them with full explanatory notes. It is difficult to exaggerate the light which the entire collection of papyri so fortunately rescued in El Faijûm is calculated to throw upon a period of Egyptian history of which hitherto little or nothing had been known.

OBITUARY.

Blatchford & Son, Builders, Tavistock.—Both members of this respected West Country firm have passed away. A year or two ago Mr. John Blatchford, the junior representative, died after a long illness at Bournemouth, and on the 3rd inst. Mr. Henry Blatchford, the father, followed. He was in his sixty-third year, and died at Tavistock, his native place, in which he had worked his way up to a high position, holding many public offices, and for several years being portreeve (*i.e.*, mayor) of the town. As contractors, they did some of the best works in Devon and Cornwall, and restored numerous churches under the late Sir G. Gilbert Scott, Mr. James Piers St. Aubyn, and other eminent architects. The Girls' High School at Plymouth and the Dawlish Railway-station may be named amongst their public works. Mr. Henry Blatchford was a shrewd, good-humoured, hard-working contractor. He was a strict Wesleyan, but in no way straight-laced, and could give and enjoy a joke with any one. He was deservedly popular among all classes, and a large concourse of people witnessed his burial.

ALTERATIONS AT THE GUILDHALL.

"I go; and towards three or four o'clock,
Look for the news that the Guild-hall affords."
King Richard III., act iii. sc. 5.

THE works which are in progress afford an opportunity that should not be missed of viewing the exterior of the Guildhall. New offices are about to be erected in the place of those which, obscuring more than half of the northern side of the hall, lined the passage into Basinghall-street. Portions of the buildings recently demolished were co-eval with the Guildhall itself, which dates from the mayoralty of Sir Thomas Knowles, in the year 1411. Nothing, however, but the two crypts can be seen of that structure, for after the Great Fire the four exterior walls with the towers and buttresses were recased, and an additional story was constructed. For the incongruous flattened roof attributed to Sir Christopher Wren, the present one, with its *flèche* and sixteen dormer windows, was substituted some fifteen years ago, after the designs of Mr. Horace Jones, the City Architect, assisted to some extent by Sir Digby Wyatt and Mr. Edward Roberts. The demolition of the architect's office, formerly the Cash and Freedom offices, of the Exchequer Court, and the Town Clerk's offices beneath it, brings to view two of the windows which light the crypts now used as a carpenter's shop and a store of timber plant for staging on occasions of ceremony. It should be noticed that in the eastern crypt the dagger is present in the civic shield upon the bosses in the side aisles, whereas in those of the centre aisle it does not appear. The Exchequer Court is still distinguishable by its pink-coloured western wall, with the beautiful doorway therein which has just been discovered, being all that now remains of the chamber erected in the year 1425. This was originally the Court of King's Bench, or Mayor's Court. The foundations, including two curious arches, are now being covered over with a layer of asphalte.

The transfer of the City Sittings to the Royal Courts of Justice would render vacant the two courts on the eastern side of Guildhall-yard. The present building stands on the site of the chapel and Bakewell (or Blackwell) Hall, which were pulled down for its erection just sixty years ago. Could this further change have been foreseen, the chapel, at any rate, might have been suffered to remain. Dedicated to St. Mary Magdalene and All Saints at the end of the thirteenth century, and rebuilt in the year 1431, it formed an agreeable foil to the southern porch of the Hall. The porch was built in the reign of King Henry VI., and was a notable feature of the building when seen from King-street. Altered in the reign of Queen Elizabeth or her successor, it endured more disfigurement at the hands of George Dance (1789). For a long period before its destruction the chapel served as the Court of Requests, though it was customary to hold a service here before the Lord Mayor's annual feast. The statues of Edward VI., Queen Elizabeth, and Charles I. which stood over the entrance from the yard, together with the windows, were preserved in the Guildhall. The former library adjoined the chapel. It was founded by John Coventry and John Carpenter, executors to Sir Richard Whittington's will. Stow says that the books and other contents were removed by the Protector Somerset, who broke his promise to return them. The library then became a warehouse for Bakewell Hall, a weekly market-place for woollen cloths, established by the Corporation 20th Rich. II. The house, originally that of the Basing family, passed into the hands of Thomas Bakewell, *temp.* Edward III., and was rebuilt after the Fire. Some interesting drawings of this hall and the chapel, by G. Shepherd, are comprised in the Crace Collection, British Museum.

Plumbers' Work.—An action was brought by a plumber named Dee in the Croydon County Court on Monday against a civil engineer named Dalgairns for upwards of 30*l.*, for the erection of a lavatory. Defendant made a counter-claim of 120*l.*, on the ground that the work, being improperly done, sewer air escaped into the house, and caused the illness of six members of the household, and the death of his son. He, therefore, claimed the doctor's bill and other expenses. The judge struck out the plaintiff's claim and gave judgment for the defendant.

RIMINI.

WE hasten now to the great work of Sigismund,*—the famous Tempio Malatestiano, which may be said to constitute his greatest claim not alone to the interest of all artists, but to all students of that active period of the Renaissance, the bearings of which on our modern civilisation we are now commencing to understand.

As the work of the great architect Leo Battista Alberti; as one of the earliest productions in the style which is associated with the Renaissance; from the spirit which actuated the founder, the architect, and the artists generally who worked under his control, the humble Gothic church which Sigismund converted into a famous temple has long ranked among the most interesting architectural relics of Italy. Like so many other churches in the peninsula, the great work was destined to remain incomplete; neither the exterior nor the interior was ever terminated, and yet the temple remains as a monument of the highest order of the interesting period in architecture to which it belongs.

The first idea of the edifice having been conceived in 1445, Brunelleschi, it will be remembered, had already achieved his revolution in architecture by his bold innovation on the Gothic traditions. Alberti was, in his turn, to carry further the attack in the building he erected for Sigismund, and in which all the architectural elements were to be borrowed from antiquity, but vivified by the new spirit of the day. Under his active and all-seeing direction,—Alberti, like Leonardo, was a universal scholar,—the sculptors he employed aided in the production of a conception which, with Sigismund's suggestions, remains to show the genius of the Florentine architect.

Sigismund's first intention had been to erect the temple entirely from its foundations, but the Gothic church of San Francesco already containing a number of his ancestors' tombs, Alberti determined to preserve this original nucleus,—a disposition which, far from impeding his plans, was in his hands only further to show the startling contrast between the old and the new style, of which he so boldly showed evidence.

To the life of Alberti, one of the greatest figures of the Renaissance, M. Yriarte devotes a most interesting study, which it is beyond our limits to attempt even to summarise. Alberti will remain to all time the type of the cultivated ideal architect, a master not alone of his own profession, but a brilliant proficient in all the kindred arts; a distinguished classic scholar, a learned archæologist,—he was, in fact, the true architect of the Renaissance, when that lofty art required in its followers an acquaintance with and practice in all the sister arts. If in his conceptions, noble and grandiose as they are, a certain coldness is noticeable,—the Church of Sant' Andrea at Mantua is familiar to all who have visited Italy,—none can deny to Alberti the high and earnest ideal that breathes in all his creations. Malatesta made the acquaintance of Alberti in Florence somewhere about 1435, and immediately determined that to him he would entrust the erection of his temple. In 1446 the first stone of the new edifice was laid. In order to conform to Sigismund's desire to preserve the original Gothic church, the architect retained its outer walls, covering the whole with a shell of marble entirely independent of the under-work. The result is curious; the contrast between the pointed windows of the primitive building and the severely classical conception of Alberti. At but a few steps from the church rises the Roman arch of Augustus, the point of departure of the great Flaminian Way which led to Rome. The sober proportions and elegant details of this monument we may feel sure influenced in no small measure the Florentine artist in his design.

Any description of the temple would carry us further than the limits at our disposal, while copious illustrations would be absolutely requisite to give to the reader unacquainted with the original any conception of its peculiar style. The design is of the simplest, consisting of three arches rising on a sub-basement and supporting a pediment which remains incomplete,—a building, in fact, of the basilica form; the lateral façades are even simpler, consisting of a series of Classic arches which enframe the Gothic pointed windows of the original church

* "Un Condottière au XVe Siècle. Rimini: Études sur les Lettres et les Arts à la Cour des Malatestas." By Charles Yriarte. Paris: J. Rothschild. See p. 8, *ante.*; also, for Illustrations, p. 11 and p. 11 in present number.

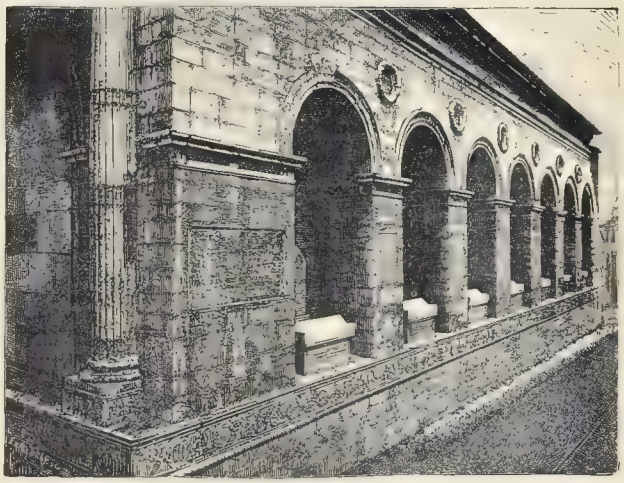
over which Alberti's shell is built. It is in its simplicity that resides the grandeur of the effect of Alberti's design, incomplete as it remains. In vain Sigismund displayed in the progress of the work the utmost zeal, bringing materials away,—strange anomaly for so ardent a lover of antiquity,—from Classic buildings at Ravenna, in Rimini itself, and from Sparta; the project was destined never to be carried out. Such, with very slight modifications, as we see the temple now, it was left in the year of its founder's death.

Probably no greater contrast could be conceived than that which exists between the simplicity of the exterior and the grandeur and richness of the interior of Alberti's temple. The decoration, even when only judged by the view we are able to reproduce, will, we think, be admired by all, bearing as it does the characteristic stamp of all the early Renaissance work in being distributed with a wise sobriety which in no way interferes with the leading architectural lines. A large nave, on each side a series of chapels separated by pillars and arches, these latter pointed,—as will be seen in the interior view,—a happy proof of the skill with which the architect effected the difficult transition between the original thirteenth-century form of the edifice which he had to respect and the very different style with which he was desirous to produce his effect. The chapels are eight in number, four on each side, all richly decorated with symbolic and allegorical sculptures. In every direction the utmost decorative use is made of the characteristic Malatestian scutcheon with its roses, its three heads and saw-tooth pattern. Everything, from the entwined initials of Sigismund and his mistress Isotta, freely scattered over frieze and walls, to the dusky elephants and other heraldic elements which bear the weight of the massive pillars, is intended to recall the founder of the temple, to breathe the spirit of antiquity and of Greece. In no single spot is the religious destination of the temple ever hinted at, a feature which in later years was set down as no small item in the charge of heresy brought against Sigismund by the Pope.

Much as we should wish, we are unable to follow M. Yriarte in his lengthy and interesting discussion of the meaning of the many sculptured allegories scattered over the building, most of which, in the absence of any tradition, he ascribes to the hand of Agostino di Duccio. Perkins, it may be mentioned, in his "Tuscan Sculptors," attributes these works to Benedetto da Maiano,—a singular error for the learned American writer to have committed, since Benedetto could only have been eight years of age when the Malatestian temple was founded. Vasari has boldly ascribed the works to Luca della Robbia, but M. Yriarte, from a comparison with Agostino's work at Perugia, in the Church of San Bernardino, in the Bargello Museum, and elsewhere, unhesitatingly attributes the Rimini sculptures, many of which are in the *stacciato*,—literally *crushed* work,—peculiar to Donatello and his school, to that great Florentine's pupil, Agostino di Duccio. We may observe that the series of representations of these allegorical decorations form some of the most valuable illustrations in M. Yriarte's work. To the student of Renaissance art these figures should prove of the utmost interest. That the artist of the San Bernardino sculptures and those at Rimini is one and the same we consider is clearly proved by M. Yriarte, thanks to his illustrations, which render the comparison so delightful and easy.

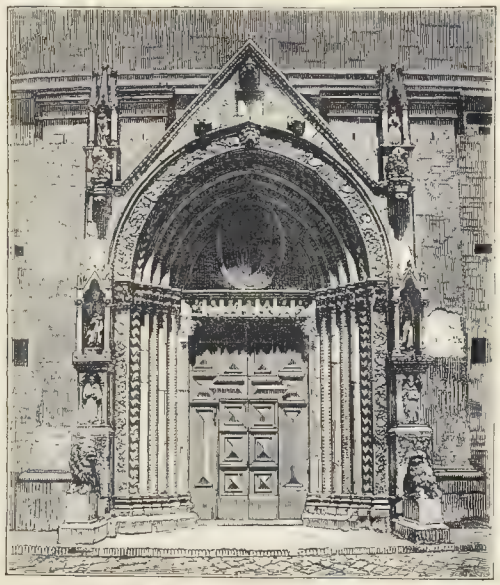
Alberti's work was, as we have remarked, destined never to be terminated. The existing roof, it is no difficult matter to see, can never have been designed by the great Renaissance artist. From a rare medal by Matteo da Pasti, who, it may be mentioned, was Sigismund's secretary, it would appear that a dome was projected, and M. Yriarte, in his copious appendix, brings forward a mass of information relating to the correspondence engaged in on this question between the architect Da Pasti and other authorities, respecting a point which promised serious difficulties,—difficulties which doubtless led to the scheme being eventually abandoned.

The part played by sculpture in the decoration of Alberti's design was, we see, very important. Although Vasari is in error when he attributes most of the works to the great masters of the school of which he was so proud, the artists employed were no mean proficients; but the chief point worthy of attention is, we think, the part played in this collaboration by the architect, who with such masterly ability knew how to direct the artists under his control while availing himself of their skill to render their work subservient to the whole. "We have here," truly remarks M. Yriarte, "a further proof that it is discipline which is force, and that when an architect enjoys sufficient authority to maintain each of his collaborators in his proper place, he is sure to arrive at remarkable results."



Lateral Façade of San Francesco.

A most interesting chapter is devoted to the tombs of San Francesco, which Sigismund intended to render a Pantheon for the ashes of those scholars whom he had in his life gathered about him, and with whose memory he desired in death to be handed down with gratitude to posterity. In each of the seven exterior arches of the church, reproduced in our view, is placed the tomb of one of his court, the most brilliant member of which opens the series, Basinio the poet; next to whom is Giusto de' Conti, the author of the "Bella Mano"; next to him repose the ashes of the great Greek humanist, the introducer into Italy of the worship (for such it was) of Plato, Gemisthus Pletho, ashes which Sigismund in his zeal bore back to Rimini from their last resting-place in Greece where the great scholar had died. Next in order comes Roberto Volturio, Sigismund's military engineer. The other tombs contain various other inmates of Malatesta's palace. Each in his day was a favoured pensioner of the literary *condottiere* who, with his charming mistress, Isotta,—the original of Matteo da Pasti's beautiful medal, and to whom Yriarte devotes a most interesting chapter,—gathered about them on the shores of the Adriatic a refined and cultivated court,



Doorway of San Domenico de Pesaro.

which has left its mark on the history of the Renaissance.

Sigismund's premature death and the ill-fated termination of his ambitious schemes, was destined to interrupt the realisation of his grandiose idea. His own tomb,—a view of which we reproduce,—will, it is true, be found in the temple he erected; it had been carried

out during the life of Sigismund from the designs of Alberti, whose characteristic hand it will be seen it plainly shows. The great *condottiere's* later life was destined to be filled with a singular series of misfortunes. In pursuit of the ambitious plans which had tormented him throughout his life, he alone succeeded in arousing the anger of the Pope,—the learned Piccolomini Pius II.,—who, not content with excommunicating Sigismund, ordered his effigy to be burned in public in Rome. A humble and humiliating *amende honorable* was the sole condition of the great warrior's pardon, a blow to his pride from which, with the loss of most of his possessions, he would seem never to have recovered. It was but characteristic of his romantic career and his singular race that he should have planned the assassination of the Pontiff, and, dagger in hand, at the very steps of the papal throne, have fallen dramatically on his knees to ask pardon for his sacrilegious design. From this moment the great warrior's life may be said to have run its course, and, in 1468, at the early age of fifty-one, Sigismund Malatesta succumbed, shorn of almost all his possessions, a victim of the ambition which had leagued against him the whole of Italy.

The story of the great *condottiere's* life is, as we have already remarked, one long romance, which in itself, apart from its artistic and literary merit, suffices to render M. Yriarte's book of interest not alone to the profession, but to all readers.

THE STEAM YACHT *BOADICEA*.

This yacht was, during last spring, built by Mr. William Pearce (Messrs. Elder & Co.), of Fairlight Yard, Glasgow, for himself, and is fitted throughout in an elegant and costly manner. Our illustration shows the main saloon, which is constructed entirely in dark mahogany, the caps and panels of the pilasters surrounding it being of carton pierre, with dolphins, &c., and they are coloured a dark leather gold, the cove above being a much lighter gold, leading up to the ceiling, which is in ivory with gold mouldings. The lower panels between the pilasters are of silk, the three upper ones on each side containing oil paintings, by Mr. James Guthrie, of the heads of Sir Walter Raleigh, Nelson, and other naval celebrities. The ports, of which there are four, have stained-glass slides. The couches are upholstered in rich olive velvet, and the curtains shown are of Persian embroidery upon satin, and the floor is covered with a magnificent Axminster carpet of special design.

The whole of the internal fittings, upholstery, &c., including the six State-rooms, owner's cabin (which is in pollard oak), and the ladies' cabin, which is in American walnut, have been designed and carried out by Messrs. Alexander & Howell, art furnishers, of 108, St. Vincent-street, Glasgow.

PUBLIC BUILDINGS FOR MIDDLESBROUGH.

In a competition for obtaining a design for public buildings for Middlesbrough, a few months ago, and referred to by us at the time, the design submitted under the title "Law and Order," by Mr. G. G. Hoskins, was selected, and is now about to be carried out. We give a view of the proposed building. On first taking the work in hand the architect was somewhat divided in opinion as to the advisability of adopting stone or brick for the external facing of these buildings; but, after making an inspection of the principal buildings in Middlesbrough, he arrived at the conclusion that stone buildings suffer too greatly from the effects of the smoke caused by the several industries of the district, and consequently assume a dark and gloomy monotony, whereas buildings of brick, if liberally relieved with stone dressings, present a pleasing contrast, even under the inevitable effects of smoke-stain. He, therefore, adopted a combination of brick and stone. The Town-hall is situated at the north end of the site, and consists of a large hall, measuring 118 ft. by 60 ft. This hall is lighted by eight two-light windows on the north and south elevations, and on the north or principal façade, towards Corporation-road, five sculptured figures, representing Art, Science, Commerce, Music, and Literature, are introduced. The floor of the hall is composed of "Dennett's fire-proof construction," with a wooden floor above; and below the hall is a covered space of the same size, which may be utilised in wet weather for the parade or drill of the police, and also as a shelter for large audiences waiting for their carriages after leaving assemblies and meetings in the Town-hall. "Dennett's floor" is adopted not only as a protection against fire, but to obviate the necessity of columns, which would considerably interfere with the drilling of the police. At the west end of the building are situated, on the semi-basement plan, a heating-chamber, 20 ft. by 16 ft. 3 in.; refreshment-room stores, 20 ft. by 16 ft. 3 in.; coal-cellar and urinals, with staircases rising to the body of the hall, dress balcony and gallery, the space used for urinals being the lowest story of the tower. The tower as it rises affords the following accommodation:—On the ground-floor, the vestibule giving upon the body of the great hall; on the first floor, a like vestibule, from which access is given to the smoking-room, refreshment-room, bar, and south staircase; and above these the weight-chamber, bell-chamber, and dial-chamber, in connexion with the clock. At the end of this portion of the building are placed, on the semi-basement floor, ladies' and gentlemen's dressing-rooms, measuring 20 ft. by 16 ft. 3 in. respectively, property-room, entrance lobbies, staircases up to the platform, lavatories, coal-houses, water-closets, &c. On the ground-floor are two committee-rooms, each measuring 22 ft. by 20 ft., organ-chamber, platform, and staircases in connexion with the same.

On the first floor are two committee-rooms, each measuring 28 ft. by 20 ft., with staircase thereto; also main landing and external balcony, from which may be delivered speeches, declarations of the poll, &c., to the public. The sculptured figure upon the apex of the gable to the main west entrance (as pictured on the design) represents St. George, the patron saint of England. To the south of this town-hall block, extending the full length east and west of the same, is a covered carriage-way, with a glass roof, glazed on Rendle's system. This carriage-way makes a strong line of demarcation between the town-hall proper and the rest of the building, and "Law and Order" points out how easily, under this arrangement, it would be to build the town-hall block at a later date if such an idea were entertained, without in the least way interfering with the remainder of the buildings. The police department is situated about midway of the site, with its principal elevation towards Dunning-street.

On the ground-floor are the main entrances from Dunning-street to the police-court and police offices, over the former of which is introduced a sculptured figure representing Justice. Here is provided the police-court, 55 ft. by 40 ft. The houses of the chief constable and the superintendent of the fire brigade are amalgamated, although thoroughly distinct and separate in their arrangements, within the block of buildings immediately to the south of the archway, between Dunning-street and the quadrangle. A considerable portion of the accommodation for the fire brigade is situated above the basement, and the offices of the inspector of nuisances and the inspectors of weights and measures are situated in the semi-detached basement, and above is the auditor and cashier's office. Other rooms for the use of town officials are conveniently situated. Situated in the very centre of the Russell-street façade is the council-chamber, measuring 55 ft. by 35 ft., to the north of which, and looking on to the large quadrangle, is a committee-room 36 ft. by 21 ft., well lighted by two two-light windows and one oriel window. From these windows may be witnessed in fine weather the drilling of the police and the exercise of the fire brigade.

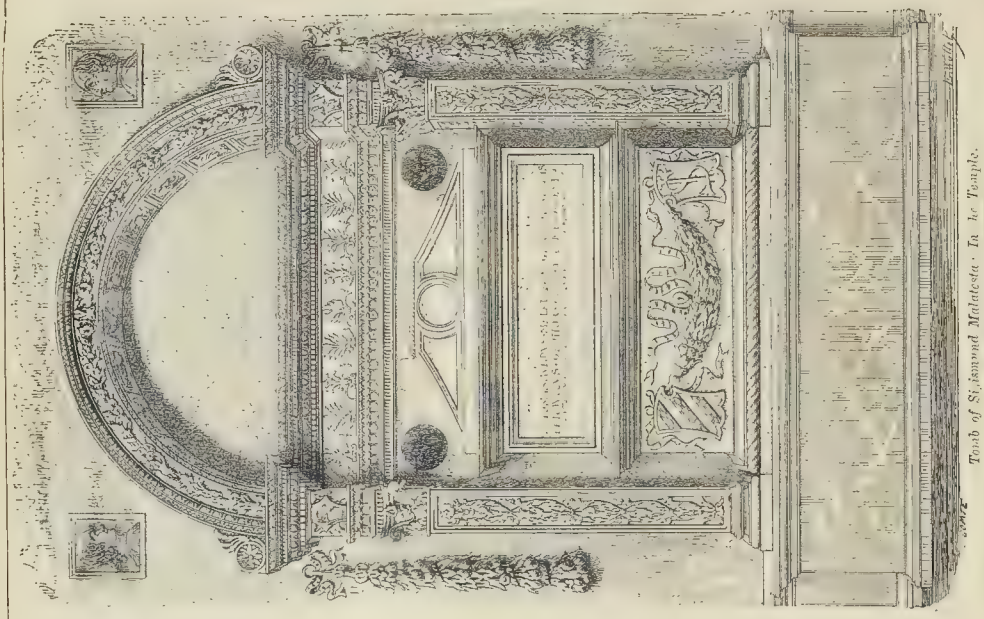
To the west of the council chamber is another committee-room, 27 ft. by 18 ft. 3 in. Adjoining these several apartments are spacious main landings and vestibules, which give approach to the lavatories, &c. The remainder of the space is devoted to the principal staircases east and west of the clock. Immediately below the council chamber is the School Board Department. The free library is situated at the extreme south-west angle of the site. The principal room measures 60 ft. by 40 ft.; and, amongst other provisions, is a writing-room for the benefit of members making references to works. Adjoining the free library on the north and on the Albert-road façade are situated the Guardians' offices; and the offices of the Water Board are between the archway at the north end of the Poor Law Guardians' offices and the west end of the covered carriage-drive. It is proposed to concentrate nearly the whole of the principal drains to one focus,—namely, a large and well-trapped tank or man-hole in the centre of the quadrangle, from which 12-inch main trunk drain outlets will be run.

NEW UNIVERSITY BUILDINGS, LUND, SWEDEN.

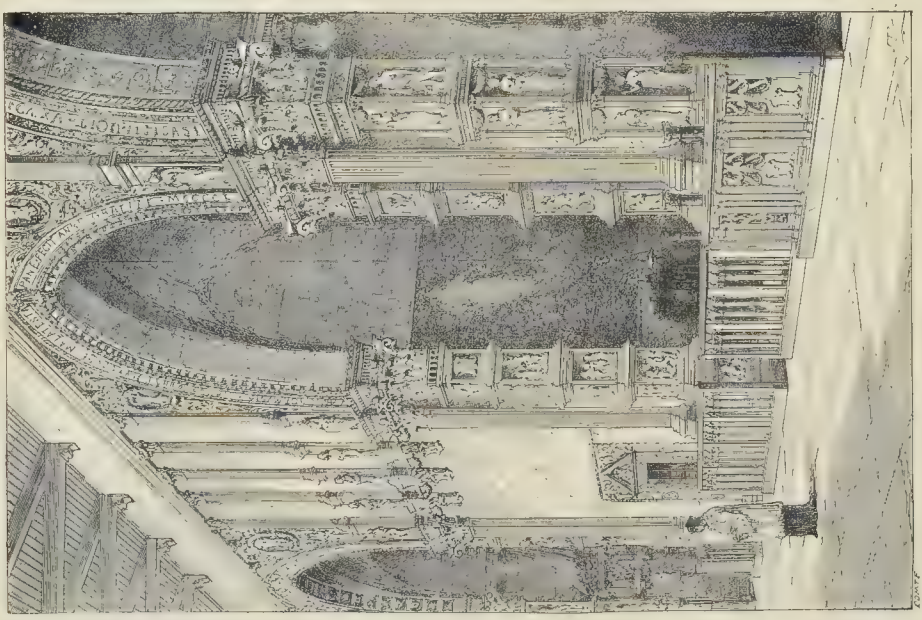
Lund University, *Academia Carolina Conciliatrix*, celebrated its bicentenary jubilee in 1868, when it was decided to erect a new building. That edifice was finished in 1882, and inaugurated on September 27 of that year, 200 years after the re-establishment of the university, in 1682, by Charles XII. When Charles X., after the Peace of Roeskilde, in 1658, visited Lund for the first time, he commissioned Bishop Winstrup to lay before him plans for transforming the gymnasium of Lund into a university. This scheme, however, was not carried out until 1668, under Charles XI., when the university was opened. Its professors then were Danes, Germans, and Swedes. When the Danes took back the province of Scania from Sweden, the University of Lund was dissolved, in order not to encroach upon the functions of that of Copenhagen. Charles XII. re-opened it, as stated above. There were at that time eight chairs,—two of theology, one of jurisprudence, one of medicine, and four of philosophy, and all the professors were Swedes. The number of students was about 300. During the wars of Charles XII., Lund University, like other institutions, was much neglected and fell into decay; but it gradually rose again after that king's reign, until it reached its most flourishing period in 1728. In that year Kilian Stobæus, who was the teacher of Linnæus, founded the natural history section of the university. The students now numbered about 500, and the institution underwent various and large extensions. It is a curious thing to put on record, but the then chancellor, in order to provide funds for the maintenance of the university, established a lottery!

Nicolas Oehlreich,—the founder and editor of the first Swedish newspaper, *Arlig Svensk* (Honest Swedish), the organ of the "Hat" party, who opposed the absolute monarchy in the eighteenth century,—proceeded from Lund University. The first Swedish doctor of medicine graduated there in 1721. Olof Dalin, the well-known Swedish writer, and the opponent of Oehlreich, also studied at the university. The latter was well known at that time as the seat of theological learning; but its library was as yet very limited in extent. From 1793 to 1803 a very lively intercourse took place between the universities of Copenhagen and Lund, and the excellent resources of the former seat of learning were placed at the disposal of the latter. About that time, H. B. Ling founded the system of gymnastic exercises which has made his name famous. The greatest Swedish poet, Esaias Tegnér, was instructor in Greek at Lund. Professor Fries taught there botany. During the agitation for greater political liberty in Sweden (1830-40), the professors and students at Lund University were all on the Liberal side, and the union of the three northern countries, Denmark, Sweden, and Norway, into a great Scandinavian kingdom has always been a favourite dogma at the university.

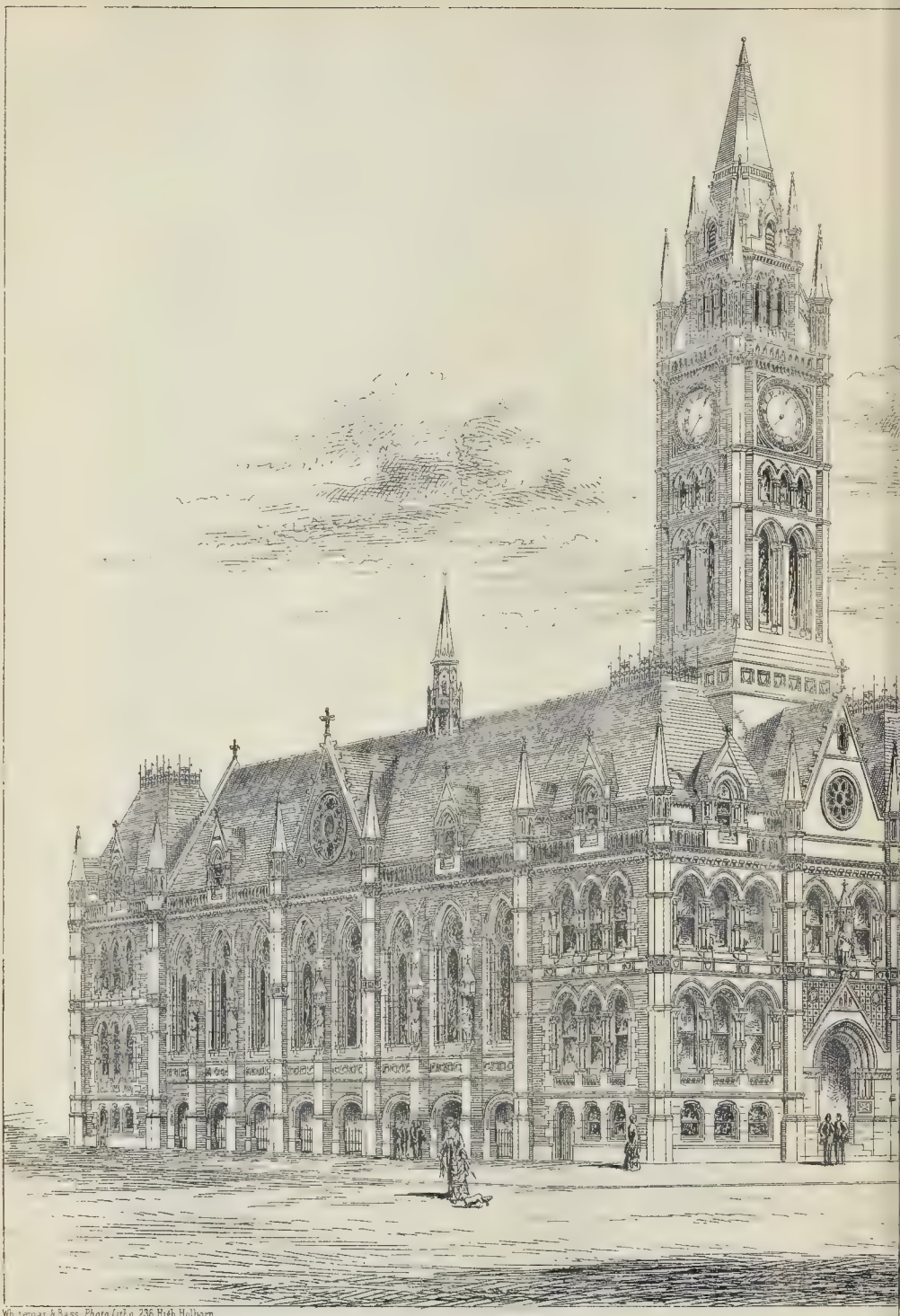
The university again losing its high rank amongst Northern schools, and falling into decay, in 1829 it obtained the first state subsidy, which has since been increased year by year. The new buildings, of which we now give an exterior view, and will hereafter give a view of the interior, were erected at the country's expense. The plans are by the architect Helgo Zettervall, superintendent and chief commissioner of public works (in Sweden always an eminent architect). The first stone was laid on May 31, 1878, the site of the new buildings being the old botanical gardens, the remains of which are now formed into a park between them and the old buildings. The latter, erected in 1800-1802, will receive the collections, for which no room is provided in the new university buildings. The present university staff comprises thirty-two professors (ordinary and extraordinary), eight masters, twenty-five "docenti," and nine library officials. The number of students is about 700. The present chancellor of Lund University is Professor Gustaf Ljunggren, a writer of great merit. Several of the scientists teaching at the university are also men distinguished in their respective departments of science.



Tomb of Sigismond Malatesta: In the Temple.

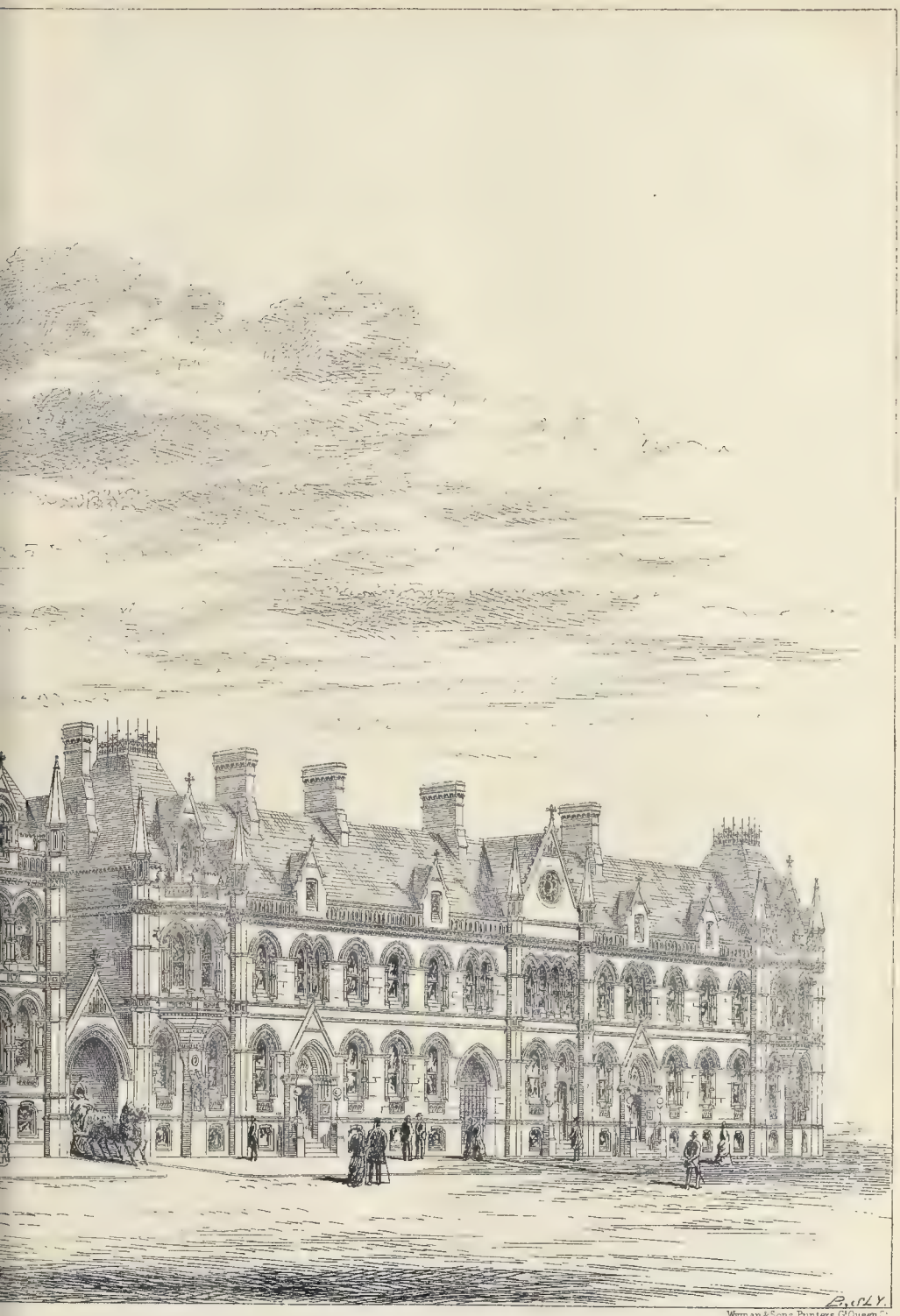


Interior of the Temple of Rimini.



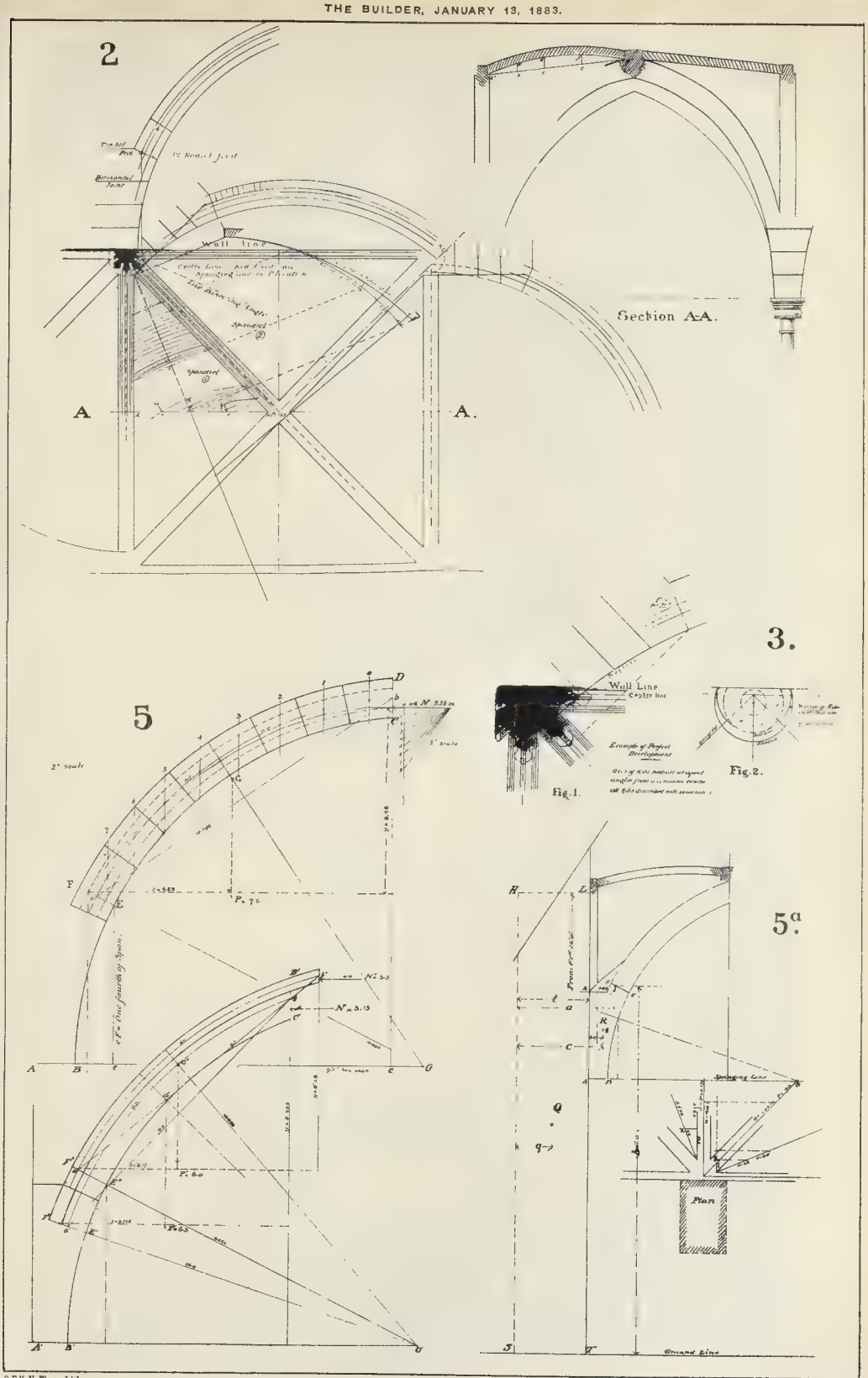
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ILLUSTRATIONS TO ARTICLE "ON VAULTING."

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NEW UNIVERSITY BUILDING, LUND, SWEDEN.—HELGO ZETTERWALL, ARCHITECT.

VAULTING.*

IN offering you this essay on vaulting, I do so with some diffidence, for I feel that you might consider it presumption in me to address you on so important a subject. The object I have in view, however, will, I trust, plead an excuse for me, my intention being merely to aid the younger members in the study of the subject, and, by attempting a solution of some of the chief difficulties, to facilitate the design of a few ordinary forms of groined vaulting.

Vaulting generally is so comprehensive a subject that it would be impossible in the time at my disposal to do more than glance at the different phases of it. As such a treatment would be quite useless, I propose to treat only of a portion of it, viz., Gothic ribbed vaulting, and that in a particular manner.

The historical development of vaulting has been so exhaustively dissected by the late M. Viollet-le-Duc, and also by the late Sir Gilbert Scott, and more briefly by other writers, that those who desire to become familiar with it cannot do better than study the works of those eminent architects, in addition to the sessional papers of the Royal Institute of British Architects, by Professor Willis and Mr. Eagles.

I intend, therefore, to omit, except where incidentally necessary, any reference to the historical side of the question; and to confine myself to the practical and scientific solution of some of the problems to be dealt with in modern practice.

Attention was here drawn to outline diagrams of four typical forms of vaults, viz., Quadripartite, Sexpartite, Intermediate-ribbed, and Lierne; and a brief general description given of each.

Commencing with the simplest Quadripartite (see diagram No. 2), I shall now endeavour to call your attention to the chief points to be attended to in designing vaulting of this form. Having determined the size and form of the ribs, the next question is their curvature and the arrangement of them on the cap. If it be desired that the mouldings shall mitre truly from their springing up to that point at which the ribs become independent arches, three conditions are imperative, —it is necessary for the axes of the ribs to radiate at equal angles from a common centre; for the intradoses to touch a circle drawn from that centre; and for all the ribs to be described with the same radius, at least up to the point at which they become free. (See figs. 1 and 2 of diagram No. 3.)

Another advantage is gained by the radii being equal; the backs of the ribs will then separate at the same height, which, if they did not, would be productive of spandrel pieces of stone. (Explained on black board.)

From an examination of the diagrams it will be evident that in the majority of cases it is impossible for all these conditions to be fulfilled in the arrangement of the wall rib. For making, as is usual, this rib of less width than the others; it would, by causing it to touch this arc, come too far forward on the cap. Besides this, when the compartment is oblong, as is more often the case, instead of square, as in this example, the axis of the wall rib cannot be inclined to the diagonal rib at the same angle at which the latter departs from the transverse. This perfect development, then, is generally impossible with regard to the wall rib, and we must arrange it as best we can. The diagonals, however, will almost always form equal angles with the transverse; we can then always insure their perfect development.

I must now direct your attention to the construction of this *tâs-de-charge*, the decorative treatment of which we have just considered. It is, as you are doubtless aware, built in horizontal courses; the joints, therefore, cutting the mouldings obliquely, instead of radiating as the voussoirs of an arch. To understand this method of construction we must ascertain what the result would be if it were attempted to construct it in any other manner. This expression *tâs-de-charge* is the one usually adopted to describe the mass of masonry where the mouldings of the ribs die into one another,—in other words, that portion from the cap up to the point at which the ribs become independent arches.

Now, if you were to construct this *tâs-de-charge* so as to show the joints radiating to the centres of the various ribs, you would, by reason of the ribs being in different planes, have to form each stone as a sort of *cup* (diagrams were exhibited showing this). It is evident that such a method of construction, if it were possible, would be extremely difficult; and, to say nothing of the waste of material, would be very unscientific, as fracture must inevitably ensue on the slightest unequal settlement.

I trust that I have made this point sufficiently clear; for the true practical reason of this mode of construction has not, that I am aware of, been pointed out by any writer on the subject, possibly because it seemed so obvious to them. The majority of writers have, however, invariably stated that the result of building the *tâs-de-charge* in horizontal courses is to diminish the span, and consequent thrust of the vault. Of this I shall speak later on.

As soon as the ribs become independent arches their construction offers no difficulty,—they are turned over centreing in the ordinary way.

Having now constructed our ossature, it becomes necessary to consider the filling-in. This may be of thin stone or brick, or of both alternating, or of other materials. It may be either flat from rib to rib, or arched; the latter is almost invariably the case now, as we thus avoid a regular boarded centreing, all that is required being a couple of boards cut to the required curve, connected by wooden pins passing through a slot, having a curve concentric with that of the edges; this allows of adjustment to the varying span. This "hand-centre" is supported on the ribs by the metal clips at the end whilst a ring of filling in is turned, and then adjusted to the next ring, and so on.

The direction that the courses or arch rings shall take is a matter of design, though by setting them out at right angles to a line bisecting the angle formed by a pair of adjacent ribs, the pressure on the ribs is more equalised than by any other arrangement.

When the filling-in is flat, the crown of it will of course be a straight line (see diagram No. 2), and when concave will terminate in a curved soffit. As this curve is the development of the surfaces of the spandrels meeting at the apex, it is necessary to find this in order to cut a special board for its centre. The method of taking ordinates to the curves of the filling-in, and transferring these to a datum line on the section, through which points thus obtained the curve sought can be drawn, was indicated, and is shown on diagram No. 2.

In the next example (diagram No. 4), an intermediate rib is introduced on each side of the diagonal. In the left-hand side of the diagram, fig. A shows the ribs, wall-rib excepted, radiating at equal angles from a common centre, the fillets touching the arc before alluded to, and the radii being equal. These ribs will, therefore, all develop truly; the arrangement, however, is not satisfactory, as a disagreeable hollow is produced between the wall-rib and the intermediate rib next it. The wall-rib, moreover, frees itself from the *tâs-de-charge* much sooner than the others.

Fig. B shows an alteration which, though slight, has a material effect on the result. The centre from which the ribs, as before, radiate is set further back (*i.e.* nearer the wall face), and the wall-rib is brought nearer the axis of the transverse. The outline of the springer is now more pleasing, and the wall-rib becomes free at the same height as the others.

When intermediate ribs are introduced it becomes necessary to have wall-ribs to maintain them in position, the mouldings of them being, as a rule, an approximation to those of the other ribs. (The means by which the approximation could best be produced were indicated by diagrams.)

I have not yet spoken of bosses, and as they are numerous in this kind of vaulting this seems to be the place to refer to them.

In Quadripartite vaulting bosses are necessary, decoratively, at the crown of the diagonals to *avoid* the irregular intersection of the mouldings. A sketch on the black-board was made to explain the necessity of bosses at the crown of the diagonals. I have used the expression to "avoid the irregular intersection," instead, as is frequently done, of saying "conceal," as that word implies a sham, as if the mouldings did intersect and the ornament of the boss was planted on. As we have seen that the mouldings cannot truly intersect, and that a boss stone is necessary, nothing is more natural and beautiful than that it should be carved, and that the mouldings should lose themselves in the foliage. For the same reason are they necessary in vaulting of the kind we are now considering, at the meeting of intermediate and ridge-ribs, &c. The bosses are worked with the square stump of the ribs on to them to form proper abutment to the ribs.

In this example, the ribs being all struck with the same radius, do not rise to the same height, therefore the ridges do not lie in horizontal planes. The filling-in has been assumed to be arched from rib to rib, hence the double curvature in the ridges. When it is decided to have arched ridges, their curvature being a matter of some importance, it is best to design these first, and work back to find the curve to give to the filling-in.

If the ridges, from central boss to either transverse or wall ribs, be either horizontal or of a single arch, the curve of the intermediate ribs must be developed according to the given conditions; it cannot be struck from a single centre.

If the ridge is level the filling-in will, of course, be flat; and if of a single curve, will be more or less twisted as it approaches it.

In the Sexpartite vaults there is nothing calling for particular notice. The difficulty before alluded to of the wall rib is increased, as these are generally considerably stilted, and the twist in the surface of the filling is consequently greater.

The Lierne vault in its general arrangement is similar to the ordinary vault with intermediate ribs. The curves of the Liernes have to be found in the same manner as described for Intermediate ribs under certain conditions.

I have now to speak of the thrust which vaulting exerts, and of the method of calculating it and determining the necessary abutment.

We have previously seen that the ribs in Gothic vaulting are, above a certain point, independent arches. The theories of the arch, then, hold good in vaulting.

The sketches on the black board show the modes of failure of a semicircular and of a pointed arch under the same conditions as in Gothic vaulting.

In the semicircular arch the centre will sink at C and the haunches rise at E F, the arch tending to break up into four parts.

In the pointed arch the crown rises and the haunches fall in. The stability of an arch is owing to the vertical weight downwards of the portion E F C D being balanced by the horizontal thrust at the crown due to the other half.

The known way in which arches break up shows at what points the force N acts. Having calculated the weight of the portion between the joint of rupture and the crown, and ascertained the value of N, we can, without much difficulty, determine the necessary abutment. The position of the joint of rupture E F varies in arches of different form. The exact determination of it is an abstruse mathematical problem. The full investigation will be found in Woodbury's "Treatise on the Arch;" and in Tarn's "Science of Building" there is a table giving the angle θ for arches of different rise. An approximation, however, quite near enough for general purposes may be made by taking the vertical height of E from springing at one-fourth the span. Then calculate the weight of E F C D. Find its centre of gravity, and let fall a perpendicular. The moment of P about E is then $P \cdot x$, and the moment of N, $N \cdot y$ as these forces balance each other $P \cdot x = N \cdot y$ or $N = \frac{P \cdot x}{y}$.

The equation from which t, the required thickness of the abutment, is obtained, is $2N \cdot b = P \cdot a + R \cdot c + Q \cdot q$, this being the equation of stability, 2 the multiplier of $N \cdot b$ being a factor of safety.

P, as before shown, is the weight of E, F, C, D, and a is the horizontal distance from the point at which P is assumed to act to the outer edge of the base of the abutment.

R is the weight of the *tâs-de-charge*, and any superincumbent load on that portion. c is the horizontal distance from its centre of gravity to the outer edge of the base, as before.

Q is the weight of the pier or abutment, and q its horizontal distance from the centre of gravity to the edge of the base, as before.

In the following example the weights are in terms of the area only, *i.e.*, the cubic contents in feet have not been multiplied by the weight

* From a paper by W. H. Wood, A.R.I.B.A., read before the Architectural Association, on the 5th inst.

in pounds, the materials having been assumed of the same weight throughout.

Example worked.

Diagonal ribs. P (area E F C D = 7·2

$$Px = Ny, \therefore N = \frac{Px}{y} = \frac{7\cdot2 \times 4\cdot23}{5\cdot48} = 5\cdot56$$

P resolved = 5·17
N ,, = 4·0
2P ,, = 10·34
2N ,, = 8·00

Transverse Ribs P^1 = 6·3
N^1 = 3·15

Collecting $N' = \underline{11.15}$

N' moment $= 11\cdot15 \times 20\cdot0 = \underline{223\cdot00}$
i.e., $N \times b$
$P' = 16\cdot64$

$$P \cdot a = P \times (1\cdot42 + t = 16\cdot64\ (1\cdot42 + t) = \underline{23\cdot63 + 16\cdot64t}$$

$$R = 11\cdot0\ \ R \cdot c = R \times (\cdot75 + t) = \underline{8\cdot25 + 11\cdot t}$$

$$Q = 25\cdot0 \times 2\cdot5 \times t = 62\cdot5t$$

$$Q \cdot q = 62\cdot5t \times \frac{t}{2} \qquad \underline{31\cdot25t^2}$$

The equation now becomes,—

$446\cdot0$ (*i.e.*, $2N \cdot b$) $= 23\cdot63 + 16\cdot64t + 31\cdot25t^2$
$\therefore t = 3\cdot16 = 3' \cdot 2''$ nearly.

In this first investigation, in order to simplify matters, no account is taken of the filling-in; the thrust of this must, however, be ascertained. It appears to me to be the simplest way, neglecting any influence it may have on the ribs, to consider it as a portion of a wide soffited arch. Taking the mean length of the spandrel (*i.e.*, the line bisecting the angle of the adjacent ribs), we can consider the whole weight of the spandrel situated on this arc, and find our values for P and N as before. We have now merely to alter the values of N and P before found, and proceed with the equation.

Spandrels No. 1.

$P'' = 6\cdot0$ resolved $= 2\cdot4 \therefore \underline{2P'' = 4\cdot8}$

$N'' = 3.5$,, $= 1.4 \therefore \underline{2N'' = 2.8}$

Contents of Spandrels No. 2 may be taken as same.

Then P = 6.0 resolved = 5·5 $\therefore$ 2P = 10·10
N = 3·5 ,, = 2 : 25. $\therefore$ 2N = 4·5

Totals $P' = 15\cdot8$
N' 7·3

N now $= 11\cdot15 + 7\cdot3 = 18\cdot45$
and $Nb = 18\cdot5 \times 20 = \underline{370\cdot0}$

P now $= 16\cdot64 + 15\cdot8 = \underline{32\cdot44}$
and $P \cdot a = 32\cdot44\ (1\cdot42t)$
$= \underline{46\cdot1 + 32\cdot44t}$

The equation now will be,—

$$740\cdot0 = (46\cdot1 + 32\cdot44t) + (8\cdot25 + 11t) = 31\cdot25t^2$$

Solving this, we find,—

$t = 3\cdot97 = 3' \cdot 11''$

Of the scientific question of the filling-in, I must now say a few words. As recently as 1874, during the discussion which ensued at the Royal Institute of British Architects after Mr. Eagles's paper, there seemed to be a doubt, in the minds of many, regarding it, and instances were given in which either filling or ribs had gone, and the ribs or filling remained.

It was here explained on black-board how, if the curve of pressures before alluded to were contained within the depth of the groins, the vault would stand without groin ribs, and their introduction, as in some of the earlier examples of Mediæval buildings, as mere soffit ribs would have no influence on the construction and might fall away without endangering the result. It was also shown by means of the black board how the filling in could be made to influence the forces N and P by making it more or less domical.

In conclusion, I must apologise for the crudeness of much of this paper, and for the roughness of many of the diagrams. Owing to a pressure of other matters, I have not been able to devote sufficient time either to the writing of the paper, or the preparation of sufficient drawings. I had commenced one or two models, but was unable, from want of time, to complete them sufficiently to be of service, I have, therefore, been obliged, though reluctantly, to bring before you many sketches made almost at the last minute.

A brief discussion ensued, in which the chairman (Mr. R. C. Page, vice-president), Mr. Thomas Blashill, Mr. Trubshawe, and Mr. J. Osborne Smith, took part, and a vote of thanks was given to Mr. Wood, who was complimented by the speakers upon the practical character of his paper, and upon his mastery of the subject with which it dealt.

Mr. Wood, in replying, referred to the old Arab proverb which says that the arch never rests. That being a fact, it was to his mind a strange thing that while architects thought it necessary to calculate the strengths of girders and lintels, they were generally content to guess at arches. It was his decided opinion that the strengths of all arches, and the forces which they had to resist, should be carefully calculated, or the profession would suffer in public estimation. Failures had occurred in arches and vaulting in the works of men of position in the profession, and such failures were only to be accounted for by the fact that the work was guessed at rather than calculated.

PAINT FOR FLOORS.

A PAINT for floors which economises the use of oil colours and varnish is described in the German technical press as having been composed by Herr Mareck. It is remarked that this paint can also be used on wood, stone, &c. For flooring the following mixture has been found applicable:—2½ oz. of good clear joiners' glue is soaked overnight in cold water. It is dissolved, and is then added (being constantly stirred) to thickish milk of lime heated to boiling point, and prepared from 1 lb. of quicklime. Into this boiling lime is poured (the stirring being continued) as much linseed oil as becomes united by means of saponification with the lime, and when the oil no longer mixes there is no more poured in. If there happens to be too much oil added it must be combined by the addition of some fresh lime-paste. For the quantity of lime previously indicated, about half a pound of oil is required. After this white thickish foundation-paint has cooled, a colour is added which is not affected by lime, and in case of need the paint is diluted with water, or by the addition of a mixture of lime-water with some linseed oil.

For yellowish-brown or brownish-red shades about a fourth part of the entire bulk is added of a brown solution obtained by boiling shellac and borax with water. This mixture is specially adapted for painting floors. The paint should be applied uniformly, and is described as covering the floor most effectually, and uniting with it in a durable manner. But it is remarked that it is not suitable for being used in cases where a room is in constant use, as under such circumstances it would probably have to be renewed in some places every three months. The most durable floor-paint is said to be that composed of linseed-oil varnish, which only requires to be renewed every six or twelve months. It penetrates into the wood and makes it water-resisting; its properties being thus of a nature to compensate for its higher cost in proportion to other compositions used for a similar purpose. Its use is particularly recommended in schools and work-rooms, as it lessens dust and facilitates the cleaning of the boards.

KENSINGTON TOWN-HALL.

SIR,—Having occasion recently to seek information at the Office of the Medical Officer of Health of Kensington, I went to the new Town-hall of that parish, and was nearly overpowered on entering by an atmosphere, literally, of sewer gas which permeated the whole building, and I was informed on inquiry that "the drains were being taken up," or, if that were not the source of the mischief, "it might proceed from the lavatory." Two or three questions at once presented themselves to me, *e.g.*,—How was it that in this new building, carried up under the eyes of the sanitary authorities, the drainage was so defective that it had failed after so short an occupation? Was it not possible for such great lights in sanitation to adopt some method of carrying on such alterations without poisoning half the establishment? And lastly, how can the general public be induced to adopt sanitary precautions, whilst such laxity is taken as a matter of course, as of no consequence, at head-quarters?

QUIS CUSTODIET IPSOS CUSTODES.

THE VENTILATION OF DWELLING-ROOMS.

THE question of artificial illumination is more or less intimately connected with that of the ventilation of those rooms in which a number of persons habitually meet together. Hence there is a certain amount of practical interest, from a hygienic point of view, attaching to the details on the matter given by Herr von Fragstein, of Berlin, in his recently published work on heating and illumination, noticed in the *Gesundheit*.

He calls attention to the fact that the air of a room, as a rule, wants to be renewed two or three times an hour. There is, in any case, in 1,000 cubic feet of air, half a cubic foot of carbonic acid, but if this quantity is increased to 10 cubic feet in 1,000 a canary dies in two minutes, while the presence of 40 cubic feet in 1,000 causes the extinction of lights. It is, therefore, estimated that a maximum of 1·5 to 2·1 per 1,000 must not be exceeded for the air in any room.

Pettenkofer's researches have demonstrated that a human being requires an hourly quantity of pure air of about 700 cubic feet to make up for the quantity of air used in that time. An important augmentation of this quantity is, however, to be counted in the case of sick-rooms and under any circumstances where noxious exhalations require to be carried away. Roughly speaking, Herr von Fragstein estimates that a room of the capacity of about 1,750 cubic feet, suffices under ordinary circumstances for one person to occupy it for five to six hours, due account being taken of the ventilation usually afforded by the windows not fitting close, and the porosity of the walls. Special ventilation has therefore mainly to be provided in cases where the artificial light used consumes air or where bad smells require to be carried away.

The following tabular scale has been drawn up by Herr von Fragstein:—

	Air required per hour for each person.
Dwelling-rooms	700 to 1,000 cub. ft.
School-rooms and libraries	450 to 500 ,,
Sick-rooms (ordinary)	2,100 to 2,500 ,,
Sick-rooms for wounded persons, confinements, &c.	3,500 ,,
Sick-rooms for epidemic diseases	5,300 ,,
Theatres	1,400 to 1,750 ,,
Assembly-rooms	1,050 to 2,100 ,,

The various quantities of air required per hour to make up for the quantity vitiated by various forms of artificial illumination are thus summarised:—

	Consumption of illuminating material per hour.	Air required, as explained above.
Gas jet	4½ cub. ft.	750 cub. ft.
Gas jet	5½ ,,	830 ,,
Tallow candle	of an oz.	124 ,,
Wax candle	,,	257 ,,
Oil lamp	,,	276 ,,
Petroleum lamp slit burner	1 oz.	502 ,,
,, ,, round ,,	1¼ oz.	544 ,,

In the calculations affecting the various forms of artificial illumination, due allowance has, it appears, been made for the heated air ascending towards the ceiling, and thus being able to contain double the normal quantity of carbonic acid, or about 4½ cubic feet per 1,000.

The use of one channel of ventilation for several rooms is condemned, as this system sometimes facilitates the transmission of bad air, while it renders it possible to hear in one room what is passing in another.

Finally, it is suggested that appliances for ventilation should be used only in the proportion really necessary. Thus, when a room is about to be left empty for a certain time, it is needless to leave these appliances in the same position as if they were supplying air to a number of persons, as a room is thus brought to a lower temperature than is necessary. The cool air which has entered the room has done no good to any one, while the bringing back of the temperature to its normal grade causes a needless expenditure of fuel. Of course, this latter point is more easily noticeable in Germany, where the system of heating by stoves facilitates the exact appreciation of the temperature which is being applied.

CONSTRUCTION OF FLOATING DOCKS.*

CIVIL AND MECHANICAL ENGINEERS' SOCIETY.

THE earliest floating-docks were constructed of timber. One was built in the river Thames, at Rotherhithe, by a ship-builder named Watson, about one hundred years ago, and another at Marseilles, 200 ft. long, 60 ft. wide, and 22 ft. deep, about thirty-five years since. Graving-docks, made of timber, have been constructed on a more extensive scale in America, some, on what was termed the screw principle, consisting of parallel rows of piling, and others on the sectional system formed of a series of separate sections joined together by connecting beams to make up the required length of the vessel to be docked, the shafting conveying the power of the engines from one section to another, running in a hollow sliding-shaft, and arranged to slide in and out. Whatever may have been the cause, the sectional dock has proved a complete failure. Probably its being built of timber, and lacking rigidity of connexion, may have had a great deal to do with the circumstance. A better result was obtained where the dock was constructed in stone chambers, resembling an open harbour or masonry dock without a gate.

The oldest means of obtaining access to a ship for external repairs was by a process known as "careening" or "heaving down." This was effected by attaching ropes to the heads of the masts and hauling the ship over, first on one side, then on the other, by tackle attached to a quay-wall, or to another vessel afloat, by which means a large amount of the ships' surface was exposed; but this plan, apart from the danger of liability to founder, is stated to have produced permanent distortion in the shape of vessels, and consequently it soon gave place to the dry-dock system; so-called, however, only by courtesy, being constantly in a wet condition, more or less, as air can never circulate well in it. The old Saxon word "grave," to clean or cleanse, suggested the term "graving-dock" for these dry-dock systems, which are used extensively in places where the rise and fall of the tide admits of a vessel being drawn in at high-water, so as to be brought over the keel-blocks and left free for inspection at low-water when the gates are closed, so as to cause no interruption to the work of repair as the tide again rises. When the tide is small, the water has principally to be cleared out by pumping, and although considerable improvements have been made of late, in the construction of pumps, the process is still expensive and tedious. Caissons have taken the place of lock-gates, constructed of iron, which has found such increased favour of late in works of construction, and has afforded an opportunity which has not been lost for considerably improving the means of lifting ships out of the water. . . . . .

The ship-lift of Mr. Edwin Clark, which was put to work in 1857 at the Victoria Graving Docks, London, consists of hydraulic-lift rams placed in parallel rows of cylinders firmly seated on concrete foundations. There are sixteen on each side, supporting crossheads, from which are slung links connected with the ends of one of as many sets of girders formed of open iron-work bracing. This method of forming truss-girders scientifically arranged is cheaper and stronger than the solid plate-girder, and imparts greater rigidity. The columns support no weight, but act solely as guides for the cross-heads of the hydraulic presses which move up and down in slots. The vessel to be docked is floated over a pontoon submerged, and resting on these transverse girders in their lower position. By the application of hydraulic pressure both the ship and the pontoon are raised clear of the water, the water-passages of the pontoon are then closed, and the pontoon with the ship resting upon it high and dry, is then floated to a lay-by for repairs, leaving the lift free for lowering or raising other vessels. The pontoons are provided with valves in the bottom, and thus empty themselves of water. The Hydraulic Lift Graving Dock at Bombay is built upon the same principle. It was erected under the superintendence of Mr. John Standfield, and is formed of cast-iron columns placed in parallel rows of 94 ft. 6 in. apart from centre to centre, eighteen on either side, placed at equal distances apart. The base of each of these columns is filled in with concrete to a level of about 12 ft. above the ground, and the bed-plates of the hydraulic presses are placed on a seating of timber resting on the top of the concrete-bed. There are two hydraulic presses in each column, having 14-in. rams, with a stroke 33 ft. 6 in. in height. The pontoon is 380 ft. long by 85 ft. wide, and having a depth of 6 ft. 8 in. in the centre, and 9 ft. 8 in. at the sides, the centre being made shallower with the object of adapting it to receive vessels of greater draught. An end flap is connected to the entrance of the pontoon fitting close up against it with india-rubber packing, by which means the entire end is made level with the sides after the admission of a vessel on the pontoon. The pontoon rests upon balks of teak timber, laid on the top of iron trellis girders, 10 ft. 8 in. deep, and 96 ft. 3 in. long over, all supported by links attached to the wrought-iron cross-heads contained in the columns, and the pontoon is divided internally into thirty-six water-tight compartments, each provided with a separate valve, so that any one portion can be filled with water, and thus tendency to strain under the influence of unequal loading avoided. In 1870 another dock on this principle was constructed in Malta, containing thirty-two hydraulic presses. As compared with the old form of graving-dock constructed in masonry, the pontoon system possesses the advantage of great saving of labour, for it is clear that in a masonry dock the amount of water to be pumped out every time it is used for graving or cleaning purposes is the depth in which the vessel can float, including the space all round to enable the men to work, and this quantity of water varies inversely with the bulk of the ship. The vessel when docked on the pontoon system is fully exposed to light and air, and is in a very convenient position for inspection and repairs. Moreover, with a masonry construction a separate dock is required for each vessel, whereas on the new system the only limit will be the number of pontoons available and the water area at command; in addition to which the quantity of material employed is so small compared with a masonry construction in a fixed position, that it seems surprising that the demand for such docks in these days of extension has not been greater.

Messrs. Clark & Standfield, who have given a great deal of attention to the question of dock-accommodation, have invented and constructed various systems of floating docks, to which I desire to call attention. They possess the advantage of requiring no foundation for the lifting apparatus. It is the foundation which forms the chief item of expenditure in the old system, whereas floating docks are independent of depth of water, and can be readily moved about to any required position. They are admirably suited for deep and rapid rivers or varying tideways, and, under proper management, for exposed situations where holding-ground can be obtained to which the entire apparatus may be anchored. There is also less risk of straining than in the ordinary method of launching from a slip, and, as will be seen on inspection of the diagrams, they can be put together so as to dock a vessel of great beam as easily as a narrow vessel.

A box floating dock was made in the United States in 1839, consisting essentially of a continuous pontoon bottom with two side walls. The pontoon was constructed to have sufficient displacement to carry the entire weight of the dock and the heaviest vessel likely to be placed upon it. Several docks on this system were built in America, principally of wood, this material being selected on account of its comparative cheapness, which is to be attributed to the abundance of forest-grown timber there, as in most other new countries. The sides to the dock served to preserve the stability of the dock when rising and falling, and also afforded an opportunity to shore up the ship by bilge shores as in a masonry dock. They served the same purpose as the air-tanks in the American sectional dock, and afforded a place for the pumps, engine-house, and working platforms. In 1867, an iron floating dock on the box or balance-dock principle was built by Messrs. Randolph, Elder, & Co., and sent out to Callao for the Callao Dock Company in sections, where it was completed and launched. The total length is 300 ft.; inside breadth, 76 ft.; and inside depth, 30 ft., with a floor space 50 ft. wide. The St. Thomas's floating dock, which was constructed about the same time, is 300 ft. long, and 110 ft. broad over all, with an inside width of 72 ft. The sides are vertical, 35 ft. deep, and rest upon the outer ends of the pontoons. There are six pontoons running the entire breadth of the dock, each pontoon being divided into three watertight compartments. It is probably due to the absence of these bulkhead divisions in the early examples of floating docks that failure resulted, arising from their liability to turn over during the process of docking a vessel, for although the two last-named docks have not been free from accident, the cause has been distinctly traced to bad management on the occasion, and not to faulty design. The St. Thomas's dock is in good working order now.

The Bermuda floating dock, built in 1869, is 381 ft. long, 124 ft. broad over all, having inside measurements of 330 ft. length by 84 ft. width, and a depth over all of 72 ft. It has eight longitudinal and three transverse water-tight compartments on each side of the keel, and is provided with two caissons. Instead of the sides being vertical, they are curved outwards, with a batter of one in six, but approach nearer the perpendicular at the top. With the view of providing increased strength in the construction of a floating dock without increasing the amount of material employed, Messrs. Clark & Standfield have introduced the tubular principle into this class of structure, it being considered that with a square section there is a tendency for the plate to buckle under the influence of outside pressure when submerged, and so to cause the joints to open. In Messrs. Clark & Standfield's tubular system, the two outer tubes are made of a larger diameter than the six inner ones, and are connected to a series of vertical cylinders securely flanged and bolted to them. Both the outer tubes and most of the vertical cylinders are hermetically sealed, in order to maintain the equilibrium of the dock under all conditions, flotation being always preserved when the dock is submerged by means of these vertical cylinders. Valves are fitted on the underside of the inner tubes to admit water for submergence, or to emit water for flotation; whilst on the upper side are air-valves and tubes connected with a valve-house, which stands upon each of the gangways, placed on both sides along the tops of the vertical cylinders on either side of the dock. Two engines are provided for driving the air-pumps, one on each side of the dock, in one of the vertical cylinders midway of the length of the structure, and the amount of labour in pumping varies directly with the weight of the ship to be raised. The apparatus which controls both the air and the water valves is fixed in the valve-houses. The dock being sufficiently submerged, the ship is floated over it. The water-valves are then opened, and by means of the air-pumps air is forced into the tubes, which, displacing the water, causes the dock to rise up to the vessel, and gradually to raise her, high and dry, out of the water. The water-valves are then closed, and the dock floats. When the vessel is ready to be again set afloat, the lower valves are opened, and the air escapes through the upper valves at the valve-house, until the required depth of submersion is obtained to enable the vessel to float off the dock. The principal object of the vertical cylinders is not to give flotation, but to afford stability to the whole apparatus while the vessel is being lifted.

In the systems alluded to, as in use at the Victoria Docks, the Bombay Docks, and the Malta Docks, it will be observed that the lifting power is in a fixed position, and the docking accommodation movable. In the floating docks just described both are movable, but with the lifting power fixed to the pontoons, a separate dock becoming necessary for every ship under repair. Messrs. Clark & Standfield have obviated the necessity for this in their depositing dock system, in which the vessel is not merely raised out of the water, but is deposited bodily on staging built along the shore. In this system the lifting power, being movable, is capable of accommodating itself to any required position, and the number of ships that can be repaired at one time with a single dock is limited only by the length of staging provided for their reception, from which position they can readily be lowered again into the water. These stages are built in a grid-iron fashion, and are formed of timber or iron piles securely driven into the ground, and braced together, forming a series of narrow parallel piers, on which the vessel is deposited. The dock consists of a series of pontoons, or

* From a paper by Mr. A. T. Walmisley, Assoc. Mem. Inst. C.E., read at a meeting held in the Society's rooms, 7, Westminster Chambers, on Thursday, January 4th, Mr. R. H. Twigg, M.I.C.E., President, in the chair.

fingers, rigidly connected at one end only to a continuous vertical side running the whole length of the dock, and made of a sufficient height to be never completely submerged, while pontoons which are attached to it in the shape of teeth to a comb, are submerged to receive a vessel which is caused to float over them. The vertical side contains the engines, pumps, and valves for working the dock, and stability is afforded by a floating outrigger provided with sliding grooves attached to the outer side of the dock, so as to maintain the side in a vertical position as the dock rises and falls. This outrigger consists of two or more broad shallow pontoons, connected by parallel sliding arms to the top of the vertical side, as well as to the sliding grooves. The pontoons are arranged at distances apart corresponding to the openings between the piers of the depositing stage so as to readily float into position, when, by admitting a little water into them, the vessel is lowered on to the piers, where it securely rests on keel and bilge blocks.

Another system of floating-dock which, in the author's opinion, is one of the most perfect contrivances for repairing a vessel, is that known as Messrs. Clark & Standfield's double-power floating-dock, in which the buoyancy of the sides of the dock, as well as that of the body or pontoons, are made use of in the process of raising or lowering a vessel. The sides are made to slide up and down in grooves, so as to remain at any desired level while the remainder of the construction is rising or descending with a vessel. The manner in which this is effected is as follows:—Each side of the dock is divided into three or more sections, the end sections containing the engines and pumps being fixed to the pontoons in the operation, while the central sections slide in grooves on these end sections, which form the corners of the dock. The sliding sides being secured in their ordinary position, water is admitted both to the body of the dock and to the sides until the whole begins to sink. In this state it resembles an ordinary floating dock. Water is added until lowered sufficiently to receive a vessel, and, having done so, the water previously admitted is pumped out of the pontoon portion of the dock, raising the vessel thereon as high as possible, while the central portion of the sides still remain at their former level in the water. They are at once secured by pins to the fixed portion of the dock, and are then pumped dry, thus adding their own buoyancy to the remainder of the dock,—in fact, acting as pontoons,—so that the whole of the construction contributes its share to the work of raising or lowering a vessel, except the end sections which contain the machinery. The sides can also be so fixed that when not required to raise a vessel they can be lowered and pumped dry, raising the whole body of the dock sufficiently clear of the water for a boat or raft to pass under from one end to the other, by which means the underneath of the pontoons and of the end sections can be as thoroughly cleaned and painted as they could be on dry land, and in reversing the process,—that is, by fixing the sides in their highest position,—the dock can be made to raise the central portion of the sides completely out of the water, ready for examination and painting. Thus, quite independent of any other dock, this system can be inspected and kept in proper order. It is perfectly self-docking on an even keel without leaving its moorings. By having engines fixed in the sides as well as in the corners of the dock, all parts can be made to work independently, and thus two different powers can be given to the dock, which has suggested the name "double-power" dock. This fact, coupled with its rapidity of action, due to its having less weight to lift compared with other classes of docks described, recommends it as superior to any system yet designed for repairing a vessel in open harbour, accompanied with the existence of deep water, as the dock is practically unsinkable.

Sir John Soane's Museum.—At the meeting of the Court of Aldermen, held at the Guildhall on Saturday last, a letter was read from Mr. Alderman Finnis, resigning the office of Trustee of Sir John Soane's Museum and Library, Lincoln's Inn-fields, in consequence of advanced age. The resignation was accepted, and Alderman Sir R. W. Carden, M.P., was duly elected to fill the vacancy.

PETERBOROUGH CATHEDRAL.

DANGEROUS CONDITION OF THE CENTRAL TOWER.

SEVERAL huge gaps having, during the past few days, shown themselves in the walls of the great central tower of Peterborough Cathedral, Mr. J. L. Pearson, R.A., the architect to the Dean and Chapter, was telegraphed for, and, after inspecting the building, condemned the tower as unsafe. The Dean and Chapter gave orders to have it removed immediately, as there is danger of its falling at any time, and involving a great part of the remainder of the cathedral in ruin. The tower was built in 1350. The cathedral records show that the tower has been from time to time a source of considerable anxiety. The central tower was originally built by Abbot de Waterville (1155—1177). It subsequently, however, proved too heavy for the central piers; and in order to prevent the fall of the tower it was taken down nearly as far as the crowns of the great arches. The east and west arches were altered from semicircular to pointed. The pointed hoods inserted above the two round arches mark real arches of construction, devised to remove the weight from the crowns of the latter. The original Norman pillars and caps remain, but have been adapted to the new work. The present wooden vaulting, as well as the lightness of the entire lantern, were rendered necessary owing to the mischief which the weight of the Norman tower had caused to the south-east pier, which, to insure security, had to be bound with iron. Some years ago the great pillars on the east side settled very considerably on their foundations, dragging down their adjoining triforium and clearstory arches. On the 3rd inst. operations were commenced for securing the tower.

The total cost of the necessary work is roughly estimated at about 40,000*l.* A committee has been hastily formed to manage the work, consisting of the Marquis of Exeter, Earl Fitzwilliam, Lord Burghley, M.P., Hon. C. W. Fitzwilliam, M.P., Hon. J. W. Fitzwilliam, M.P., Lord Lilford, &c.; and subscriptions have already been received with a view to restoring the tower, Canon Argles having subscribed 1,000*l.* It is announced that, as the matter is of national importance, an appeal will be made to the country for help.

The Rev. Owen W. Davys, Canon of St. Alban's, writes:—

"I learn with dismay that the great central tower of Peterborough Cathedral, long known to be dangerous, is to be removed by order of the Dean and Chapter, and I see that an important committee has been formed to assist in the work. But is it necessary to remove a tower of such value? Is it impossible to do at Peterborough what we have so successfully accomplished at St. Alban's in the case of a much heavier tower? Sir Gilbert Scott knew how to save both these towers, and Mr. John Scott has told me that he is in possession of his father's arrangements for the preservation of that at Peterborough. I have pressed the importance of this information on the attention of the Chapter, but other counsels have prevailed, with the deplorable result now announced. I have not had time to learn the exact intentions of the architect now responsible for the safety of the noble minster, or the full particulars of the distressing circumstances in which the Dean and Chapter must find themselves placed, but I cannot let the day pass without expressing an ardent hope that not one stone of the cathedral may be thrown down which can possibly be left upon another."

Mr. John Oldrid Scott writes:—

"The central tower of Peterborough Cathedral has been in a critical state for many years, one of the four great piers which carry it,—that at the south-east angle,—is seriously split, and bulged from the top to the bottom; it is only held together by woodwork and numerous iron bands.

The upper stage of the tower is also much shattered, and in its eastern face I remember seeing a crack almost wide enough for a man to get through eight or nine years ago. During the time Sir Gilbert Scott was architect to the cathedral he more than once called the attention of the Dean and Chapter to the dangerous condition of the tower, but it was considered impossible to raise the funds necessary for its restoration, and the work was postponed. It was his wish at that time to deal with this tower as he had with those at Ripon, St. David's, and more recently at St. Alban's,—namely, to carry the weight of the upper part by powerful shoring of woodwork, and to underbuild the weak leg, either wholly or in part, leaving the defects in the upper stage to be made good later on.

The failure of the tower has, however, I understand, increased quite lately. The condition which I have described was that in which the tower was some eight or nine years since, when I made an examination of it on my father's behalf, and I have no doubt whatever that the course now proposed by Mr. Pearson is the right and only safe one; nor need there be any apprehension that in his hands anything more will be done to interfere with the ancient character of the building than is absolutely necessary for its safety."

Sir Edmund Beckett says,—

"No one has yet mentioned what seemed to me the worst symptom of mortal disease in the Peterborough tower when I looked at it with the Dean in 1881, viz., that at some time or other it had been attempted to hold up the south transept from leaning outwards by strapping it to the tower. Of course, that had not succeeded; the transept has gone on sinking, I suppose from bad foundations, and has torn open the tower worse and worse. Nothing of that kind had happened at St. Alban's, or anywhere else that I know of. The failure of the piers was much the same.

It is not so well known as it should be, when so much is made of rebuilding tower piers and setting up leaning walls, that one of the transepts of Beverley Minster, which overhung 4 ft., or nearly twice as much as the south clearstory of St. Alban's, was set up by a Beverley builder early in the last century. I forget the exact date, but the pictures of the machinery used were frequently before my eyes when I was a boy in my grandfather's house there. And hydraulic presses did not exist then, with which Mr. Longmire, the present contractor at St. Alban's, did the job of setting up that wall in perfect silence in an hour, filling up the gaps afterwards.

There is no doubt that altogether this is a very serious business at Peterborough, and will require every penny of the estimate of 40,000*l.*, and probably a good deal more, unless it is very unlike St. Alban's, and, I may add, Lincoln's Inn Chapel, where almost every cut has revealed something still more rotten behind it, both in stone and wood. In both of these churches we have been sitting under Damoclean roofs unconsciously for years. The 'vaulting' of Lincoln's Inn Chapel was composed by Wyatt, the fashionable church "restorer," just ninety years ago, of string loaded with plaster, and nailed to beams, of which the ends had turned to sponge in the walls. I hope Peterborough may not turn out as bad."

Dean Perowne has written to say that the Dean and Chapter, having full confidence in Mr. Pearson, had no hesitation in at once acting upon his report.

Canon Owen Davys, in a subsequent letter, writes:—

"Surely it should at once be announced what are the intentions of the Dean and Chapter, and what are the plans of their architect. A private letter from one of the Canons, who, I see, has nobly started the subscription list with 1,000*l.*, tells me that one side of the tower can be kept *in situ*, and that, preserving this valuable authority, the other side can be rebuilt stone for stone; but the public should know, on the authority of Mr. Pearson, whether this can and will be done.

This is the second central tower which has failed at Peterborough. Abbot William de Waterville built a tower three stories high there between A.D. 1155 and A.D. 1175, when he finished the great transept, and completed the Benedictine Choir, which extended some bays into the constructive nave. This must have been a tower of great magnificence. The beautiful Tower of Castor, near Peterborough, has been thought to represent it on a smaller scale, while at Norwich and Tewkesbury we have towers still left us of similar character; but the piers below sunk under this great load into their damp foundations, about, it is supposed,—for no chronicle of the circumstance remains,—A.D. 1350, when a 'Decorated' Tower of remarkable lightness was substituted for that of the 'Norman' architect, new constructive arches being arranged to receive it upon the Norman piers. Afterwards, failure being observed again, in comparatively recent times, the 'strapping' alluded to in Sir Edmund Beckett's letter took place, with results which any architectural mechanic could have foreseen. That is the point, where, with the present well-known appliances, it would seem that rebuilding and setting upright should begin, if any of the superstructure is to be saved. I may add that before the erection by Dean Kipling, just when the present century was beginning, of what used to be called 'the Dean's Chimneys' at the four corners of the present tower, its height and dignity were increased by an octagonal superstructure, removed, it is believed, for safety, as shown in old pictures."

The latest reports state that the fissures in the wall of the lantern continue to widen, and the tower is subjected to constant examination. The greater portion of the cathedral is now practically closed. The large organ has been removed, and the two transepts are filled with cranes and other implements. The choir has been stripped of its furniture, and the fine pulpit, which stands almost immediately under the lantern, and which was erected a few years ago to the memory of Dr. James, is also to be removed. Every preparation has now been made for a speedy demolition of the tower.

THE CASE OF BELT *v.* LAWES.

BOLTING THE MATTER TO THE BRAN.

THE case of Belt *v.* Lawes is neither so simple nor easy of solution as, at first thought, it may appear. It is not to be brought to a head and to one issue. It is complex, and involves several important and distinct considerations.

1. Whether it be an imposture on the part of an artist to employ assistants in carrying out a work of art?

2. If it be not, to what extent may an artist avail himself of other artists' aid?

3. Whether, under any circumstances, an expert who accepts a wage as an assistant should not be actionable for communicating the fact to his principal's employer or patron?

4. Who are the best judges of a work of art?

1. The verdict in the late trial has virtually decided that the employment of assistants on any but preliminary rough and mechanical work is an imposture, for the defendant, with the evidence of experts, endeavoured to prove that the plaintiff had received assistance, and the counsel for the plaintiff, together with the summing up of the judge, that he had not, though the history of art from the Greeks to the present day supplies abundant evidence that the employment of highly-skilled assistance in carrying out important works of art has not been considered derogatory to the artist employing it,—an imposture. No works of any great importance and extent can be economically carried out, nor in any reasonable time, without such highly-skilled assistance. Raffaelle assisted Perugino; Raffaelle's scholars, also eminent painters, assisted Raffaelle; and we might swell this enumeration with the names of other great painters and sculptors who have been aided to a very considerable extent in the execution of their works by experts, either equal to, or a little inferior to, themselves. In past times it would only have been regarded as an imposture if it could have been said that the artist attaching his name to a work, or a series of works, could not, unaided, and with a considerable extension of time, have produced a work, or a series of works, of equal merit. We have even seen a work by a scholar more complete than one of a series by the unaided master; for the power to invent and direct,—the master power,—is not always accompanied by the highest technical skill: so that a scholar possessing this quality in an eminent degree may, under a master's guidance, produce a more complete work than the master himself. This principle of employing skilled labour descends from the fine arts to the art-manufacturers, down to mechanical employments, and in many instances the public is by this means better served than they would be by an insistance that all work bearing either an artist's or a manufacturer's name should be the work, and nothing but the work, of the principal whose name it bears. In fact, to insist on this single-handedness being rigorously carried out in art would materially threaten the prospects of mural painting, of monumental art, ever being attainable in this country. It may be all very well to insist on this single-handedness in cabinet works, to which art in these latter days has been chiefly confined, till the value of such works has come to be estimated, not so much in respect to their intrinsic merits as to the market value of the artist's name inscribed upon them. This excessive estimate of the individuality is a modern characteristic. There is not a name inscribed on any of those wondrous Phidian marbles in the British Museum, whereas if a frieze of the same extent were to be executed in these days every slat of it would be scored with the name of the mason who did it.

2. We find, then, that it has been the custom in the fine arts, from time immemorial, for masters to avail themselves, to almost any extent, of the services of skilled labour, even that of eminent men,—we say for *masters* to do so. It would have alone been considered in the light of *imposture* by their contemporaries if the artist signing the work or works had been unable, unaided, to produce a work or works of equal excellence,—that is to say, if the assistants had had more mastery in art than their employer who made use of them; but even in a case of this kind, as we have previously hinted, the public might be better served,—that critical public, whose art opinions are, forsooth, to be set above those of experts; that public which prefers to place its confidence in the man of inferior ability,—than if their favourite had done all the work himself; and therefore, notwithstanding the opinion professional experts might form of him, we maintain that he should be permitted to carry on his art-manufacturing with impunity, without let, hindrance, or abuse, on precisely the same grounds that other manufacturers are permitted to do so. Only let results be fairly compared with results, and, without any bias of favour, be judged in open competition. When the public shall be better informed in art matters it will put the right artist in the right place. We have for the present to educate, educate, educate. In this only can we look forward with complacency to the art of the future. But why does not the Royal Academy take a more active and authoritative part in the education of the public?

3. If it were once to be considered legal that an expert of any kind might communicate the fact of his employment to his principals, employer, and patron, and thus to endeavour to underrate him, the whole manufacturing industry of the country would be shaken. It should not be countenanced, even in art. Most talented men have been at one time, sculptors especially, servitors to others. This temporary servitude is a useful discipline. If an assistant really have great talents, he will not be servitor for long; for he comes immediately in contact with those who are able to appreciate art ability, and these will endeavour to raise him to his proper position. It is only men of very moderate ability who continue to be servitors to their lives' end.

4. Who are the best judges of the merits of a work of art? Let us cite a few facts which may help the inquiring to solve this question. An Englishman of wealth went to Canova to commission him for a statue; but, instead of being received with open arms, he was reproved by the sculptor, who said:—"You English see with your ears rather than with your eyes. You have a great sculptor in your own country, why do you not commission him?" Ah! why did he not? Because the English have no eyes for art, but ears for the penny trumpet. There are the great Phidian sculptures at the British Museum, which were purchased by the advice of experts, and which, if the English public had art eyes and art understandings, should have prevented a Gothic revival, and the apotheosis of Chinese and Japanese barbarities; but, instead of this, *bizarre* tastes have been rampant from the day of their purchase until now. If the public's opinion on art matters is to be taken in preference to that of experts, why Slade professorships?—why South Kensington?—why all the provincial art schools? The artists of most of your public statues in London have been chosen by laymen,—would you have these determine the merits of the students' work at the Royal Academy, instead of the Royal Academicians, or to select the pictures sent in for exhibition, or to elect artists as associates and members? Go to.

SCULPTURE.

STONE-WORKING MACHINE.

THE use of facings of burnt clay appears to be on the point of being to some extent superseded by the application of native facing stone, Baumeister G. J. Schmidt, according to the *Baugewerkszeitung*, having succeeded in simplifying and cheapening the working of the latter by means of steam power. Herr Schmidt's method of working stone is said to recommend itself by its simplicity. Whilst formerly it has been the aim of imitating the working of stone by hand, and of simply performing it by machines,—that is to say, of changing the native rough fracture of surface of crude stone blocks to smooth faces, by working away all inequalities,—Herr Schmidt has proceeded on the simple principle of obtaining the same effect as the saw, but potentially intensified, by a direct-acting machine; in other words, of producing two finished surfaces at one operation and with a minimum waste of the raw material. He was guided in his design by the great power of the rock-boring machine, without whose aid it would have been impossible to undertake the gigantic work of the Mont Cenis, St. Gotthard, and now Arlberg, tunnels.

As the hardest rocks are bored by the boring-machine with the greatest ease, it was thought that any kind of stone might be cut through; and if this view were confirmed, it would be as easy to produce finished surfaces by machine-power direct as to bore holes with the boring-machine. As an experiment, a small provisional machine was constructed, in which a small steam cylinder acted direct upon and set in motion a pair of equally wide steel chisels, the latter striking vertically, the stone block being moved a little at each stroke. By this operation, a stream of water being at the same time directed upon the cutting made, an exact section was made throughout the entire length of the block. The chisels penetrating deeper and deeper, the block was cut through in its entire length and breadth and divided into two parts, each of which possessed a highly finished and exactly level face. The first trial was with hardest syenite granite, the result of the work being surprisingly satisfactory, both as regards exactness and smoothness of surface obtained and quantity of work performed.

By this experiment, the correctness of the present principle of working stone was demonstrated. Compared with the stone saw, the following was the performance of the machine. A stonemason cuts with the hand-saw, in a working day of eleven hours, of sandstone, 0·4 to 0·6 square mètre of surface; of marble, 0·17 to 0·20; of granite, 0·02 to 0·03. The smallest machine of Schmidt, with only one small cylinder, cuts in the same working day of eleven hours 4 to 6 square mètres of finished surface of the hardest granite. The smallest machine, consequently, replaces, as compared with the hand stone saw, in granite, $\frac{4}{0{\cdot}02} = 200$ workmen per day. It is the same whether the machine works the hardest granite or the softest sandstone. Its capacity is only regulated by the greater or less hardness of the stone, and as it performs with each stroke exactly the same amount of work, the machine is at the same time, the most perfect measuring apparatus of the hardness of the various descriptions of stone. The stroke of the steam piston is only from 4 to 5 centimètres; 1,000 strokes are delivered per minute, without heating the chisels, a constant stream of water cooling them, and at the same time washing away the working slime. The slime is carried into pits, where it is allowed to settle, and may afterwards be used in the manufacture of earthenware.

We are not prepared to say that a stone-cutting machine on this principle has not been employed in England.

BUILDING PATENT RECORD.*

APPLICATIONS FOR LETTERS PATENT.

6,227. J. Moore, New Thornton Heath. Fire-grates. Dec. 30, 1882.

6,241. J. Butter, Birkenhead. Window-sash and other fastenings. Jan. 3, 1883.

6,255. M. Kellow, Merioneth. Cutting and dressing stone. Jan. 4, 1883.

NOTICES TO PROCEED

have been given by the following applicants on the dates named:—

Jan. 2, 1883.

4,232. J. Hudson, Bolton. Apparatus for holding and releasing cords for Venetian and roller blinds, &c. Sept. 6, 1882.

4,743. H. Hancock, London. Fastenings for door and window sashes. Oct. 5, 1882.

Jan. 5, 1883.

4,165. W. R. Lake, London. Steam and hot-water apparatus for heating dwelling-houses &c. (Com. by E. F. Osborne, St. Paul's, U.S.A.) Aug. 31, 1882.

4,315. M. J. O. Riordan, Cork. Apparatus for heating water, cooking, &c. Sept. 11, 1882.

ABRIDGMENTS OF SPECIFICATIONS.

Published during the Week ending January 6, 1883.

2,420. W. S. Morton, Edinburgh. Materials for covering and decorating walls, &c. May 23, 1882. Price 6d.

This consists of canvas treated by passing the same, after it has been saturated with size, round a modelling roller, on which are formed the required ornamental devices, into the interstices of which it is forced by stamps.

2,447. R. Henry, Edinburgh. Apparatus for opening and closing window-curtains. May 24, 1882. Price 6d.

Behind the curtain-pole is a metal rod, with a right and left-handed screw-thread cut on it. The curtain-rings have

* Compiled by Hart & Co., Patent Agents, 186, Fleet-street.

eyes, which surround this rod, by turning which the curtains are adjusted.

2,477. J. Smith, Liverpool. Fireplaces. May 25, 1882. Price 6d.

To enable the bituminous coal to be burned, the fireplace is partly surrounded by a coking chamber. The grate-bottom is sliding, and below is a closed ash-pit, to which the admission of air is regulated by dampers.

2,498. A. M. Clark, London. Door-fasteners. (Com. by C. A. Crongeyer, Detroit, U.S.A., and W. Busch, Walkerville, Canada.) May 25, 1882. Price 2d.

A hook is placed against the jamb of the door, and when this is shut the point is forced into the jamb. A U-shaped piece is then passed over the shank of the hook and screwed up by a nut against the door and the door-post, thereby securing the door.

2,530. H. Ransford, Brighton. Domestic stoves or fireplaces. May 27, 1882. Price 6d.

The fire-basket is secured to a vertical disc pivoted in its centre. Movable covers are fitted to the basket. When the fire requires feeding the coals are placed on the top, and the cover is shut down, when the basket is turned over, so that the smoke from the fresh fuel passes through the live fuel and is consumed.

2,541. P. Ross, Harrow. Architectural work. May 30, 1882. Price 4d.

This is chiefly applicable to stained-glass windows. The framework which traces the figures is of a taper form, so as to provide tapering apertures to disclose the design.

2,549. T. Hyatt, London. Building construction, lighting, fire-proofing, &c. May 30, 1882. Price 8d.

The buildings are constructed of a framework of iron pillars tied together by iron beams, &c., the space between being filled by iron lathing covered by concrete. The buildings are lighted by outside or receiving reflectors, combined with internal distributing mirrors, which latter form part of the building.

2,556. G. L. Reynolds, Oakland, U.S.A. Window-screens. May 30, 1882. Price 6d.

A perforated screen is rolled upon a roller, which is inserted in the bottom of the lower sash, while another is inserted in the top of the upper sash. The outer ends of these screens are secured to the window-frame, so that when the window is opened the screen will be extended over the opening, and exclude flies, dust, &c. A spring rolls up the roller when the window is closed.

THE FALL OF A FACTORY CHIMNEY IN BRADFORD.

THE inquiry into the deaths of the fifty-four persons who lost their lives by the fall of the chimney at the Newland Mills was resumed on Tuesday last, before the borough coroner, Mr. Hutchinson, when the evidence of technical witnesses was commenced to be taken. Lieut.-Col. Seddon, R.E., was present on behalf of the Government.

The Town Clerk (Mr. M'Gowen) represented the Bradford Corporation; Mr. Lockwood, Q.C., appeared on behalf of the trustees of the late Sir Henry Ripley, the owners of the mill.

Mr. John Henry Cox, borough surveyor of Bradford, produced a plan of the Newland Mills and adjoining premises. He said that no complaint of the insecurity of the chimney had been made either directly or indirectly to the borough surveyor. Complaints had been made in other cases, and the Corporation had effectively interfered.

Mr. Lockwood.—Is there any person whose duty it is to inspect mill chimneys?

Witness.—Not specially; but if either the sanitary inspector, the inspector of buildings, or the police in the course of their daily duty see a dangerous building of any kind, it is part of their duty to report it to the building inspector, who, however, attends more particularly to new buildings. The chimney in this case was surrounded by buildings, and the inspector would not be able to notice it. The police have special instructions to report all cases of dangerous walls and buildings which may come under their notice. Any complaint, even if it be anonymous, is immediately attended to.

Mr. David Little, of the firm of Messrs. Taylor, Jeffery, & Little, solicitors to the trustees of the late Sir H. W. Ripley, owner of Newland Mills, said that the fallen chimney was used by the whole of the different mill-premises comprised in the oblong block enclosed between Upper Castle-street and Springmill-street on the one side and Ripley-street on the other, as well as the premises of Messrs. Mark Dawson on the opposite side of Springmill-street. The chimney was under the sole control of the owner, and the tenants had nothing to do with it except send their smoke up it. He did not know anything about any repairs to the chimney, but it was periodically inspected on behalf of the owner.

The Coroner.—Are you able to say when any inspection took place?

Witness.—It was inspected about twelve months ago by a man who goes by the name of "Bill the Greaser," who will be produced. He did not know when or by whom the chimney had ever been otherwise inspected. While Sir Henry was living, he would very probably look after the chimney himself. Witness did not know that the chimney would be under anybody's special care. On Thursday, December 21, Mr. Frederick Ripley, one of the trustees, received a letter from Mr. Francis Haley, the rent agent, asking him to see about the chimney. Mr. Ripley went with Mr. Francis Ripley and a mason to see the chimney next day. Mr. Taylor advised Mr. Ripley to get the best advice on the subject he could as to the safety of the chimney. Mr. Frederick Ripley told witness he had seen Mr. Andrews, one of the firm of architects who built the chimney, the day before, and that Mr. Andrews had advised him that there was no immediate danger. Mr. Frederick Ripley said to witness, "There are bulges in the chimney, and I shall not be satisfied until they are removed." Mr. Frederick Ripley, on the Sunday morning, told him that he and Mr. Andrews had viewed the chimney and had decided to remove the bulges on Saturday after one o'clock, when the workmen had left. He also stated that on Saturday he sent his servant into the chimney, and the servant reported that there was no corresponding bulge inside to that outside the chimney. Mr. F. Haley reported in writing to Mr. Ripley, under date December 23:—"I am glad to say that the damaged portion of the walling of the chimney looking towards Scott's and Briggs's has been got down without any serious result. The inside wall, so far as I can see, is perfectly sound. We shall proceed to fix the scaffolding this (Saturday) afternoon, and to-morrow, I hope, we shall be able to take down the remainder of the unsound wall,—I mean that portion on the south side." On the Tuesday following witness saw Mr. Frederick Ripley and Mr. Francis Haley on other business; the chimney, however, was referred to, and witness said that he should have got some other architect than Mr. Andrews to inspect the chimney. Mr. Haley said, "Mr. Andrews is Sir Henry's architect, and his firm built the chimney, and, among many others, Mr. Lister's, of the Manningham Mills." He also said that, in addition to Mr. Andrews, Mr. Moulson, Mr. Humphreys, and Mr. William Beanland had all expressed themselves satisfied as to the safety of the chimney. No other arrangement was made, and the subject dropped. Witness did not recollect having any further conversation as to the chimney until the following Thursday after the chimney had fallen. Witness exacted a promise from Mr. Frederick Ripley not to go either near the mill or the chimney while the bulge was being removed.

Mr. Scott.—Then you thought the chimney insecure?

Witness.—Yes, I did.

Joseph Illingworth, one of the masons employed by the builders, Messrs. John Moulson & Sons, in the erection of the chimney, said that the inner coat consisted of 9 in. of fire brick and 9 in. of red brick. The outer coat was of walling with a backing of rubble. When the chimney had been raised some 20 yards it gave way, becoming round on one side and hollow on the other. The works were at once stopped until a man named Woodman came from Manchester to straighten the chimney. This was done by taking out several courses of masonry and brickwork on one side and dropping them half an inch. After that the chimney was proceeded with until it was completed. The chimney was then straight, and, as far as he was able to judge, it was a good chimney. It was put into use shortly afterwards. Some sixteen or seventeen years ago a portion of the outer case bulged out in four places, above the place where the courses of masonry had been taken out, and as they were an eyesore he took the bulges out and put in new masonry. He had not done anything to the chimney since, but he had frequently seen it when he had been passing in the train. Sometimes he had thought it was out of plumb, and at other times he had thought it was straight.

Miles Moulson, foreman for Messrs. Humphreys & Moulson, builders, Horton, stated that he was employed with Illingworth in the erection of the top portion of the chimney. He assisted to straighten the chimney. As far as he remembered, the man from Manchester took out half of one of the courses of stone and brick, inserted wedges, put in "throughs" of ashlar stone, and lowered the chimney on one side until it became straight. Two courses of masonry were cracked by the operations, and witness helped to replace them. Witness did not work at the mill again until the Saturday before Christmas Day, when he went to erect some scaffolding in order to repair the outer shell of the chimney, which was bursting out. The bursting out was at a point some 16 yards from the bottom, and extended for 6 or 7 yards in an upward direction. Two of the burst-out corners were the same that burst out twenty years ago. He did not notice whether the chimney was plumb or not. Some of the out-side masonry was loose when they erected the scaffolding, and they also removed a piece of the outer case, about 3 or 4 yards wide by 2 yards deep. Some masonry fell on the Wednesday before the accident, and broke down the scaffolding. Three sides of the chimney, which was octagonal in shape, fell out in the direction in which the chimney afterwards fell altogether. Two men were stationed at either end of the yard to prevent any hands going into it. As he was passing along Ripley-street on his way to work on Thursday morning, he saw the chimney fall. It seemed to burst out about the height of the mill, just about the place where it was cut through to be straightened twenty years ago, and then sank several yards down, and fell aslant across the mill in the direction of Upper Castle-street. The wind had been blowing strongly all night, and at the time the chimney fell there was a strong gust. He did not think there was any danger; he would have worked on the chimney without any fear. When he was taking out the masonry the hearting of the chimney seemed as sound and as good as twenty years before. Witness did not go inside the chimney, and could not say whether any stones had fallen inside.

On Wednesday the examination of Miles Moulson was resumed. In answer to Colonel Seddon, he said that when he went to work at the chimney, it seemed to commence to be out of plumb about half-way up, and not from the bottom. The chimney was cut at the point which it was thought would bring it straight. Every one thought that the foundation had given way a little, but they believed that cutting it through at the point they did would straighten it. He did not see any dislodgment of the ground, but he was not present when the foundations were laid. He was not aware of any steps having been taken by the architect or builders to straighten the courses below or to ascertain whether the foundation had gone. He worked on the outside scaffolding while the chimney was being straightened, and he did not notice any cracks in it. Courses were removed on the cants or sides nearest to Upper Castle-street in the direction in which the chimney fell. The first two bulges which he removed were on the south and south-east corners. The bond stones were broken. They took down the bulged part as far as it had burst. They examined the surface stones on the opposite side of the bulged part, but found no cracks. The other side seemed to be all right. When they let the chimney down there was a slight opening of the bed joints on the opposite side to where they cut through. They did not disturb any of the casing on the opposite side.

Colonel Seddon.—Did you examine the inside of the chimney at the time you were cutting through it?

Witness.—Yes, and afterwards as well; we could not see anything the matter on the inside. After the chimney was straightened I went on with the finishing, but I never noticed any further settlement or getting out of plumb. There were three masons and one labourer working on the top. We made no objection to the quality of the material put in. We put in what was sent up to us. So far as I remember, there was only one kind of mortar used for both backings and facings. Witness further said that he had seen the chimney from time to time, but did not observe that it was out of plumb. He had seen the bulges in the chimney at the point where it had previously been repaired about a week before Christmas. Mr. Humphreys, his employer, drew his attention to it, and they went up together. Mr. Humphreys told him that they were going to try to do something to the chimney. Witness told him there was no fear of the chimney falling, as it was only the outside shell which was bulging out again. Mr. Humphreys remarked, "It

looks very bad to look at." Witness replied that it did. Mr. Humphreys sent for him on Saturday, the 23rd December, and told him to take out the part which was bulging. Scaffolding was then put up to take out the four corners which bulged. Witness did not think at that time that the chimney was out of plumb. He was under the impression that it was merely a breaking out of an old sore, and that the previous repairs had given way where there were no bonding stones. The backing seemed to be as strong as ever. During the night preceding the accident there had been a strong wind blowing. When witness helped to repair the chimney twenty years ago, he did not see any cracks in the inside coating of bricks, nor any settling in the backing or hearting. As an experienced mason, he should expect a gradual settling of the hearting, which in degree would be regulated by the quantity of mortar used. If the amount of mortar used was excessive, the settling would be greater than that of the outer coat; and, if the subsidence was greater in the hearting than in the outer coating, it would have the effect of breaking the bonding stones, and leaving them separate and distinct from the outer coating.

By the jury.—As an experienced workman, he thought that the cutting of the chimney to straighten it twenty years ago, and the lowering of the weight above, would break the line of the whole chimney.

By Colonel Seddon.—When they cut through the chimney, half way round, and had taken sufficient out to let the chimney come over, and they began to knock the wedges out, they could hear a noise which they thought was caused by the breaking of the "throughs." There was a plumb thrown over the chimney, and when it got straight they filled in the spaces with mastic. It took about eight weeks to straighten the chimney, six weeks to cut through it, and the rest in withdrawing the wedges and filling up the spaces with mastic. The work of finishing the chimney was at once continued.

By the jury.—The fires were relighted again after the Christmas holidays. The intense heat going up the chimney would, after the latter had cooled, have the effect of expanding the chimney and causing it to burst out at any faulty place.

William Waterhouse, a masons' labourer in the employ of Messrs. Humphreys & Moulson, who assisted previous witness to erect the scaffolding around the chimney a fortnight ago, stated that when he got the scaffolding up he noticed that the chimney was badly cracked and that a portion of the outside case was continually falling out at a point about 15 or 16 yards from the ground. He was about 10 or 12 yards off the chimney when it fell. It fell a few minutes after eight o'clock; the mill had not been stopped long. Just before the chimney collapsed he heard a fall of something at the opposite side of the chimney to that on which he was standing, which broke down the remnant of the scaffolding still remaining up. Next a barrowful of stones fell out on the right-hand side of the chimney, and then three or four stones fell out on the left-hand side. Before these stones reached the ground the chimney opened out just below the top of the scaffolding and fell. The lower part of the chimney fell towards him; the upper part went in the opposite direction. A piece of the scaffolding caught him on the calf of the leg, but otherwise he was not touched.

Alfred Robinson, another masons' labourer, stated that he also was present when the chimney fell. He was standing about 20 yards off the chimney, and he first saw what he thought was the outer case of the chimney fall. Under that impression, he stood for a second or two, but hearing a great noise, as if more stones were coming, he ran towards the passage leading into Upper Castle-street. As he was running he was struck by some falling stones, and rendered insensible for a short time. He recovered, as he thought, in about two or three seconds, and heard a greater crash. He made his way to the great gates, and ran off without looking to see what became of the chimney.

By Colonel Seddon.—About half-past six o'clock on Thursday morning he was in the boiler-house. He heard a noise, and on going out he saw that a piece of the outer case, about 4 ft. by 18 in., had fallen out of the chimney. While he was watching, he had his eyes constantly on the chimney, but he never saw any smoke issue from the side of the shaft.

The inquiry was again adjourned.

PROVINCIAL NEWS.

Bootle.—The London and North-Western Railway Company have completed the large pile of warehouses which are being provided in Regent-road to accommodate the constantly-increasing traffic inwards and outwards of the Bootle Docks, the latest extension of the dock system of the port of Liverpool. These warehouses are situated in Regent-road, near the corner of Strand-road, immediately facing the Alexandra Docks, and at the terminus of the Bootle branch of the London and North-Western Railway. The warehouses are the third largest on the London and North-Western system, being 290 ft. in length by 155 ft. in width, and 70 ft. in height, and comprising altogether upwards of 4 acres of flooring. There is a basement-floor of 280 ft. by 50 ft. The elevation fronting Regent-road is carried upon moulded cast-iron columns, between which lorries can back in and be clear of the footpath whilst they are loaded through trap-doors from the upper floors. At the back of this there is a covered way or tunnel containing one line of rails, to enable the company to run goods trains from the warehouses to their land on the other side of Church-street. At the back of the tunnel is a paved roadway, 48 ft. wide, with trap-doors over, so that lorries may load or discharge under cover, through trap-doors communicating with every floor. Then comes a platform over the basement, 290 ft. by 50 ft. in extent, specially designed for storing tin and other valuable metals which would be injured by exposure. Past this platform is a road, with two lines of rails, with crossings and turn-tables at each end, and from the wagons on these lines goods will be hoisted to the upper floors. There are four stories above, each 290 ft. by 155 ft. Each floor is fitted with trap-doors and with external doors on the goods-yard frontage for the reception and delivery of goods. One noteworthy feature of the building (according to the *Bootle Times*) is the enormous quantity of iron which has been used in the construction. There are 700 tons of cast-iron columns and stanchions, and 2,600 tons of wrought-iron girders, the number of girders being 3,200. The building was designed by the company's engineers, and the hydraulic hoisting-machinery by the locomotive department. The builders were Messrs. Dransfield & Smith, of Bankhall, Liverpool, who employed the Horseley Company, of Tipton, to supply the ironwork. Mr. Wm. Thomas has been the clerk of the works. The total cost of the building is about 100,000*l.* It may be added that the area of land occupied by the London and North-Western Company for their Bootle terminus will be not less than 23 acres in extent, being about the same area as that which has been secured by the Midland Company.

Sedgley.—On the 28th ult. the new Public Hall erected in the Dudley-road by the Public Hall Company was formally opened. The building is erected to accommodate 800 persons, and every provision is made for the use of the large hall as a concert-room or as a theatre. The structure has been erected, at a cost of 1,200*l.*, by Messrs. Jones & Sons, from plans prepared by Mr. A. P. Brevitt.

OFFICES OF THE CHELTENHAM GAS COMPANY.

SIR,—I observe in your publication of date the 30th of last month, a letter of Mr. Smith, of Mitcheldean, having reference to his competitive design for the new central offices of the Cheltenham Gas Company.

Any one reading Mr. Smith's letter would be led to suppose that his design had been accepted; that his first estimate of the cost of the building was 9,162*l.*; his second estimate, 7,021*l.*; and his third estimate, 6,141*l.*; and that he resigned the office of architect in consequence of the directors having refused "to accept any tender for the erection of the building, after putting the contractors and himself to the trouble of supplying and obtaining three separate estimates."

I shall endeavour to point out that the facts are essentially different. Mr. Smith's design was accepted provisionally only, the condition being that he was to furnish a tender of a responsible and approved builder undertaking to execute the work for a sum within ten per cent. of his estimate of 5,583*l.*, and not 9,162*l.*, as he has stated. And it was upon the faith of this estimate that his design gained the preference in the competition.

Mr. Smith's quotation of the first list of tenders, which range from 13,840*l.* to 8,441*l.*, showed how greatly the directors had been misled in confiding in his estimate. When the explanation of the excessive amount of the first list had been called for and given, the directors were surprised to find that Mr. Smith had introduced costly work into the building which had not been included in his estimate, and of which work they entirely disapproved. They desired him to adhere to the drawings and specifications on which his estimate of 5,583*l.* had been founded, and to restore the drawings and specifications to the form approved, and on that basis to invite fresh tenders.

This resulted in the second list of tenders being sent in, which range, as quoted by Mr. Smith, from 9,278*l.* to 6,838*l.*, all of them being some hundreds in excess of his estimate of 5,583*l.*, and not 7,021*l.* as he has stated, except one, which was not approved.

At this juncture, and purely out of consideration to Mr. Smith, and in compliance with his urgent request, the directors consented to refer the plans to him and myself to see if it were practicable to make such deductions, consistently with the maintenance of the structural character of the building as would bring the cost within the company's limit of 10 per cent. of the estimate of 5,583*l.*

I accordingly met Mr. Smith for the purpose, and went carefully through all the details of the building, and agreed to certain deductions as the basis on which a third list of tenders should be invited. To my surprise, however, when the directors met to open this third list, it was found that Mr. Smith's bill of deductions, on which the tenders comprised in the third list had been sent in, differed in essential particulars from that which we had agreed upon.

Under all the circumstances the directors felt that no other course was open to them than to return Mr. Smith his designs, and decline to continue his services.

R. O. PATERSON, Manager.

JUPITER PLUVIUS.

SIR,—The past year has been an unusually wet one throughout this country, and as the temperature has also been below the average, the result has been most disastrous to agriculture in particular. Every crop has suffered more or less, even that of ground game. Although the human death-rate has been lower than usual, yet sickness and a low degree of health have prevailed, as most medical men can testify.

As a contribution to the statistics of this subject, Mr. Plant, of Moseley, near Birmingham, has published the records of his observations, and as they are of general interest I thought you might find room for them in the *Builder*.

Rainfall at Moseley, near Birmingham, in 1882.

	inches.
January	2·33
February	1·34
March	2·58
April	4·35
May	3·05
June	4·89
July	4·35
August	1·89
September	2·85
October	6·21
November	4·68
December	4·04
	43·06

For the purpose of comparison with previous years, he gives also the rainfall of each year since 1860, as follows:—

	inches.		inches.
1861	29·31	1872	47·69
1862	28·66	1873	27·26
1863	24·73	1874	30·62
1864	25·35	1875	38·02
1865	29·44	1876	34·75
1866	34·83	1877	36·49
1867	31·55	1878	36·42
1868	31·83	1879	36·57
1869	33·07	1880	34·50
1870	25·54	1881	30·74
1871	30·31	1882	43·06
Average	29·51	Average	36·01

Mean rainfall in twenty-two years ..... 32·76
Mean temperature in 1882 ..... 47·9
Average of twenty years ending 1880 ... 48·2

It will thus be seen that in only one year in the record,—1872,—has more rain fallen than in 1882.

There is another point may be mentioned in connexion with the last table, which is divided into two equal parts of eleven years each. The average of the first eleven years is only 29·51 in., while the average of the second eleven years is 36·01 in. So that if the cycle principle holds good we may now expect a series of drier years than we have lately been favoured with. But what we most want is sunshine. The abundant rainfall would be a great advantage to us, if we were blessed with a sight of the face of the sun much oftener.

E. GRIMES.

OVERHEAD WIRES.

SIR,—Referring to an article in one of your recent issues anent overhead wires for electric purposes, I beg to hand you by this post a copy of a pamphlet I have written upon the subject, which may be of interest to you. I quite endorse all you say of the danger and nuisance of overhead wires; but until the authorities insist upon all wires being placed underground, we may be sure the companies interested will do nothing to alter existing lines. Until an alderman is killed, this is not likely. But when it,—an accident,—or public opinion induces the authorities to move in the matter, I believe there will be no alternative but to adopt the proposal I have made, for all wires to be under one control, and my suggestion that special companies should be founded to lay down mains and rent out the wires is now being adopted in the United States, which is in advance of us in these matters, and whose example we are bound to follow sooner or later.

H. R. MEYER.

"SHORT QUANTITIES."

THORNTON *v.* WALKER AND OTHERS.

THIS case was heard before Vice-Chancellor Bristowe, in the Lancaster Chancery Court at Liverpool on the 20th, 21st, 22nd, and 23rd of December.

The action was brought by the builders of a Presbyterian church in Liverpool against the architect and building committee of the church, to recover a sum of 1,050*l.*, which the plaintiffs claimed as due to them for work executed in pursuance of their contract, but not included in the bill of quantities.

The plaintiffs, by their statement of claim, alleged that the committee had issued a circular to architects inviting a competition for plans for the building of the church, and that they had in that circular stipulated that the cost of the church should not exceed 10,000*l.*; that the defendant Walker's plans were accepted, and that a stipulation was made between him and the committee that the employment of Walker as architect should depend upon his being able to obtain a tender not exceeding 10,000*l.*; that Walker, by the instructions of the committee, employed one Newton, a quantity surveyor in Liverpool (since deceased) to take out the quantities for the work, informing him that the adoption of the plans by the committee depended upon a tender not exceeding 10,000*l.* being obtained, and that the quantities were required for the purpose of obtaining tenders not exceeding that sum; and further, that it was stipulated between Walker and Newton that the latter was to receive no remuneration for taking out the quantities unless a tender were obtained not exceeding the above-named sum.

It was further alleged that in taking out the quantities, Newton, at the suggestion of Walker, and for such purpose as above stated, wilfully and intentionally represented the amount of work required to carry out the plans at much lower figures than were correct, and that the plans submitted by Walker to Newton to enable him to take out the quantities were not the same plans as those subsequently signed by the contractors, and were insufficient to enable him to take out the quantities accurately.

The architect (Mr. Walker) thereupon invited tenders for the execution of the work according to the plans and specifications.

The plaintiffs alleged that at the time of inviting tenders the defendant Walker knew that at his suggestion the quantities had been taken out incorrectly for the purpose of obtaining a low tender for the work, and that Newton was, as Walker well knew, without experience or skill in taking out quantities. The plaintiffs also alleged that the plans open for their inspection at the architect's office were not sufficient to enable them to check the accuracy of the quantities, and that they tendered for the work relying entirely upon the representation that the quantities had been extracted by an experienced surveyor, and in the belief that they had been extracted *bonâ fide* and were correct.

Several tenders were sent in, the highest being 17,219*l.*, and the lowest (the plaintiffs') 11,750*l.*

The plaintiffs' tender was accepted, and the contract was signed on the 10th of August, 1877.

As the work proceeded it was found that the quantities were inaccurate and did not show all the work required to erect the building in accordance with the plans and specifications.

The plaintiffs demanded a considerable sum for the work executed by them in excess of the work shown in the bills of quantities. The defendant Walker refused to certify for this sum, and the Building Committee refused to pay it. This action was then brought, claiming payment from the architect and the committee.

Before the trial it was admitted that the quantities were inaccurate, and that the sum due to the plaintiffs, if any, was 1,050*l.*

The defendant Walker, by his pleadings, denied that there was any stipulation between him and the committee as to the cost of the building, or that he instructed Newton to take out the quantities inaccurately, and he alleged that Newton was a competent quantity surveyor. He denied that the quantities were, to his knowledge or to the knowledge of Newton, false or inaccurate in any particular. The defendants the Committee relied upon the contract signed by the plaintiffs.

Mr. Neville and Mr. Mulholland appeared for the plaintiffs; Mr. O. L. Clare and Mr. T. R. Hughes for the defendant Walker; and Mr. Robinson, Q.C., and Mr. Frederick Thompson, for the other defendants.

During the hearing, the counsel for the plaintiffs asked leave to amend their statement of claim by striking out the allegations of fraudulent intention on the part of Walker and Newton, and the allegations that Walker suggested that the quantities should be taken out incorrectly, and knew that they were incorrect. This was accordingly done. They contended that they were entitled to have the contract set aside, and to be paid as upon a *quantum meruit* for the materials and labour supplied by them in excess of that shown in the bills of quantities.

The following cases were cited in the course of the argument:—Moon *v.* Guardians of Witney Union (3 Bingham's New Cases, p. 814); Scrivener *v.* Pask (Law Reports, 1 Common Pleas, 715); Kimberley *v.* Dick (Law Reports, 13 Equity, 1); Kemp *v.* Rose (1 Giffard, 269).

At the close of the plaintiffs' case, Mr. Clare, on behalf of the defendant Walker, submitted that there was no case against him; that if the plaintiffs claimed to set aside the contract and sue on a *quantum meruit*, the architect had nothing to do with it, and that the action as against him ought to be dismissed with costs.

Mr. Robinson, for the other defendants, argued that this action, if anything, was in the nature of a common law action of deceit, and that to sustain such an action it was necessary for the plaintiffs to prove three things:—firstly, that a false representation had in fact been made; secondly, that the defendants knew that it was false; thirdly, that the plaintiffs acted upon the faith of that representation. He submitted that the plaintiffs had failed to establish these three points. He cited the recent cases of Redgrave *v.* Hurd (20 Chancery Division, p. 1), and Smith *v.* Chadwick (20 Chancery Division, p. 27).

The Vice-Chancellor, without hearing the defendants' witnesses, dismissed the action, with costs, both as against the architect and as against the Building Committee, on the grounds urged by the defendants' counsel. In his opinion, it was clear that the plaintiffs had relied, not on the representation that the quantities had been extracted by an experienced surveyor, but on the skill and experience of Newton.

METROPOLITAN BUILDING ACT.

THOMAS EYERS, of Oldfield-terrace, Acton Vale, was summoned by Mr. Knightley, the District Surveyor of Hammersmith, for not complying with the by-laws of the Building Act.

The case was heard in the defendant's absence.

Mr. Stephens, assistant to Mr. Knightley, said the defendant was erecting six houses on the north side of Vespan-road, and had not covered the sites with 6 in. of concrete. The sites consisted of a vegetable soil on which cabbages had been grown. It was not a virgin soil, nor gravel and sand. The defendant had only put down 1 in. of concrete. Witness saw him last Wednesday, when he promised to make the alteration.

Mr. Knightley informed the magistrate that the defendant made an application to the Metropolitan Board of Works, who refused to excuse him. He (Mr. Knightley) left the case in the magistrate's hands, as he wished only to have the law complied with.

Mr. Sheil fined the defendant 40s., with 2s. costs.

ARBITRATION.

ANWELL *v.* THE EVERTON BURIAL BOARD.

THIS action was brought by Mr. Isaac Anwell, a contractor of Liverpool, against the Everton Burial Board to recover the sum of 10,212*l.* 18s. 4d., being the balance he considered due to him on three contracts and extras for laying out a cemetery of about sixty acres at Fazackerley, erecting boundary walls, also three chapels, board room and offices, lodges, stables, gateways, and other matters, the contract in the aggregate amounting to 30,338*l.* 15s. 6d., making the total claim in the action 46,636*l.* 19s., the cash paid on account being 36,424*l.* 0s. 8d., leaving the reputed balance as aforesaid.

The questions at issue were various and as follow:—Alleged tightness of certificates and consequent paucity in money payments; obstruction; want of drawings and definite information, mainly in consequence of interminable alterations and rearrangements in the construction, arrangement, and situations of the buildings; loss of time and profit in consequence of such alterations and delay, claim for payment for such additional work at rates in excess of the contract rate, to which the contractor was clearly entitled, there being no negative clause in the contract; differences of opinion as to amounts in claims for day work allowed and disallowed, extending over a period of several years; as to extent and value of the additional works admittedly executed; innumerable incidental items, including interest, &c.; and last but not least, a heavy claim for alleged discrepancies in the quantities supplied to the contractor by the architects to the Board, Messrs. T. D. Barry & Son, of Liverpool, such discrepancies being stated to consist of insufficiency in quantity in many of the main items, lack of numerous legitimate items not given, &c.

These quantities contained the clause to the effect that they had been taken by a qualified surveyor, but that the architects would not be responsible for their accuracy. The architects, it was stated, as a matter of fact, took the quantities themselves, and duly received payment for them at the rate of 2 per cent.

By consent, the matters in dispute were referred to the sole arbitrament of Mr. Cornelius Sherlock, architect, &c., of Liverpool, who, after a patient inquiry extending over thirteen sittings, awarded that the plaintiff was entitled to the sum of 1,794*l.* 11s. 2d. in addition to the sums of 620*l.* 2s. 2d. and a further marginal sum of 500*l.* paid into court, making a total of 2,914*l.* 13s. 4d., and further that the whole of the costs, charges, and expenses be borne by the defendants.

This amount was clearly awarded entirely outside the question of the responsibility of the quantities, and as a somewhat similar case has been determined in a similar manner very recently in the same locality, it behoves contractors to be very careful and discriminating in accepting the responsibility of quantities, or, on the other hand, of adopting the most sensible course of declining to do so at all.

The plaintiff's case in the foregoing arbitration was prepared by Mr. T. S. Smith, surveyor, of Liverpool and Manchester, the solicitors being Messrs. Barrell, Rodway, & Barrell, and the barrister Mr. W. H. Butler, all of Liverpool.

The defendants were represented by their architects, assisted by Mr. T. Cooke, architect, Liverpool, the solicitors being Messrs. Whitley, Maddock, & Hampson, and the barrister Mr. James, all of Liverpool.

The cemetery has been occupied for two years and a half, and as the difference of opinion was co-existent the contractor has been kept out of the balance for that period.

Books.

New Year's Art, 1883. Compiled by M. B. HUISH, LL.B., and D. C. THOMSON. London: Sampson Low & Co. 1883.

THIS, which is a concise epitome of all matters relating to art, grows in size and value. Mr. Huish has taken to his aid Mr. D. C. Thomson, who has suggested and introduced several valuable new features. The volume contains a remarkable mass of information, and its value does not cease at the end of the year in which it is published.

Miscellanea.

The Contractors for the New Law Courts. Messrs. Joseph Bull & Sons, of Southampton and the New Law Courts, have been compelled to suspend payment. It is stated that the completion of the New Law Courts has strained their resources beyond their ability to bear. Their efforts to prevent the forfeiture clauses under the contract coming into operation have affected their general estate to an extent which has resulted in their being unable to meet their engagements, and their position depends entirely on the working out of their very large claim on the Government for extras, of which they are unable to procure a settlement until the herculean task of completely measuring-up the work has been completed. The books of the firm have been placed in the hands of Messrs. Broads, Paterson, & May, of 35, Walbrook, who are preparing a statement of affairs. In the Bankruptcy Court on Monday, the case was mentioned. The debtors, Messrs. Henry, William, Frederick, and Edward Charles Bull, petitioned the Court for the liquidation of their affairs, describing themselves as builders and contractors, carrying on business at the Belvedere Works, Northam, Southampton, and estimating their liabilities at 190,000*l.*—Mr. Hackwood (Messrs. Linklaters & Co.) applied for the appointment of Mr. A. A. Broad (Broads, Paterson, & Co.), as receiver and manager of the estate, and in support he read the affidavit of one of the debtors, Mr. F. Bull, which stated that the firm had a large claim still outstanding in connexion with the building of the Law Courts, and there was plant, &c., on those premises which had cost 30,000*l.* There was also 10,000*l.* worth of property at the Belvedere Works, Northam. The firm were also contractors for the London and South-Western Railway, and there were a large number of men employed at work on the railway. It was very important, in the interest of the creditors, that these works should be kept going, and that the wages should be paid. It was therefore necessary that a manager as well as a receiver should be appointed. His Honour appointed Mr. Broad receiver and manager, and granted an injunction against several creditors. We may add that on referring to the *Builder* for March 29, 1873, we find that seventeen tenders were sent in for the erection of the Law Courts. The highest was "Lovatt, 1,000,000*l.* odd," and the lowest that of Messrs. Bull, amounting to 719,787*l.*

The River Embankment at Pimlico.—On the 4th inst., at the ordinary fortnightly meeting of the St. George, Hanover-square, Vestry, a further correspondence was read respecting the raising of the embankment wall at Grosvenor-road, Pimlico. The Metropolitan Board wrote asking whether the vestry were prepared to carry out the suggestion of the First Commissioner of Works, which was that they should do the work at their own expense. Mr. W. H. Smith, M.P., enclosed a copy of a letter which he and Lord Algernon Percy, M.P., had addressed to Mr. Shaw-Lefevre on the subject. The communication was in the following terms:—"Under a recent Act of Parliament all owners of property, without exception, were compelled to raise the riverside walls belonging to them to a height to prevent any probable flood from overflowing property inside the walls. Every owner in the vicinity has complied with the Act, but the Crown has neglected to do so, and floods entering over the Crown walls threaten most seriously the whole neighbourhood, including the property of those persons who have complied with the Act at their own expense. We are informed that your department have hitherto refused to raise the wall,—which, it is said, can be done for a small sum,—on the ground that the Crown derives no revenue from the property. There is no provision in the Act exempting property owners from their liability under certain conditions, and it is not conceivable that the Crown can before the country claim an exemption from the operation of an Act passed in the interests of the public at large, and the provisions of which cannot be legally complied with, so far as the Crown property is concerned, by any local authority. We are so convinced that you have not fully realised the gravity of the principle, and the comparative insignificance of the charge involved, that we hesitate to give notice of any Parliamentary action on the subject, and we hope it will be in your power to assure us that the work will in some way be immediately provided for." Mr. W. H. Smith, M.P., in a letter dated the 23rd ult., said that he and his colleague had not received any reply to the foregoing communication addressed to the First Commissioner, but if the work was not done they were prepared to take further action in the matter. Mr. Southon remarked that it was monstrous for a Government department to ask the Vestry to do the work; they might just as well be asked to repair Buckingham Palace. He moved that the correspondence be referred to the Parliamentary Committee, with a view of further action being taken. Lord Frederick Fitzroy seconded the motion, remarking that the Government were merely asked to protect their own property. The motion was carried unanimously.

New Board Schools, Portsmouth.—On Tuesday last the new Board Schools at Binstead-road, Buckland, were opened for educational work. These schools have been designed by Mr. A. H. Bone, the architect, to accommodate 915 children,—boys, girls, and infants. The style of architecture is plain Gothic, the facings of deep coloured red brick, relieved with Beer stone dressings, from the Beer Stone Quarries in Devonshire. There is little beyond this in ornamentation, the Gothic heads of the windows alone being filled with Cathedral glass in lead lights. The principal entrance is beneath the bell tower in Langley-road, in which is the main staircase of York stone to the girl's school and class-rooms, which are very large, lofty, and well lighted. The boys' entrance is in the Winchester-road. It is stated that every care and attention has been paid to the sanitary and ventilating arrangements. There is a caretaker's residence detached from the schools, and large open playgrounds. The contractor was Mr. John Crook, of Northam, who has carried out the works to the entire satisfaction of the architect and the Board, at a cost of a little over 8,000*l.*, the gas-fitting and water-fittings being done by Mr. H. B. Kent, High-street, Southampton. Mr. Walmesley has been the clerk of the works and Mr. McGown the foreman.

Malvern.—The Beauchamp Hotel here has been considerably enlarged by the alteration and extension of the commercial-room and the billiard-room, the addition of stock-room, coffee-room, sitting-rooms, bed-rooms, &c., and the reconstruction of the hotel bar or restaurant. The work has been carried out to the designs of Mr. G. C. Haddon, architect, by Mr. Everal, builder, of Malvern, at a cost of over 2,000*l.*

Cairo.—Mr. W. J. Loftie, in a letter to the *Times*, writes,—It would be a great satisfaction to know that the English in Egypt are not wholly indifferent to the claims of ancient art. Cairo suffered much during the reign of Ismail Pasha, and during the few months which passed between the accession of the present Khedive and the outbreak of Arabi's mutiny a number of minor works of destruction were carried out, by whose direction I know not. It is only necessary to mention the so-called "restoration" of the mosque of the Caliph Hakeem, which consisted merely in pulling down and numbering the marble columns that remained standing; the "macadamising" of the Moosky, the removal of the boards overhead, and the construction of a ridiculous and inadequate footpath, which only narrows the roadway without benefiting pedestrians; the removal of the ancient and picturesque buildings which surrounded the Slave Market; and the virtual destruction of several old mosques to make room for new buildings in a style which resembles its original in the same degree that the Alhambra in Leicester-square resembled the Alhambra at Granada. My friend, M. Arthur Rhoné, has detailed the vicissitudes of Cairo in a recent volume, and has written to his correspondents in this country begging them to call attention to the subject. M. Rhoné describes himself as "attaché à la mission archéologique de France au Caire." No such mission has been sent out from England. There are a few competent antiquaries now in this country who would be perfectly capable of forming the members of a commission for the preservation of ancient remains, such as already exists in India. The Boolak Museum is, or was lately, managed by a Frenchman and a German; the Khedivial Library, a treasury of Arab art, was in the hands of a German, who had an Italian deputy. In no such post was an Englishman to be found. This is surely the moment at which such apathy on our part should be abandoned. No doubt, the Government has much to think of now in settling affairs in Egypt, but the appointment of a few English Commissioners, or even one, to proceed to Cairo and take his place with the French and German *savants* could not be a matter of any great difficulty, and would certainly lead to satisfactory results in the preservation and perhaps the repair of many interesting, but fast perishing, remains.

Reading.—The alterations and additions to St. Mary's Episcopal Chapel Boys' Sunday School have been completed, and the building has been re-opened by the mayor. A gallery has been carried round three sides of the building, and in it eight spacious class-rooms are arranged, reached by a staircase from the ground-floor. Under the gallery curtains divide the junior classes, the superintendent's desk being in an elevated position between the two floors. In addition to the class-rooms, there are rooms for the superintendent and librarian, and other offices, while a considerable addition has been made to the infants' room. There are about 800 scholars attending the schools, and 100 teachers. The total cost of the alterations will be about 560*l.* The work has been carried out by Mr. Margetts, under the direction of Messrs. Webb & Tubbs, architects, Reading.

Stratford-on-Avon and its Waterworks. At the last meeting of the Town Council, it was decided to affix the corporate seal to a petition to the Local Government Board for a provisional order empowering the Corporation to purchase compulsorily the land required for the waterworks, a scheme for which has been prepared by Mr. Pritchard, civil engineer.

Dymock Church, Gloucestershire.—Numerous alterations have just been made in the interior of this church. The additions include a handsome carved Bath stone pulpit, in the same style as the building. The body of the pulpit is supported by elaborately-carved alabaster columns, and is from the works of Messrs. Jones & Willis, of Birmingham.

A Competition for a new infirmary and alterations to Mansfield Workhouse has resulted in the success of Mr. John Greenwood, of Mansfield. His tender is 10,911*l.*, and 70*l.* extra for pressed brick fronts. Twenty-four tenders were received, the highest being 13,790*l.*, and 130*l.* for the brick fronts.

Kensington Town-Hall.—A competent correspondent complains of the prevalence of sewer-gas in this building. As the head-quarters of the sanitary *corps* of the parish, the drains in this building ought at once to be overhauled.

The Monument of the Prince Imperial His Royal Highness the Prince of Wales has signified his intention of attending at Woolwich on this Saturday to unveil the statue erected in the grounds in front of the Royal Military Academy to the memory of his Imperial Highness Prince Louis Napoleon. The memorial has been erected by subscriptions contributed by 20,000 officers and men of the army. It is composed of granite and marble, the latter having been specially brought over from France for the purpose. The monument consists of four marble steps and two pedestals, the second of which is surmounted by a statue of the Prince. On each side of the upper pedestal is a French eagle, and in the centre a wreath, surmounted by a crown containing the letter "N." The monument has been constructed from designs by Count Gleichen.

Cost of Scavenging in the City.—The *City Press* states that the superficial area of the City is a little over one square mile, and to cleanse and water this one square mile costs nearly 30,000*l.* a year.

New Board Schools at Ilkeston, which have been completed at a cost of several thousand pounds, were opened on Monday.

TENDERS

For enlargement of Vicarage-road school, for the London School Board. Mr. E. R. Robson, architect. Quantities by Messrs. Northcroft, Son, & Neighbour:—

S. J. Jerrard	£3,468	0	0
J. R. Hunt	3,461	0	0
W. Tongue	3,387	0	0
W. Oldrey	3,379	0	0
F. Johnson	3,347	0	0
Atherton & Latta	3,300	0	0
C. Wall	3,224	0	0

For enlargement of Jessop-road school, for the London School Board. Mr. E. R. Robson, architect. Quantities by Messrs. Northcroft, Son, & Neighbour:—

J. Oliver	£2,493	0	0
H. Hart	2,047	0	0
J. R. Hunt	1,781	0	0
W. Oldrey	1,738	0	0
Higgs & Hill	1,674	0	0
F. Higgs	1,670	0	0
S. J. Jerrard	1,663	0	0
Atherton & Latta	1,570	0	0

For drains, latrines, manholes, ventilators, and works connected therewith, at the Pwllheli Union Workhouse. Mr. Thomas Roberts, Assoc. M. Inst. C.E., engineer:—

Williams, Carnarvon	£326	18	0
Summers, Pwllheli	294	10	0
Davies, Portmadoc	290	0	0
Jones, Pwllheli	270	8	0
Owen, Portmadoc (accepted)	260	0	0

For the rebuilding of Nos. 46, High-street, and 11, Commercial-road, Whitechapel, for Mr. E. R. Goodrich. Mr. John Hudson, architect, 80, Leman-street, E.:—

Roberts	£1,650	0	0
Gladding	1,517	0	0
Wyard	1,357	0	0
Parrish & Hawker (accepted)	1,290	0	0

Accepted for building school at Paddock, Huddersfield, for the Huddersfield School Board. Messrs. Henman & Harrison, architects, 64, Cannon-street, London. Quantities by Mr. C. FitzRoy Doll:—

Stead & Kaye, Masons, Huddersfield	£3,950	0	0
F. & H. Calvert, Joiners, Huddersfield	1,700	0	0
Heaps & Co., Ironwork, Heating, &c., Huddersfield	914	8	0
Miller & Crowther, Plumbers, Huddersfield	406	10	0
Smithies, Slater, Bradford	385	0	0
Jowett, Plasterer, Huddersfield	140	0	0
Moxon, Painter, Huddersfield	79	12	6

For alteration to offices for the Royal Standard Benefit Society, 42, Great Ormond-street. Mr. T. Bedford, architect:—

S. & S. Dunn	£178	0	0
D. Viney & Co.	125	0	0
H. Cornish, jun. (accepted)	115	0	0
Veitch & Close	110	0	0

For alterations and additions to Nos. 167 and 167A, Newington Butts, for Mr. Brown. Mr. Banister Fletcher, architect:—

W. Downs	£695	0	0
G. & J. Riddell	670	0	0
H. Burman	666	0	0
W. & H. Castle	649	0	0
C. King	615	0	0
B. Cook (accepted)	571	0	0

For the erection of a pair of semi-detached villas in Tierney-road, Streatham. Mr. D. R. Dale, architect, 8, Union-court, E.C.:—

A. Farr & Co. (accepted)	£1,800	0	0

For partially rebuilding the premises No. 192, Westminster Bridge-road, S.E., for Mr. C. Lynes. Mr. D. R. Dale, architect:—

W. Salter (accepted).

For alterations to premises 237, Tottenham-court-road. Mr. D. R. Dale, architect:—

J. Hoare & Co. (accepted)	£400	0	0

For the erection of a villa on the Whitgift Estate, Addiscombe, Croydon, for the architect, Mr. D. R. Dale:—

J. Hoare & Son (accepted)	£1,683	0	0

For the erection of offices Nos. 2, 3, and 4, Cross-lane, Tower-street, E.C., for the City of London Real Property Co. Mr. R. B. Marsh, architect. Quantities by Mr. D. Cubitt Nichols :—

Scrivener & Co.	£9,192	0	0
J. & J. Greenwood	8,697	0	0
Smith & Co.	8,649	0	0
Conder	8,493	0	0
Morter	8,420	0	0
Ashby & Horner	8,240	0	0
W. Bangs & Co.	8,189	0	0
A. Kilby	8,187	0	0
W. Brass	8,138	0	0
E. Lawrance	8,075	0	0
Outhwaite & Son	8,043	0	0

For a block of four houses, S. Margaret's-road, Brockley, for the Land Development Association. Mr. Wm. C. Banks, architect :—

Little	£3,237	0	0
Falkner	3,033	0	0
Grubb	2,656	5	0
Hughes	2,639	0	0
Tarrant	2,620	0	0
Marrisge	2,496	0	0
Taylor	2,469	17	0
Croaker	2,468	0	0

For the erection of two shops, with dwelling houses, being Nos. 44 and 46, Queen-street, Ramsgate, for Mr. C. R. Wood. Mr. E. L. Elgar, architect :—

Paramor & Son	£1,960	0	0
W. Osborne	1,855	0	0
Smith & Son	1,790	0	0
T. Elgar	1,760	0	0
Newby, Bros.	1,661	10	0
H. Bowman	1,627	0	0
C. Home	1,625	0	0
H. Miller	1,570	0	0
W. H. Fort	1,550	0	0
B. J. Cowell	1,390	0	0
W. Martin	1,360	0	0

For steam laundry buildings, stable, and two cottages To be erected at Caversham, Reading, Berks, for the Steam Laundry Company, Basingstoke, Hants. Messrs. Thomas & Taylor, architects, Stockport :—

J. Bullen, Bermondsey	£3,275	0	0
W. H. Simonds, Reading	2,909	0	0
F. Talbot, Caversham	2,750	0	0
J. P. Groome, Islington	2,700	0	0

For engineer's factory, Poplar, for Messrs. Davis & Co. Mr. Joseph Harris, architect (1st contract) :—

Smith	£3,896	0	0
Crossley	3,385	0	0
Harris & Wardrop	3,244	0	0
Crockett	3,222	0	0
Brass	3,187	0	0
Russell	3,142	0	0
Johnson	2,987	0	0
Walker	2,873	0	0
Parrish & Hawker	2,793	0	0

For repairs and alterations to Oak Lawn, Leatherhead, for Mr. L. C. Verrey. Messrs. Waring & Nicholson, architects :—

Batchelor	£567	0	0
Gibbs	555	0	0
J. J. Bryant (accepted)	525	0	0

For Dresden (Longton) Congregational Sunday school and class-rooms. Messrs. William Sugden & Son, architects, Leek. Quantities by the architects :—

H. Hayes, Birmingham	£1,200	0	0
J. Massey & Son, Alderley Edge	1,180	0	0
J. T. Clarke, Hanley	1,158	0	0
R. Bradbury, Stoke	1,100	0	0
W. Lucas, Wellington	1,070	12	0
N. Bennett, Burslem	1,064	0	0
J. Grosvenor, Tunstall	1,034	5	0
N. Barlow, Stoke	1,044	0	0
J. Bowden, Burslem	1,000	0	0
S. Warburton, Manchester	980	0	0
C. Smith, Tunstall	978	0	0
T. S. Bromage, Stoke	950	0	0
W. Collis, Longton	870	16	0
Wetton & Meakin, Fenton	855	0	0
E. Gibson, Tunstall	849	0	0
H. & R. Inskip, Longton (accepted)	847	0	0
Woodwork			
Midland Joinery Company, Birmingham	315	0	0
Plumbing.			
T. Maydew & Son, Macclesfield	133	0	0

For building new stabling at Islington for Mr. W. Seaward. Mr. W Hawker, architect :—

Field	£2,475	0	0
Grover	2,254	0	0
Wilson & Exton	2,047	0	0
Parrish (accepted)	2,000	0	0

For rebuilding The Lord Clyde, Bethnal-green. Mr. W. H. Pannett, architect :—

F. & F. J. Wood	£868	0	0
Parrish & Hawker	594	0	0

Kettlewell Convalescent Home.—In the list of Tenders published by us on p. 31 for Kettlewell Convalescent Home, the one given as "Fish, 12,792l." should be Chas. Fish, Prestige, & Co. Mr. Charles Fish has retired from business in favour of Mr. George Prestige, who, for the last twenty-five years, has been associated with him, and Mr. Prestige has taken into partnership Mr. J. B. Wells and Mr. G. B. Chappelow. The business will in future be carried on under the style of Chas. Fish, Prestige, & Co.

TO CORRESPONDENTS.

H. & S (shall appear). W. H. (we cannot insert statement without seeing plan). H. D. (we are compelled to decline recommending books). A. B.—W. E.—J. E.—M. & J.—J. J. C.—M. B.—A. T. W.—H. H.—C. W. Q.—W. C. B.—C. B. F.—W. R.—A. R. S.—F. R. B.—B. F.—R. O. F.—E. S. E.—A. D. R.—Messrs. S.—W. E. M.—C. F.—G. C.—J. C.—S. H.—J. F. G.—S. & Son.—J. O. & Son.—W. & H.—J. H.—P. & H.—C. F. R. D.—J. J. B.

Correspondents should address the Editor, and not the Publisher, except in cases of business.

All statements of facts, lists of tenders, &c. must be accompanied by the name and address of the sender, not necessarily for publication.

We are compelled to decline pointing out books and giving addresses.

NOTE. The responsibility of signed articles, and papers read at public meetings, rests, of course, with the authors.

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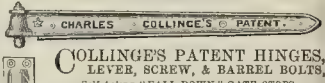
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The Builder.

VOL. XLIV. No. 2083 SATURDAY, JANUARY 20, 1883.

ILLUSTRATIONS.

New University Building, Lund, Sweden: Aula (Double-page Engraving).—Helgo Zettervall, Architect 76
Wall Paper Decoration: ("The Grosvenor") Adam Style (Double-page Engraving).—Designed by Mr. O. W. Davis, Architect 78
St. Albans School Board Schools (with Plans).—Messrs. John & S. Flint Clarkson, Architects 80, 81

CONTENTS.

The Permeability of Walls as affecting Ventilation 65
English and American Painting 66
Dying London 67
The Sorbonne at Paris 68
Mr. Tadema's "Cleopatra" 68
Doulton Ware Chimney-pieces 68
Tapestry Painting as a Mode of Decoration 68
School Planning: Primary Schools 69
Covent Garden Market-place 70
The Old Law Courts at Westminster 71
Central Tower, Peterborough Cathedral 71
Public Works and Buildings in London and Suburbs, in the Sixteenth, Seventeenth, and Eighteenth Centuries 72
The Victor Emmanuel Monument 73
Bituminous Bricks 74
New Office Buildings at the Waterloo Railway Station 74
New Schools at St. Albans 74
New University Buildings, Lund, Sweden 74
Wall Paper Decoration 74
Normal Size for Bricks in Switzerland 74
On the Use of Building Stones 87
Portland Cement: its Manufacture and Uses 88
The Fall of a Factory Chimney in Bradford 90
Artisan Industrial Schools 91
Setting a Chimney Upright 91
On Scales 92
Mr. P. H. Calderon, R.A., on Affectation in Art 92
Obituary 93
The Junior Army and Navy Club, St. James's-street 93
Competitions 93
To Render Textile Materials Incombustible 94
Building Patent Record 94
Elevated Railways 94
A Builder's Claim for Plans: Maxwell *v.* Scott 94
House Sanitation and the Nuisances Removal Act: A Cistern in a very Bad Position 94
Alleged Obstruction of Light: Gardner and Others *v.* Whiteley 94
Hardening Floors 94
Offices for the Cheltenham Gas Company 94
Circular Arrangement of Class-rooms 95
The New Law Courts 95
Miscellanea 95

The Permeability of Walls as affecting Ventilation.



OR some time past the porosity of walls has awakened the attention of sanitary reformers, architects, and engineers. There were, it is true, Pettenkofer's most interesting experiments on this subject; but these have been, perhaps, looked upon too much in the light of interesting theories, rather than as facts to be taken into consideration in the daily work of the architect and builder. The matter, however, was brought forward more vividly by the Russians at the Paris International Exhibition of 1878. We remember calling the attention of our readers at the time to specimens of porous walls shown with the other exhibits of the St. Petersburg Pathological School. A glass case or jar was fitted hermetically upon one side of the section of a wall, and by means of a tube it was possible to blow upon the surface of the wall that had thus been covered. A similar glass jar, on the opposite side of the section received whatever air had been blown through the wall, and this escaped by means of a second tube, which, to enable the experimenter to mark the result, was dipped in a glass of water; thus a person taking up the one tube and blowing into it could see his own breath come up in bubbles in the glass of water, after it had travelled through the wall. With a simple brick the breath passed through with the same facility and promptness as if it had been smoke drawn from a Turkish pipe. With a thick stone wall it was necessary to blow long and hard to produce an impression; but when once the current of air had been established it was easier to maintain it. Among the persons who took special notice of these facts, we may mention Dr. E. Vallin, professor of Hygiène at the Hospital du Val de Grace; Dr. Grau Overbeck de Meijer, professor of Hygiène at the University of Utrecht, and the well-known French architect, M. Emile Trélat.

During the years that have elapsed since the Exhibition of 1878, further experiments have been made and the question more fully investigated. M. Trélat sought the advice of the celebrated ventilating engineers, Messrs. Jeneste & Herscher, who, with the assistance of M. Somasco, have commenced an elaborate series of experiments. The results attained so far are, however, in contradiction to previously accepted facts. Avoiding joints, which are, it is urged, a frequent cause of error, M. Somasco found that the amount of air passing through an ordinary wall, at a pressure of 30 kilogrammes per square mètre of surface, was only 120 litres per square yard. Under the normal pressure only 40 litres of air per square yard of wall would penetrate the room, and if the room was of the general size, this supply of fresh air would not represent more than 2 per cent. of its cubic contents per hour. Basing his arguments upon these figures, M. E. Trélat argues that the porosity of walls is of little importance so far as ventilation is concerned; but he urges that the passage of oxygen through the pores of walls may contribute to preserve the purity of the materials with which they are built. We all know how readily a wall becomes an absorber of miasma, and too often little better than a reservoir of disease. Nothing, therefore, should be done to destroy the porosity of walls bathed externally by the purer outdoor atmosphere. They should, on the contrary, be allowed to absorb to the utmost the fresh air, so as to purify the materials with which they are built, if not to ventilate the rooms within. For partition walls, however, M. E. Trélat would employ every means of rendering them air-tight. There is no advantage in allowing the more or less foul air of one room to mix with that of the next room. By such filtration from one room to the other the walls simply become "miasmatic sponges." It may tend to equalise the foulness of each room, but what advantage can there be in thus establishing this equilibrium of evil? From the outer wall fresh air is obtained, which is a distinct gain, and by facilitating evaporation we are better able to resist the effects of change of temperature. These considerations should not, however, hinder the structure of thick walls, or, better still, of double walls with a "blanket" of air between them.

If from M. E. Trélat we turn to Dr. E. Vallin, we find that this eminent hygienist refuses altogether to allow the experiments made by M. Somasco to upset the theories derived from the studies of Pettenkofer. The experiments commenced in 1853 by that celebrated German scientist show that the diffusion of air through the body of walls is far greater than what was noted by M. Somasco; but that it was modified considerably according to the direction and velocity of the wind, or the difference between the internal and external temperature. Further, rain, by clogging up with water the external pores of a wall, helped to check the passage of air. While insisting that the amount of air supplied to a room, through porosity of the walls, is much more considerable than that discerned by M. Somasco, Dr. E. Vallin would nevertheless render even the outer walls absolutely air-tight. Complaints were made that walls rendered air-tight by enamelling or other means allowed humidity to gather and run drown in drops. But this humidity, produced to a great extent by respiration and the heat given off from human bodies, contains in dissolution the organic matter derived from our respiration and secretions. Absorbed by the pores of the wall, the solution evaporates and deposits the organic and putrescent matter it contains, and no experience has yet shown that this matter is destroyed in porous walls by the action of the air, as is the case with respect to well-drained soils. Thus walls, in spite of the infiltration of air, become what M. Trélat has defined as "miasmatic sponges." If, on the contrary, the sides of the walls are rendered impervious by a vitrifying wash or a silicate paint, the water, by condensing on the surface, renders the washing, or at least the wiping, of the wall a matter of absolute necessity, and thus secures the immediate removal of the organic matter, which, if left to putrify, would so gravely endanger the health of the inhabitants. In such buildings as hospitals and barracks the observance of this principle is more especially essential, and Dr. Vallin points to the lying-in hospital known as the Pavillon Tarnier, where the mortality from puerperal fever, &c., has been so marvellously reduced by constant and careful washing of the walls with an abundant supply of water. Not satisfied with mere paint, it is now proposed to protect these walls with porcelain, with plate-glass, or sheets of zinc, which would be absolutely impermeable, thus facilitating the washing, and rendering the absorption of organic matter impossible. In one word, therefore, Dr. Vallin admits that the porosity of walls is very considerable, and urges that, as it is also very dangerous, it ought to be prevented even in the case of external walls.

In Dr. Van Overbeck de Meijer, of Utrecht, we have the exponent of yet another doctrine on this subject. Dr. Meijer has not only studied Pettenkofer's experiments, but, with some slight modifications, has repeated each one of them in his own laboratory, and confidently asserts that his own experience confirms in every respect the results previously attained by the German professor. If we allow a difference of temperature of one degree Centigrade, there passes through an ordinary wall, per hour, per square mètre, 245 litres of air. By these experiments, it has also been demonstrated that no inconsiderable quantity of air forces its way through wood, especially through the joints that inevitably occur in putting wood together. Dr. Meijer does not, however, count so much on these currents as a means of local ventilation, but looks to the effect they have in reducing the dampness of confined air. When the pores of the walls are blocked by water and dust, the confined air can no longer pass out of the house, and the water, evaporated from the human beings dwelling within the house, condenses itself on the internal surface of the walls, the balustrades of the staircase, &c.

Then, indeed, the house becomes scarcely habitable, and is often extremely unwholesome. One example, given by Pettenkofer, helps to confirm this argument. Some workmen's houses in Germany were built with the *scoria* or refuse from the neighbouring iron works. This metallic material, thoroughly air-tight, was very rough and irregular in shape. The fitting of the pieces together necessitated the use of a large quantity of plaster; and the interstices between these *scories* were so numerous that the walls still retained a certain amount of porosity. Ultimately, however, a means was discovered of cutting the *scories* into even shapes, so that they could be fitted tightly together: this entirely destroyed the porosity of the walls. The evaporation outside of the damp arising inside was thus rendered impossible, and the houses became so extremely unwholesome that they had to be abandoned. The money spent in their construction was entirely lost. Dr. Meijer, therefore, is in favour of maintaining the porosity of all the walls; the partition or internal walls, as well as the outer walls, and this porosity he would further extend to ceilings, roofs, and floors. In fact, every house should be made as porous as possible, unless a very perfect system of artificial or mechanically contrived ventilation be introduced which will work as effectually during the night as during the day.

From all these arguments we may, perhaps, conclude that where the danger of infection is especially great, as, for instance, in hospitals; and where, at the same time, means of artificial ventilation are more easily established, it would be preferable to follow Dr. Vallin's advice, and destroy the porosity of the walls, and especially that of their inner surfaces. On the other hand, for private dwellings, where the presence of disease germs and organic matter in the atmosphere is not prevalent to so great an extent, it would be preferable to follow the advice given by Professor Van Overbeck de Meijer. The science of ventilation is not yet sufficiently understood for us to safely dispense with the accidental ventilation that so often helps to compensate for the ignorance or indifference of the public, and this view we have long held and often expressed. In England, however, the porosity of walls has been studied, not so much with a view to its effect on ventilation as to its influence on the dampness of dwellings. The exceptionally damp characteristics of the English climate, and the particularly porous nature of the bricks with which the greater part of our houses are built, have naturally led the public to patronise the paints and distempers which profess to exclude moisture. In seeking to attain this latter end, but few persons have paused to consider how far they interfered with ventilation, or prevented, especially when applying their paints to the outside of the house only, the oxidation, by infiltration of pure air, of the organic and putrescible matter absorbed within the pores of the walls.

In this respect, however, our attention has been called to what would appear to be a happy compromise. Mr. J. B. Orr suggests the following experiment with the distemper he has patented under the name of *Duresco*. He proposes that a brick should be partially scooped out and painted over with *duresco*. It will then, he maintains, retain water in the hollow till evaporation; just, in fact, as if it was a porcelain saucer. The distemper, therefore, is thoroughly waterproof. But, on the other hand, if the same brick is placed in an air-pump, it is easy to draw air through where water was unable to pass. Thus, while excluding damp, the ventilation through the pores of the walls need not be altogether hindered; and there may still be some hope for the disinfection by oxidation of the body or substance of the walls. Such facts when established by extensive experiments and vindicated by practical experience, would be of the utmost value. But, as the matter now stands, the whole problem is yet in the infancy of discussion. It would be somewhat presumptuous, with the limited evidence before us, to attempt to offer a definite answer to the questions suggested. We can, however, with confidence maintain that the experiments of Pettenkofer, of the Russian Pathological School, of M. Somasco, of Dr. De Meijer, and of many others, clearly prove that the porosity of walls is an important factor, for good or for evil, in the sanitation of dwellings, and should become the subject of more extensive and practical studies.

ENGLISH AND AMERICAN PAINTING.*

THIS is one of the useful illustrated handbooks of art history, of which we have noticed several already. It gives a sufficient though brief account of the English painters who have achieved a position in artistic history, commencing from a period before the history of painters really commences, which is illustrated by paintings in illuminated missals and elsewhere, the authors of which are entirely unknown. It was well thus to draw attention to the fact that England had her own painters and her own art in the period before the Renaissance, though it will not do to push this too far. There was nothing in England to compare with the pre-Renaissance art of Italy, or even of Germany, in the way of painting. Then there follows the period when foreigners occupied our stage entirely, or when the only aim of an English artist was to imitate Vandyck. The distinctly English epoch begins with Hogarth, who, as the author says, did not found a school, but who "was the first English artist who forsook exhausted conventionalities for large truthfulness and original thought, and thus paved the way to a new life in art," though he was himself "too original either to copy or to be copied." Reynolds and Gainsborough are happily treated of, and justice is done to Richard Wilson, who was once too much admired, and now is rather too little thought of. He must be judged in reference to the state of knowledge and feeling about landscape-painting in his day. The author points out that though Wilson did not go to nature so directly as he should, he had the merit of turning the taste of his own country from the meaner school of Holland to that of Italy, and showed the power of the English school to compete on this ground also (that of imaginative landscape) with the foreigner. Some practically dead reputations are revived in the notices of painters succeeding this period, men who, with great industry and indulging ambitious and lofty hopes, have just succeeded in establishing a right to be named in a history as men who were thought something of in their day. This kind of record is rather melancholy. The water-colour school of England has, as it should, a chapter to itself in the portion of the book referring to the eighteenth century.

In the succeeding chapter we observe that a rather more cordial word than we should have expected is put in for John Martin. We rather doubt if he can be said to have been unjustly depreciated since his death. His art was of a very false and showy kind, and made the pretence of sublimity at little intellectual expenditure. Some cordial words are bestowed, more fittingly, to the memory of Hilton, who certainly had higher powers than have been generally done justice to. An engraving of his "Europa" faces the page devoted to his memoir, in which he is described as "a gentle, silent, and retiring man, who knew much sorrow, and shunned publicity."

The brief additional treatise on painting in America is, perhaps, as extended as it could be fairly made within the scope of the volume, and in comparison with the far larger history and greater achievements of English painting. As far as history is concerned it may, in fact, be said that there is no history to write of American art. It is, as Mr. Koehler observes, only "the record of the dying away of the last echoes of movements which had their origin in Europe." There were, during a certain period, American painters, poets, and musicians to be found, who fancied they had it in them to reproduce in America the triumphs of the great European artists, and even to do this on a greater scale, consistent with the size and extent of "this great country, sir!" This tendency of Americans to look on themselves as bound to produce an art and a literature commensurate with the extent of their forests and the size of their rivers, has been the subject of a good deal of pleasant satire on the part of American authors who could see a little further than the States. There is a most amusing example of this in a conversation between a poet and an editor in Longfellow's prose story "Kavanagh;" and Lowell, in one of his lighter moods, has hit off the tendency of American artists and poets to imagine themselves the double of some great genius of the old world:—

> "I myself know six Titians, I think; one Apelles;
> A whole host of Scotts; any number of Tennysons;—
> In short, if a man have the luck to have any sons,
> He may make pretty sure that some one of the train
> Will be some very great person over again."

Consequently, the history of American art is a very uninteresting and unimportant matter for the most part. Two or three men only are to be named who were possible great artists, if their circumstances had been more fortunate. Mr. Koehler, nevertheless, divides the American art-history into four periods. First, we have the "Colonial," of which Copley, of Boston, and West were the chief names. West, it may be observed, appears in this small volume twice over, as an English and as an American painter, which is certainly giving him more importance than he ever deserved. The next is the Revolutionary period, of which also there are two prominent names, Gilbert Stuart and Trumbull, both almost entirely unknown on this side of the Atlantic. A half-length of General Knox, by Stuart, of which an engraving is given, leads to the idea that he may have possessed no ordinary power of giving force and originality to his portraits, if this is not an exceptionally favourable specimen. Trumbull was an officer in the States army, and carried on the sensible hint which West had given, of taking American battle scenes and other historic scenes, as they actually happened, as subjects for painting. His merit as a realistic painter of such scenes was recognised, we are told, by Thackeray (a fact which we did not remember), who cautioned the Americans never to despise or neglect Trumbull,—"a piece of advice," says the author, "which is only now beginning to attract the attention it deserves." Trumbull's system, however, found no imitators, and this period is followed by what the author somewhat grandiloquently calls "the period of mere development," which seems to have been marked by very little indeed that merited such a definition. Certainly Allston, who was the chief name of the period, and was "the American Titian," does not seem to have accomplished anything beyond a very poor and spiritless echo of Italian painting. There is, however, according to Mr. Koehler, one American *genre* painter *par excellence*, William Sydney Mount, and the engraving from a work of his, "The Surprise," a barn-door scene with two or three figures, gives the idea that he possessed some power and originality in the treatment of subjects from the everyday life of his own country. Mr. Koehler considers, however, that the most original development of the art of painting in America at this period was in the direction of landscape painting. "In this department also it seemed for a time as if the influence of the old Italian masters would gain the upper hand. But the influence of Düsseldorf, aided by that of England, although not through its best representatives, such as Constable, gave a different turn to the course of affairs, and in a measure freed the artists from the thraldom of an antiquated school." The American painters began to go direct to the scenery of their own country, to the Catskills, the Hudson, the White Mountains, &c. "It has become the fashion in certain circles to speak rather derisively of these painters as 'the Hudson river school,' a nickname supposed to imply the charge that they preferred the subject to artistic rendering and technical skill. There is no denying that there is some truth in this charge, but later experience has taught, also, that a more insinuating style is apt to lead the artists to ignore subject altogether." The greatest name among these early American landscape-painters, we are told, is that of Thomas Cole, who came from England in 1819, but whose art was entirely acquired in America. We are sorry to say his works are entirely unknown to us. The author mentions the names of Shaw, Kensett, and Gifford, among leading members of the "Hudson River School." As to the modern tendency, we can well understand what the author means in hinting that it is towards a manner of painting in which subject is a secondary consideration. American artists seem now to be taken up with a study and emulation of French art, but not of the best French art. As far as we have observed, they are inclining towards the heresies of the impressionists, and adopting some also of the present very regrettable tendency in French art to the treatment of vulgar and disagreeable types of contemporary life and society, with an often repellent and some-

* English Painters. By H. J. Wilmot Buxton, M.A. With a Chapter on American Painters, by S. R. Koehler. London: Sampson Low & Co. 1883.

times almost disgusting realism. We have seen one or two modern American paintings in which, with unquestionable talent, the disagreeable and sensual quality of the school of French art which the American seems to be emulating, are even outdone. It is to be hoped that the American painters of to-day will, while gaining all they can from the technique of the French painters, set themselves a higher and nobler task than that of reproducing the lower qualities of contemporary French painting, as far as figures are concerned. In lanscape-painting they seem to have been more got hold of by Corot than by any other painter. Mr. Henry James ridicules, in one of his shorter sketches, the spirit of affectation which leads a young Bostonian to describe the day as "quite a Corot day," and suggests, through the mouth of another personage in the story, that America might find a language of her own to speak in, and metaphor of her own, instead of borrowing that of France. And in the style of the very charming illustrations to the *Century* and other American magazines we detect the influence also of Corot, in the aërial faintness of the landscape effects, for the attainment of which a new handling of wood engraving has been matured. It appears to us that it is in this matter of handling, of the mechanism of the subsidiary forms of artistic execution, that American art has so far shown its originality. More than this is required, however, to make a school; and though we believe there has really been an immense advance in America of late years, both in regard to the execution and appreciation of artistic spirit, we cannot feel that the mere reproduction of the spirit of modern French art promises more in the way of permanent interest than did the former imitation of old Italian art. If the Americans will draw upon the special features of their own daily life, their own society, their own history, and their own scenery, for subjects, they have now, we imagine, the artistic power to treat such subjects with force and originality, and it is to the development of American art in this direction, in regard to subject, that we should look for the best chance of the formation of a national American school of painting.

DYING LONDON.

"So might we talk of the old familiar faces—
How some they have died, and some they have left me,
And some are taken from me; all are departed;
All, all are gone, the old familiar faces."

AT the beginning of a fresh year it may not be inopportune to chronicle, from various sources, some of the topographical changes which, in extent and importance, render the last twelve months or more unusually eventful the history of old London. Newport Market, with Grafton House, Prince's and Market rows, and parts of the neighbouring Litchfield, Grafton, Little Newport, and Market streets, Hayes and Newport courts, in Soho, have been already cleared away for the new street from Piccadilly to Bloomsbury. This street, in crossing Wardour-street, will also swallow up a former residence of Nell Gwynne.* With the new Peabody Trust Buildings, between Drury-lane and Great Wild-street, has disappeared a picturesque wooden house in Prince's, now Kemble, street. The demolitions for the workmen's buildings comprise Lincoln-court, formerly named Holford-court, after the original owner, and then Stewart's-rents; Orange-court (where the outbreak of typhus fever, in November, 1879, first opened the authorities' eyes to the squalor, vice, and disease in this quarter); Brewer's-court, Wild-passage, and Pit-place. The last-named alley stood on the site of the ancient Cock-pit, which a mob demolished in 1617, rebuilt as the Phœnix Theatre. Here were produced Marlow's "Jew of Malta," Webster's "White Devil," Heywood's "Woman killed with Kindness," and Massinger's "New Way to pay Old Debts." The triangular space long known as Aldwych Field or Oldwick Close, from the Via de Aldwych, or footpath leading from the Strand to Aldwych Cross, St. Giles's, by the once famous White Hart Tavern, came into the possession of Henry Holford and Sir Henry Drury *temp.* Queen Elizabeth. In the year 1623 it passed to Sir Edward Stradling and Sir Kenelm Digby, of whom the former built on his portion "a fair large mansion-house, with stables and outhouses." Kemble-street was built in Queen Elizabeth's reign; but Oldwick Close was then bounded towards Great Queen-street, on the northern side by a ditch, and on the eastern side, towards Lincoln's Inn-fields, by a sewer. About 1650 all this property came into the possession of Humphrey Weld, a local magistrate and ancestor of the Welds of Lulworth Castle, who, in 1651, laid out on either side of his house the street since known as Great Wild-street. About this time Drury-lane began to lose reputation as a fashionable quarter of the town. New chambers replace Palsgrave-place,* and Nos. 231-3 Strand, the quaint partly-wooden houses that faced what is now the main entrance to the Courts of Justice; whilst the removal, at a cost of nearly £93,000, of Nos. 194 to 202 Fleet-street, between Bell-yard and Chancery-lane, to be followed by Apollo-court and the time-honoured Cock Tavern, has abolished a home of Izaak Walton. Here, next door to the then Harrow Inn (No. 198), he shared a house with one John Mason, a hosier, during the interval 1624-1632, at the end of which he removed into Chancery-lane. The northern wing of Brick-court, Temple, has fallen a prey to the fate of its neighbour, Elm-court, and which ere long will overtake the western side. No. 2 staircase leads to the chambers where Blackstone wrote his "Commentaries on the Laws of England," and of him whose death was lamented by that strange unaccustomed group of unbidden mourners one April morning rather more than one hundred years ago. The "Retaliation" lay unfinished in his desk: yet not to weep for the author of the "Traveller" and the "Vicar of Wakefield" had they come,—as such he was scarcely known to them,—but for one who to them—wretched outcasts—had ever extended a hand of melting charity, one whom a hard world had not, nay, could have never spoiled, and who, despite a thousand acts of heedlessness and folly, won the love and companionship of men like Johnson and Garrick, Burke and Reynolds.

Few City parishes have suffered more during the period under review than All Hallow's, Barking. The operations of the Metropolitan Railway Companies, combined with the projected throughfare from Trinity-square to King William-street, involve the destruction of much property along the east end of Tower-street and the houses between Barking-alley and Katharine-court,—Lord Justice Bovill's birthplace. At No. 14 of these latter (marked, together with No. 13, by the arms of the Mercers' Company), the Jacobite lords were lodged on the eve of their execution; a shaft opposite the house shows the precise locality of the scaffold. In constructing the Inner Circle from Aldgate, numerous Roman and Mediæval remains were discovered. An extensive piece of the City wall lay beneath the surface at Trinity-square, where the ditch was observed to have been diverted eastwards from the wall. Much had to be destroyed, but fortunately the fine relic above ground on the eastern side of the square is spared, and forms a conspicuous feature by the new road at the back of the temporary Tower station. The railway passes through the wall between Trinity-mews and the Crescent. In the Minories were found traces of the Roman cemetery and of what were believed to be the walls of the Minorite Convent of St. Clare beneath the foundations of the dwellings between Church-street and Aldgate. Mr. John E. Price, F.S.A., is investigating the antiquities in this district, and expectation is aroused by the undertaking which we understand he has made to prepare a report of them when the works are completed. A new market is opened at Leadenhall in place of that which, built in 1730, represented one which has been famous ever since the fourteenth century, when Sir Hugh Neville acquired for a granary the old manor-house and priory here. On the other hand, readers of "Dombey & Son" will miss the shop in Leadenhall-street distinguished by the wooden figure of the Little Midshipman, and generally identified with that of Uncle Sol. The Church of St. Mary, Whitechapel, first built in 1339, and burnt on the 27th August, 1880, and which contains the grave of Richard Brandon, who beheaded King Charles I., was re-opened in December for divine service.

Passing further eastwards, important structural alterations have just been completed in the Mint, in lieu of the once contemplated removal to the Victoria Embankment. The Midland Railway Company have absorbed some notable old wooden houses in Royal Mint-street, beyond the Tower, whilst their new dock at Poplar replaces Messrs. Money Wigram & Sons' yard,—a spot of considerable historic interest, having been a ship-building yard since Queen Elizabeth's reign. Forming part of the premises of the first East India Company at the beginning of the seventeenth century, it passed into the possession of Sir Henry Johnson; and a wet dock, the earliest of its kind in England, was made. Here a large number of men-of-war, East Indiamen, and Government troopships have been built, the last of them to be launched being the *Crocodile*.

Carrying our record further backwards in point of time, we should notice the fossils excavated beneath Drummonds' new bank at Charing-cross. Classified and arranged by Mr. Rowland Ward two or three months ago, these include bones of the cave lion (*felis leo spelœa*), tusks and bones of the mammoth, of the extinct elephant (*elephas primigenius, elephas antiquus*), remains of extinct Irish deer (*cervus megaceros*), of red and other deer, and of extinct oxen, from the pleistocene gravels; together with, out of later deposits, bones of the horse, sheep, and the short-horned Celtic ox (*bos longifrons*). On the 29th of March the Baroness Burdett-Coutts laid the foundation-stone of the new Westminster Town-hall, erected over a clearance in Little Chapel-street. The estimated cost (25,000*l.*) of this building of brick and stone in the Renaissance style designed by Messrs. Lee & Smith, of Queen Victoria-street, was more than met by the sale to the Kensington Guardians of the old workhouse in Marloes-road, Kensington. In that quarter of the town the materials of Mr. Albert Grant's mansion, which, with its grounds, covered about seven acres, and was built in 1873 at an outlay of 270,000*l.*, were lately sold by auction. The transfer to the governing body of Westminster School of Ashburnham House and its garden,—site of the Abbey Refectory,—evoked much public interest. To the accounts which with illustrations have appeared in our own columns,* we may add that the school authorities have at last taken possession; and notices are affixed upon the staircase warning the boys to respect their new heritage. The house's history is somewhat obscure; but it would appear to have been built by the celebrated "Jack Ashburnham" (the trusted and faithful attendant of King Charles I.), eldest son of Sir John Ashburnham, of Ashburnham, Sussex, and grandfather of John, first Lord Ashburnham, who was living here in 1708. In 1730, the Crown bought the lease of his son John (created that year Earl of Ashburnham) for the housing of the Cottonian MSS., which had been purchased some twenty-five years previously. The fire that threatened to reduce the whole collection to ashes broke out in the early morning of October 23rd, 1731. In a letter to Lady Sandon, Dr. Robert Freind, headmaster of the school, gives a diverting picture of Bentley, the librarian, rushing forth out of the flames with the Alexandrine MS. of the Scriptures in his arms,—the priceless Codex A. which Cyril Lucar, patriarch of Constantinople, had presented to King Charles I. In the year 1739 the Chapter purchased the remainder of the lease from the Crown. Another work of the "English Palladio," the chapel of Lincoln's Inn, is in course of being lengthened towards its western end, room having been made by the pulling down of two sets of chambers in Old-square, which presented a fine specimen of Jacobean brickwork. In High Holborn, the First Avenue Hotel stands on the site of No. 45, the house of Mr. Bland, music-dealer, with whom Haydn lodged at his first coming to England, in January, 1791. Nearly opposite are the houses that replace the two highly-curious examples of old street-architecture which covered the entrance into Tichborne-court. A new police-court has arisen in Bow-street, and on the 14th of March Evans's Hotel, Covent-garden, was opened as the Falstaff Club. That house, whose façade in likeness of a ship's forecastle forms the background of Hogarth's "Morning," retains many memorials of its origin. Burnet says it was erected for Admiral Edward Russell (afterwards Earl of Orford), in reward for his eminent naval services, particularly the victory over the

* See *Builder*, vol. xliii., p. 776 (16th December, 1882).

* Built on the site of the Palsgrave's Head Tavern, so-called after Frederick Palsgrave of the Rhine, and for one winter King of Bohemia, husband of Elizabeth, the "Queen of Hearts," daughter of King James I.

* See the *Builder*, vol. xlii., pp. 27, 38, 84.

French fleet off Cape La Hogue in 1692. The principal staircase is reputed to be formed out of the timbers of the Admiral's flag-ship, and nearly all the main woodwork is of seasoned oak or teak bearing many tokens of having previously served in marine architecture. As Master of the Mediterranean, in 1695, Russell retrieved his comrade Rooke's defeat by the French Admiral Tourville in Lagos Bay.*

Admirers of the real Queen Anne style, so different from the nondescript variety which now passes under that name, must regret the loss of Nos. 48 and 49, Great Ormond-street, the Hospital for Sick Children, built in the first decade of the eighteenth century. From No. 49, Dr. Stukeley, the "arch druid," dates his "Itinerarium Curiosum" in 1724; and here Dr. Mead died thirty years later. The beautiful wooden portico of No. 48, with its two finely-carved Corinthian columns and fluted pilasters behind, entablature, and cambered pediment, was purchased for the South Kensington Museum; those who could appreciate elegance and thoroughness of work gladly bought the staircases, ceilings, and other interior fittings. In Coleman-street, Bunhill-row, the Society of Friends erected a coffee tavern, with other buildings, on part of the site of their old burial-ground, out of moneys received for the compulsory sale of portions of their property to the Metropolitan Board of Works. As over the site of Stockwell Park House, and the old Tradescant garden at Lambeth, so, at Chiswick, villas are rapidly covering the "Home Field," a plot of ground that adjoined the once "Pest House," which for centuries served as a sanitarium for the Westminster boys. The Pest House was long occupied by the printing-office of Messrs. Whittingham & Co., giving its name to the famous "Chiswick Press," but a few years since was pulled down for building purposes.

Of places associated with literature and the arts may be instanced Well-walk, Hampstead, identified with the memories of Richardson, Johnson, Constable, Leigh Hunt, and John Keats. Here one now looks in vain for the pump and assembly-rooms; the chalybeate spring is turned into a drinking-fountain, whilst the homes of Goldsmith, in Monument-yard, of Rogers, at Stoke Newington-green, and Turner, at 23, Queen Anne-street,† Cavendish-street, have likewise disappeared. At Hampstead, too, last spring, was pulled down the Queen Elizabeth's Chicken House, in Roslyn-street, a hunting-box of James I.

A theatre occupies the site of the house in which Addison wrote his "Campaign"; two hotels that of Northumberland House with its garden. The King's Bench prison has been pulled down. Burned by the "No Popery" rioters on June 7th, 1780, in it Lord George Gordon himself was for a while confined. The Bankruptcy Act of 1861 freed many an insolvent debtor; and upon a subsequent Act for removing the prisoners to Whitecross-street prison, the King's Bench was used as a military jail. The National Model Dwellings Company have built their Queen's-buildings on the ground. A Weights and Measures Office is established in the entrance-gateway, being all that remains, of the Surrey County jail in Horsemonger-lane, now Union-road. We conclude this necessarily incomplete sketch in reminding our readers that on the 30th January last a new commission was read at Newgate whereby that jail ceased to be a prison for the detention of prisoners, except during sessions of the Central Criminal Court; and that on the morning of the 4th December her Majesty's judges and law officers proceeded for the last time in solemn state down Westminster Hall, where eighteen days later the Old Queen's Bench Court closed for ever.

THE SORBONNE AT PARIS.

A COMPETITION which was opened for plans for the enlargement of the Sorbonne at Paris was participated in by eighteen competitors. The first prize was awarded to the architect, M. Nénot, who had previously distinguished himself by winning the *Prix de Rome*, and afterwards the first prize in last year's Victor Emmanuel competition.

* See Burchett's "Memoirs of Transactions at Sea"; Burnet, ii. 114-116; *London Gazette*, July 17th, 1693.

† Hence, Turner removed to No. 119, Cheyne-walk, Chelsea, where he lived (and died) as Mr. Booth.

MR. TADEMA'S "CLEOPATRA."

THE new work by Mr. Tadema, which has now been added to the collection at the Grosvenor Gallery, is one of the finest paintings which he has produced. It represents Cleopatra as Mark Antony first caught sight of her in her barge on the river Cydnus, as described in the passage in Plutarch, which Shakspeare has rendered familiar to every one by his splendid paraphrase of it in "Antony and Cleopatra" (act ii., sc. 2). The painter does not, it is true, follow out the passage literally from Shakspeare, and those who expected to find it so may be a little disappointed at first sight at the comparatively tame effect, and the absence of that brilliant and gorgeous effect of colour and accessories which Shakspeare has massed together in the speech of Enobarbus. We have not the smiling Cupids, nor the mermaid at the helm, nor does the barge the queen sits in "like beaten gold, burn on the water"; on the contrary, it is a wooden barge, decorated, Egyptian fashion, with some ivory inlay. The painter has circumscribed his scene, in fact, in order to concentrate our attention on the principal figure; and we do not see the whole barge, only the central portion, under the rose-garlanded canopy, beneath which sits Cleopatra. She is a dark-complexioned woman, with strong aquiline features and a large and full chin, who sits draped in semi-transparent stuff, and with a tiger-skin clasped, head to claw, over her bosom. She is very much the type of woman that we can imagine Cleopatra to have been. The other figures visible on the barge are dark Egyptians, two girls playing on stringed instruments and a negro or negress pulling back the curtain furtively at one side to have a better view of Antony. The barge in which the latter is has drawn up nearly alongside that of Cleopatra, and Mark Antony, in white drapery, rises from his seat in the stern and turns with astonished and eager looks towards Cleopatra, who affects not to notice him. The figure of Antony is not up to our idea of the man; he is somewhat haggard and unkempt-looking, and poorly "set up" in the way of costume. The painting of his barge, with its bronze plating, and the shimmer of the water repeated in the shield of the man standing near the bulwarks, is beautiful. But nothing in the picture is finer than the big trireme, as big as a modern frigate, which is seen coming along foreshortened at the left of the picture. This is so minutely studied, and the whole of the details so carefully made out, that we seem to have seen the old Roman fighting-ship actually revived before us. We see the heavy gallery projecting from the upper deck which afforded the fulcrum for the upper bank of oars, and which recedes in the two lower stages so as to bring each bank of oars nearer up to the ship, and below this we see the ponderous metal ties by which the rowing galleries are bound to the main framework of the vessel, and the immense strain of the oars communicated to the hull. Along the bulwarks are the shields, hung outside in regular order just below where the hammock-nettings would be in a modern man-of-war. This piece of naval architecture is on a par with Mr. Tadema's fine painting of Roman civil architecture, and is in itself worth seeing. In the distance several other large triremes are seen coming up the stream in perspective. The whole thing is wonderfully real, and it is difficult to shake off the idea that one has actually seen Cleopatra, and been back, for a day, at the entry of a Roman "Channel squadron" into one of its appointed ports.

DOULTON WARE CHIMNEY-PIECES.

MESSRS. DOULTON have placed on view in the ground-floor galleries of 9, Conduit-street some examples of new suggestions for the employment of their coloured-ware for chimney-pieces and the adjuncts of fireplaces generally. The material is so well suited for producing effective chimney-piece designs at a moderate cost that it is surprising that it should not have been turned to this purpose before; it is warmer-looking than stone or marble, and more durable than the wood mantelpieces which have been a good deal employed lately; it has also the advantage of grouping better with coloured tiles, so often used now in fireplace decoration, than does wood. Of course, there is the drawback that it cannot be produced in such large pieces as marble, nor can the joints be made so neat and so true. This is one of the drawbacks to the use of the material in fine work which it seems so far impossible to surmount. But the effect of one or two of the specimens in the room at Conduit-street is very good; one or two that are not so good are objectionable chiefly through the attempt to do too much and to over-ornament portions, such as shafts, which will not bear that kind of florid treatment. One or two partially new forms of stove and fireplace are worth notice.

TAPESTRY PAINTING AS A MODE OF DECORATION.

THE revival of the process of tapestry painting as a method of supplying internal decoration to dwellings has several points in its favour. It is a mode of painting which combines something of the texture and effect of tapestry work with simplicity and ease in execution. It is, in fact, painting on a fabric instead of weaving work upon it. It has not the richness of effect of tapestry, it is true, nor, we may conclude, as a matter of course, is it so durable; but this is not an unmixed disadvantage. Stuffs used for decoration may in a sense be too durable,—an objection which we certainly think applies to tapestry. It is a decorative material produced by a lengthy and costly process, and one which adds to the weight and durability of the stuff on which it is worked, and it becomes, therefore, a valuable property, which has cost much time and labour, and must be treated with respect, and carefully preserved accordingly. But, unfortunately, its value from an artistic point of view does not render it in the least less of a dust-collector, and we can imagine a piece of tapestry, considered too valuable to be parted with or put away out of sight, remaining a receptacle for the dust and dirt of years, and anything but a sanitary influence in the house in which it is hung. Look at some of the old and faded tapestries at Hampton Court and elsewhere, and say if these are, in this point of view, desirable linings for a dwelling-room. There is also the objection, artistically, that tapestry must be on a large scale, and at a certain distance from the eye, in order to look well; otherwise it has a bad and ill-defined outline.

All these principal drawbacks to the employment of tapestry are absent from tapestry painting. The process is not very expensive either of time or money; a better outline can be produced than in woven tapestry, and the comparative cheapness and ease of its production will allow of new designs being not unfrequently made for the same room, and the old ones, when they have become clogged with dust and consequently unwholesome, can be thrown away without the qualms of conscience and of purse which would afflict the man who had to throw away a piece of really costly tapestry for the same reason.

The apparent simplicity of the process renders it very suitable for amateur working, and from the collection of work of this kind which Messrs. Howell & James have had in their establishment for some time, among which there is nearly as much amateur as professional work, the amateurs (ladies chiefly, if not entirely) seem to have taken to it very kindly and in some cases certainly very successfully. The æsthetic lady of a former age would have spent a great part of her life in weaving on to a fabric the design of an artist, of which she did merely the lengthy and laborious mechanical work. The æsthetic lady of to-day is offered the choice, if she have the requisite skill, of inventing and executing her own design, with perhaps nearly as good result, and with far less labour.

We have, however, seen a good deal among the work of the amateur painters of tapestry, and some among that of the professional workers, which had better not have been produced at all. Landscapes are not in place in this method, neither realistically painted figures in harshly coloured garments. It must be devoted to purely ornamental design, to symbolical design, or to conventionally treated figures. Too pictorial a treatment only produces the effect of a bad picture, harsh and deficient in tone. Kept within the limits of the kind of design which the method and material are really fitted to express, it is a very charming process, offering great facilities for the introduction of special and personal taste in the decorative treatment of one's own habitation.

SCHOOL PLANNING: PRIMARY SCHOOLS.

SEEING that the Education Department, in the last returns, credited the 26,376 departments in the 18,000 primary day schools in England and Wales with accommodation for nearly four millions and a half of children,* or about one-sixth of the whole population as then estimated, it would almost seem as if architects might give up some of the activity of invention, and professional journals some of the keen scrutiny, shown during the active years since the passing of the Education Act of 1870. In 1869 about 1¾ million children could be accommodated; room has since been made for between 2½ and 2¾ millions. Of these about 1½ million are in voluntary schools, and the remainder have been provided for by School Boards, who have borrowed for the purpose, on the security of rates, between 13 and 14 millions sterling. The number of children on the school registers fell short of the number for whom accommodation was provided by nearly 350,000; and of the children on the registers over 670,000 were not present on the day of inspection. Such figures might support very well the contention that if all the buildings were of the right sort, put in the right places, and managed by the right people, the immediate wants of the population would be sufficiently met. Figures, as we all know well, can be made to prove almost anything, if judiciously used in the presence of an uncritical audience. It is difficult, however, when many of the existing school buildings are spoken of with disrespect to stand by them very firmly; there are, indeed, various good reasons why modifications of what exists, and additions to the existing supply, must be constantly in hand.

Many schools will bear, probably to the end, the marks of the time which produced them. Belonging to different denominations, they have often been placed so as to group conveniently with places of worship. The founders of many of these did not cast a prophetic eye towards modern needs. When education had among Nonconformists little bands of enthusiastic but not over-rich supporters, cheap bits of land were gladly taken over, when they could be got, and cheap buildings were put up on the cheap sites. Some considerable number out of the 1¾ million school-places existing before 1870 were in buildings which were erected when a class-room, or a separate room for infants, was a luxury which could well be done without, and babies, lavatories, ample cloak-rooms, and such things were the inventions of a later time. They were also contrived a double debt to pay, —the school-rooms serving as meeting-rooms for business, lectures, displays of magic-lanterns, concerts, and teas. This general utility did not always make them specially unsuitable, but certainly did not make them more suitable training-places for children.

On some school inspectors falls the uphill work of applying a firm and steady pressure in order that the irreducible minimum of the code may be complied with. The article 19c of the previous code, No. 96 in the new code (1882), shows the weakness and the power of the inspector: —why, with reference to buildings, as with reference to school-work, he has different standards to suit different places and people, the "irreducible minimum" contrasting strongly with counsels of perfection. Public opinion reaches the heads of departments pretty quickly by one channel or another, and the spiriting has consequently to be done with some gentleness; but, on the other hand, little credit is to be got from a weak use of powers, conferred by Parliament and the country when the time was ripe. In quoting the article, it may be well to call attention, by the way, to two alterations of some importance, by putting the new words in italics, and the superseded words within brackets.

"96. The Department must be satisfied:—

(*a*) That the school premises are healthy, well lighted, warmed, drained, and ventilated, properly furnished and supplied with suitable offices, and contain sufficient accommodation for the scholars attending the school.

N. B.—In administering this article the Department will endeavour to secure at least 80 cubic feet of internal space, and 8 ft. of internal area for each *unit of* [child in] average attendance; but in a school built with the aid of a loan sanctioned by the Department, the average attendance should not exceed the number for which the plans were approved by the Department. If in the neighbourhood of any such school there is a deficiency of school accommodation, which is being supplied with due despatch, the accommodation of that school will, pending the supply of the deficiency, be calculated *in the same manner as that of schools not built with the aid of a loan* [according to the usual rule]."

Supported by the spirit if not by the actual letter of this article, inspectors have, for instance, laboured with persistence to get boarded floors in school-rooms, in place of bricks or tiles. In one English district, containing 186 schools, it is recorded that there were no less than thirty without boarded floors three years ago. The painstaking inspector in his published report gave a *résumé* of the arguments, which had sometimes convinced managers that schools should have wooden floors, although the children came from brick-floored cottages; and he hinted that the floors were being altered at the rate of about seven in a year. Then he would evidently be ready for further movement; but the annual grants would be continued notwithstanding coughs, colds, discomfort, and greater efforts of voice,—the "irreducible minimum" not yet including wood floors as a matter of course. In districts torpid from absence of attraction or of trade, unwilling listeners to suggestions of improvement may be looked for; but, happily, elsewhere there is no tendency to look on the "conditions relating to premises" (article 96) with a grudging mind. The mere words are not the measure of what is attempted and done; and ratepayers groan,—inwardly rejoicing at the same time,—over buildings suitably placed and planned, healthy and well found in every way.

Tinkering and remodelling existing buildings, and substituting new for old, are not impressive; but the natural increase of the population in England and Wales will probably call for over half a million school places in the next ten years,—principally, it is to be feared, in the large towns. There may, besides, be instances, of very rapid growth, such as made Middlesbrough so quickly a town of 90,000 inhabitants, and placed 28,500 more people in Barrow in ten years. The population of a decent country town may thus be poured, as the result of leaps and bounds of trade, into primary schools in one place during a decade. In the future it may not be a subject for unmixed satisfaction that 15½ millions have been expended in England and Wales, in only eleven years, on between 5,000 and 6,000 schools. The pace seems to have been rapid when we look back,—albeit many of us grumbled when the arrears which had to be made up were constantly in our view. It is somewhat unfortunate that, in so many cases, great things are done,—and then the people who did them, and those who follow after, are at liberty to consider whether what was done was as wise in the details as in the general scope. School planning will obviously be well studied in the future on many grounds,—scientific planning, which has the advantage of being a living art,—useful to the bodies and minds of some human creatures, and to the pockets of others.

Last week (page 38) we gave careful consideration to the subject of a large mixed school, consisting of grouped class-rooms connected with a central hall,—a kind of school which seems likely to come largely into use, or at any rate to be fairly tried in a sufficient number of cases. This week we give illustrations of two schools erected for the St. Albans School Board,—one for 150 and the other for 250 children, which may be taken as good examples of smaller schools now being erected in villages and country towns, by architects who have made a careful study of the subject of education and educational buildings. The views of educationalists with reference to the desirable sizes for schools may be appropriately considered, before a few remarks are made on the kind of schools illustrated.

The relative advantages of small, moderate-sized, and large schools for secondary and the higher education, will probably always be the subject of debate; and it will doubtless be decided as of old that the school should be well suited to the scholar, which is not a mere truism. Although the work in primary schools resembles wholesale dealing as distinguished from dealing with the less abundant, more delicate, and more excellent products, there are keen controversies as to the most useful sizes for such schools also. Of course, in the happy days which are to come, difficulties as to non-attendance at school will not exist, owing to the resolute purpose of parents and children, and distance from a public elementary school, "measured according to the nearest road from the residence of such child," may remain in Section 74 of the Education Act and in by-laws, but never be quoted as a reasonable excuse. Nowadays, however, it is considered inexpedient to tempt too severely those parents who, in their hearts, regard the absence of training as an ancestral privilege, which should be secured for each succeeding generation. The nearest school to such parents' cottages being that to which their children are sent, when sent at all, many of the small schools do good service, in reducing the amount of grumbling which accompanies acquiescence in modern tendencies. Compulsion may be looked on with more pride hereafter; for the present, moral suasion has to do the work in very many places as well as it can. The whole consequences of apathy in parents and children may be put in a somewhat startling form. In 1881, for instance, the number of children from three to thirteen, for whom elementary education should be provided, was reckoned as over 5½ millions, but the number actually in average attendance was only a little over 2¾ millions. This statement would not convey a strictly correct impression, for children do not and cannot all be expected to attend school for the whole ten years of school life. But all deductions made, it is abundantly clear that nothing should tell against the improvement of school attendance, as it is something secured whatever the standard of efficiency of the school attended may be. It has, however, been pretty well decided that small schools are not desirable except in this way, that they are generally better than no schools at all; as also, that very large schools are not desirable, unless they can have a large and consequently extensive staff. Some authorities, indeed, stand by the rules and do not allow any exceptions.

Of the 18,000 primary schools, 30 per cent. have an average attendance not exceeding 60 scholars. The salaries obtained, even by female teachers, after two years of training, are beyond the means of the managers of a large number of these schools. Article 111 of the new code (1882) is practically a reproduction of the old article 19*d*, and provides that "where the population of the school district in which any public elementary school is situate, or the population within two miles, measured according to the nearest road from the school, is less than 300 . . . . the Department have power to make a special grant, amounting, if the said population exceeds 200, to 10*l*., and if it does not exceed 200, to 15*l*." Calculating the school places at one-sixth of the population, 10*l*. is thus granted for a school of 50 children, and 15*l*. for one of 33. If such special annual grants had been made at an earlier date, it is highly probable that more schools of a very small size would have been erected in country places. The value of these sums of 4s. or 6s. a week in making up the slender stipends of the teachers is felt by the managers in many such cases. These teachers, although they may not have attended training-colleges, are frequently most useful and worthy people,—fitted for their work by a fair amount of preparation,—each having passed through a course as pupil-teacher, and served as an assistant, before obtaining a certificate. In the main, however, these small schools get a bad character for the quality of the education given in them; the judgments beginning with comparisons of some of them with bigger schools to their prejudice, and reaching strong condemnation of others as "extremely bad; their existence can only be regarded as doing harm." There is an impression that children in country schools do not get justice done to them when they are compared with the children in town schools, small schools in outlying districts being selected for the sake of forcible contrast. "Country schools, where the head-teacher is thoroughly competent, receives a fair salary, and has a sufficient staff, compare favourably even with the best of the town schools. Country children breathe purer air, lead healthier lives, and are often better fed than town children. One of the reasons why so many small country schools do not do well appears to be that the salaries offered are often too low to attract really good teachers, whereas it obviously requires as competent a teacher to conduct single-handed a school consisting of 50 children, who are in six different standards, as to conduct a much larger school

* Mr. Mundella, in a speech delivered since this was written, has mentioned 4,538,000 school places, 4,190 000 children on the school registers, and 3,015,000 in average attendance, as the numbers at the present time.

with a proportionate staff. Small mixed schools under a single-handed teacher, who is receiving a very low salary, seldom exist in towns; but so far as my experience of such schools goes, they are no better than, if so good as, country schools similarly circumstanced." Mr. Elliott, who vindicates in this chivalrous way the intelligence of the children of the tillers of the soil, is her Majesty's inspector in the Lincoln district, looking after a population, chiefly agricultural, numbering about 160,000,—about 20,000 children being present on the day of inspection.

In a little over the half of the whole number of schools in England and Wales there is an average attendance not exceeding 100; in accommodation there are only 28 per cent. of that small size. The teaching power, on which the results so largely depend, must be scanty also in such schools,—unless there are liberal contributions from rates or from subscribers to assist in paying the way. When the sole adult teacher is unwell, or is new in his place, the machine moves very slowly, and it stops altogether too frequently. Teachers possessed of talent and training think that their energies are thrown away on a small school, and try to get into a larger sphere; many only take charge of the small schools as first independent charges, and go elsewhere as soon as they can.

The disadvantages of very large schools are strongly insisted on by inspectors and others, who have to do with the immense schools, which have been erected by School Boards in London, Birmingham, Leeds, Norwich, and other large towns. It is not clear, however, that the critics have satisfied the managers of such schools of the error of their ways. Mr. Stokes, in his 1881 report, alludes to the Credon-road School (recently opened, described in the *Builder* of November 11, 1882), just beyond the Bermondsey border. "In regard to this school it is a relief to me personally to reflect that the responsibility for an institution so huge, and so likely in one or another of its parts to breed neglect and mischief, will not fall upon my shoulders,"—being out of his division of Southwark. "I should be glad to know that your Lordships had restricted the size of Board schools within more reasonable limits." But there are considerations which cannot be ignored, such as saving in first cost, economy in maintenance, ease of supervision by managers, high percentages of passes in the standards when there are plenty of class-rooms and plenty of teachers in them; and these considerations have, notwithstanding protests, a good deal of weight, as they ought to have, when rates are to be mortgaged for a couple of generations.

There is safety in a middle course; and a certain warrant for it in practice, for under 10 per cent. of the whole number of schools have an average attendance exceeding 350. Experiments of all sorts may be hailed with satisfaction in the large towns, but some such limit as 350 will continue to be looked upon as a comfortable one in the smaller towns. None of the reasons why very small and very large schools are complained of apply to schools of this size, which means, in effect, that somewhere about this point a capable head-teacher and staff are likely to do their best with the raw material committed to them. The head-teacher can undertake something beyond supervision in his school.

"I do not think a staff should be so calculated as to set the head-teacher wholly free from the responsibility of teaching one class himself. An idea has been some time growing that head-teachers should have their time free for general supervision. Presumably, from more mature experience the head is the most efficient teacher in the school, and yet by the plan now often adopted, the most effective teaching it might command is lost to the school, and especially to the first class, who would naturally profit by it. In our large public schools no headmaster ever thinks of shirking the practical part of teaching, and the responsibility for the work of one class himself. His subordinates are certainly men of some experience, but he has to review and supervise their work. In an elementary school, no doubt, the young staff requires far more constant and careful supervision, and model lessons must be given in their presence, but by good organisation and rigid economy of time it is possible to teach and also to superintend the work of the school thoroughly, as some of our best teachers have proved. I hope the new proposals [of the 1882 Code] may be found to set the head-teachers free from some of their clerical work, and enable them to devote more time to the practical part of their profession."—*Mr. Harrison, H.M. Inspector, Liverpool District.*

One must be contented with a hint as to the important bearing of this upon "specific subjects," the widening of the range of instruction for promising pupils, and upon the character of teachers, spurred to self-improvement, instead of being lulled into content by the even course of duties which call but rarely upon all their powers. These, however, are thorny subjects.

The "Rules to be observed in Planning and Fitting-up Schools," published by the authority of the Committee of Council on Education, are thought to be rather out of date in these days, —when wide rooms, many class-rooms, and central halls are fashionable;—and careful revision at an early date is recommended. On the other side, it is argued that the Rules apply specially to the smaller schools; and, while affording instruction to those connected with all schools, do not confuse by alternative courses put forward with judicial impartiality. Perhaps the weaknesses of those who are likely to use them are unduly considered, and school managers judged with too much severity. Some of her Majesty's Inspectors mingle at times their superior wisdom and tender pity for the world at large, with special sentiments proper to members of School Boards and other decent people who have the misfortune to be in office, without having attempted to take honours at their universities. Still the maxim that Rules should apply generally, but exceptions should be allowed occasionally, may be at times valued too highly,—as an economy suited to the mass of frail humanity. Such a rule as No. 7: "The width of a boys' or girls' schoolroom *must not* exceed 20 ft.," has an odd look when the London School Board has for years made them 22 ft., and there are plenty elsewhere,—one is illustrated by us this week,—of similar width. No. 11 might daunt some authorities who were thinking of grouping class-rooms after the American fashion, or joining a number with a central hall: "framed wood partitions are not allowed between school-room and class-rooms. They *must be* separated by a lath-and-plaster partition or a wall." These are not suggestions, but distinct directions, with a *must* of a pronounced kind.

Even if the Rules are only to be applied with rigour in the case of the smaller schools, a good deal will still be urged as to modifications and amplifications. We will not attempt much,—merely repeating, without finally approving, a few of the suggestions earnestly insisted upon; —each suggestion being understood to stand by itself, and not to be necessarily in harmony with the others.

1. *Aspect and Lighting.*—Aspect is of the very first importance. School-rooms should derive a good deal of their lighting from the north,—but there should be windows on other sides also, including some windows facing southwards, but not many. When possible, the desks in a school-room should be placed along a north wall, so that the light from the windows in that wall may reach the desks from behind. The windows above the backs of desks should be as high above the floor as they can be, consistently with their giving sufficient light; but other windows should be kept lower, especially the windows on the left of the desks.

2. *Width of Rooms.*—Plenty of width should be given to the rooms, and the width should not be encroached upon by cupboards and other fittings.

3. *Position of Entrances.*—When it can be so managed, somewhere about the centre of the length of a schoolroom is the best position for the door; the children then have to pass less distances in going to their desks and the teacher's desk is near at hand. The cloak-rooms, being near the entrance to the building, should be passed by children going into the playground as well as by those entering the school; that is to say, a special door to the playground should not be put, but the entrance to the school should be the exit to the playground. Sites and their aspects make this difficult, or even impossible, at times.

4. *Class-rooms.*—When there is only one class-room it will be most conveniently placed by the side of the schoolroom, and somewhere near the centre of its length. It will thus be nearer to the head teacher's desk, and the children will generally have to move a less distance when they are taken there out of the schoolroom or back again.

5. *School-rooms not Passage-rooms.*—Rule No. 8 provides that "the class-rooms should not be passage-rooms from one part of the building to another, nor from the schoolrooms to the playground or yard;" but this leaves the schoolroom a passage. Independent access should be provided to the class-rooms from the lobbies, so that they may be cleared without the school-room being entered. The advocates of the "hall-passage system" for middle-class schools look upon the hall as the passage to and from every part of the building, but the halls in such buildings are not used for the same purposes as the schoolrooms in primary schools.

COVENT GARDEN MARKET-PLACE.

THE Metropolitan Board of Works has received a communication from the Duke of Bedford offering to enter into negotiations for the sale of Covent-garden Market, and as there is every probability of a change of ownership, with a possible disappearance of the market, a few words concerning the history of the market-place may be interesting and *apropos*.

Parton, in his history of St. Giles's-in-the-Fields, gives a plan of the parish and its boundaries as they appeared *circa* A.D. 1300, in which the garden of the Abbot of Westminster occupies the site of the present market, lying between the Via Aldwych (Drury-lane) and the Via de Westmonaster (St. Martin's-lane), the northern boundary being an unnamed lane, to be afterwards known as The Elms or Elm-close, then as the Seven Acres, and then as Long Acre. The Abbot's garden and the land within the enclosure were granted by Edward VI. to his uncle, the Duke of Somerset, and in 1552, there was a patent granted to John, Earl of Bedford, on the attainder of Somerset, of Covent-garden lying in the parish of St. Martin-in-the-Fields, next Charing-cross, with seven acres, called Long-acre, of the yearly value of 6*l.* 6*s.* 8*d.* In 1645, Covent-garden was made into a parish of itself.

We gather from Strype that about 1634-35, the Earl of Bedford pulled all the old buildings down, and cleared away the rubbish that, for a century and more, had disfigured the ground, and in lieu of "thatched houses" and "hovels" arose "several fair streets, strait and uniform. . . . About the centre of the ground he caused to be set out a large square, or rather oblong piece of ground, 500 ft. in length, and 400 ft. in breadth. . . . In the midst of this plot or space, since called Covent-garden, within rails, is a stone pillar or column raised on a pedestal ascended by steps, on which is placed a curious dial, four square, having above it a mound gilt with gold, all neatly wrought in free stone." Cunningham, in his Life of Inigo Jones, differs from Strype in regard to dates. The square was formed (by Inigo Jones) about the year 1631, though never completed. The Arcade, or Piazza, was carried along the whole of the north and east, the church completed the west, and the south was girt by a grove of trees and the garden wall of Bedford House (taken down in 1704) in the Strand. The northern side was called the Great Piazza, the eastern the Little Piazza. St. Paul's, the parish church of Covent-garden, was commenced by Jones in 1631, and consecrated seven years afterwards. "I don't want to lay out much money on the building," said the Earl of Bedford to Jones; "in short, I would not have it much better than a barn." "You shall have the handsomest barn in England," replied the architect. This "barn" was burned down in 1795. "On the 17th of September," records the *Annual Register*, "about ten o'clock a fire broke out in the cupola of St. Paul's, Covent-garden, which communicated to the roof, and in two hours consumed the whole inside of that very beautiful building." Then comes the oft-repeated story, "The fire was occasioned by the carelessness of some working men who were repairing a part of the lead-work about the cupola. The original cost of the building was no more than 6,500*l.* Its repairs, about six years since, were charged at 10,000*l.*" In the *Annual Register* of 1786 we read that,—"At about five o'clock in the morning [March 17] a fire broke out at a distiller's in Great Russell-street, Covent-garden, which entirely consumed all the houses up to the [south-eastern] piazza." Among the houses consumed were, "Mr. Rigg's Hummums, two peruke-makers, and great part of the Bedford Arms tavern and the piazza. The whole front of the said piazza fell down about eight o'clock with the most terrible concussion." The church was rebuilt of stone by the eldest Hardwick, on the plan and in the proportions of the original structure. The portion of the piazza which fell was never rebuilt, but the Hummums was, and exists to this day as a hotel.

To confine ourselves to the story of the market-place. In Rocque's plan of London (1737-46) the market-square is represented with shops on the south side and stalls behind them, and the dialled pillar in the centre. In a mock-heroic poem, entitled "Tom King's; or, the Paphian Grove," "Printed for P. Sambroke, under the Piazzas, Covent-garden, 1741," referring to the market-place:

"High in the midst of this most happy land,
A well-built marble pyramid does stand,
By which spectators know the time of day
From beams reflecting of the solar ray:
Its basis with ascending steps is graced,
Around whose area cleanly matrons placed,
Vend their most wholesome food."

The writer, in a note, tells his readers that upon these steps sit several old women who sell hot rice-milk and barley-broth. After this the writer takes a bold flight:—

"When the Omnipotent, with dread command,
Banish'd our parents from blest Eden's land,
'Another garden,' said he, 'I will give,
In which with pleasure ye may happy live,
Second to Eden only but in fame,
For bliss and constant spring exact the same:
To the happy spot let Convent be the name.'"

A view of the market in 1820 represents the shops and stalls shown in Rocque's plan, while the north side is covered with a jumble of tents and stalls.

Mr. Charles Richardson writes, in 1817, from the "Hotel, Covent-garden," of which he was the proprietor, to the *Gentleman's Magazine* concerning a painting by Hogarth in his possession:—"The subject is a view of Covent-garden Market. . . . . In the centre, seated by the column, with vegetables before her, is the figure of a very handsome woman well known by the name of "The Duchess." Her second husband's name was Wharton, and among her numerous admirers was the eccentric and profligate duke of that name. On the left-hand corner of the picture are an old couple whose name was Blake. Mrs. Blake is in the act of frying sausages and smoking. Near them is a man in a red waistcoat serving out rice and milk. This portrait is also reprepresented in the "Morning" of this artist. The conspicuous figure standing in front of the church is George Carpenter, who, when a boy, made his living by carrying empty fruit-baskets to the waterside for the market gardeners." Carpenter married; took a public-house, acquired considerable property, and after the death of Mr. Gyfford, a brewer, "became lessee to the Duke of Bedford for the market at 14,000*l.* yearly. The man in the Quaker's dress is Crow, who had in his younger days been coachman to the celebrated Duchess of Marlborough, and became collector of the tolls of the market for Mr. Gyfford. The column was taken down about twenty-five years ago."

The same magazine on May 18, 1827, records: "Died aged 67, Mr. Charles Richardson, of King-street, Covent-garden. . . . . He for some years kept the hotel in Covent-garden called by his name. He was a great collector of everything relative to the parish of St. Paul, Covent-garden."

The present market buildings were erected by the Duke of Bedford in 1831, the late Chas. Fowler being the architect. A few years ago the open spaces on either side were partially roofed in, and a flower-market built at the side of the Hummums Hotel, with entrances from Wellington-street and Covent-garden.

The Old Law Courts at Westminster.—Orders have been given by her Majesty's Commissioners of Works and Public Buildings that all the valuable building materials comprising the block of buildings known as the old Law Courts at Westminster, adjoining Westminster Hall, shall be sold by public auction in lots, by Messrs. Horne & Eversfield, on Monday next, the 22nd inst., and following day, at one o'clock. The lots offered comprise, among other things, about 1,000,000 sound bricks, timber roofs and floors, square floor boards, oak linings, partitionings, wainscoting, seatings, about eighty tons of lead, and numerous other fixtures and fittings. The courts may be viewed this Friday and Saturday, the 19th and 20th of January.

Christ Church Cathedral, Dublin.—A costly and beautiful book, giving an account of the restoration of this building, by the late George Edmund Street, R.A., with an historical sketch of the Cathedral, by the Rev. Edward Seymour, M.A., and a dedication by Sir Theodore Martin, has just now been published by Sutton Sharpe & Co., Queen Victoria-street. We shall take an early opportunity to speak fully of it.

CENTRAL TOWER, PETERBOROUGH CATHEDRAL.

EVERY ONE who is in any way interested in Gothic architecture must be grieved at hearing that the destruction of the central tower of Peterborough Cathedral has been considered necessary. We do not, for one moment, challenge Mr. Pearson's opinion as to the necessity of carrying out this unfortunate piece of destruction, but we cannot understand how things should have been allowed to go so far as to render such an operation necessary.

The unsatisfactory, not to say dangerous, condition of the piers supporting the lantern at Peterborough is no new story, as is proved from the following passage in Winkle's "British Cathedrals," published in 1838:—"The central tower is built upon four clustered columns, and the same number of arches. . . . The column at the south-east angle is now banded together with iron, and seems to be in a very tottering and dangerous condition." Now, if this was the case in 1838, it is not surprising that the tower should, in 1883, threaten ruin. Surely if this had been attended to when these defects were first notorious, some means might have been arrived at of averting the danger; for instance, the tower might, without any very great difficulty, have been shored up and the pier which was "in a tottering and dangerous condition" taken out and rebuilt. We presume that it is now too late to do this, as the tower itself appears to be in such a very unsound condition; but it is strange that this not very difficult operation has not been attempted before matters arrived at their present unfortunate condition.

The fate of this tower, however, may be a lesson to us for the future, and we suggest that a careful examination of all the central towers of English cathedrals and churches should at once be made, with a view to ascertaining the condition of their supports. Either this should be done by those in whose care these buildings are vested, or it might be made a Government question; but certainly the public have a right to demand that the safety of these structures should be inquired into. We should, for instance, like to know what is the condition of Salisbury, of Norwich, and of Lincoln. Are we to read in the paper some morning that some eminent architect has been telegraphed to because one of these towers "shows signs of falling in"? Let it be borne in mind that the accident at Peterborough is nothing new. Hereford, Chichester, St. John's Chester, Fritzlar, and Breslau have all warned us of the danger.

We cannot help thinking that the old-fashioned plan of having cathedral architects appointed, with regular yearly stipends, whose duty it should be to attend to the structural repairs of the building, would avert a good deal of danger, men who, being on the spot, can watch the building from day to day, and who would not have to be telegraphed for from London when the building is absolutely tumbling down. Of course, when very important repairs or restorations are necessary, the local man might have associated with him some eminent London architect, just as people living in the country have a local doctor to attend them as their family medical attendant; but in cases where he considers it advisable, some more eminent practitioner is summoned to give advice. Every English cathedral ought to have its resident architect, who ought to be paid by the year, and who should be responsible to the dean and chapter for the state of the building. With the vast revenues attached to our cathedrals, the least we can expect is that they should not be allowed to fall down, or allowed to get into such a condition as to render pulling down necessary. But without the appointment of some resident architect, how can such a fate be avoided? The clergy cannot possibly know anything about such matters, as only a practical architect or engineer can tell whether there is or is not danger threatening until it is too late to avert it.

If the revenues of any particular cathedral are insufficient to support a regular cathedral architect, surely some Government grant might be applied for, or some Government official (being, of course, an architect) appointed and paid by the Government. To preserve our ancient cathedrals is a serious and sacred duty, and we are responsible to those who come after us to hand these buildings down to them in as genuine a condition as possible; they will not thank us for handing down to them our imitations of old work, where, by a little care, we might have saved the genuine ancient work. Of course we know that all buildings must eventually submit to the destruction of time, and we do not intend to discuss the questions which have recently divided archæologists into two camps concerning the advisability of restoration, but we think that even the least conservative architect would acknowledge that it is better to preserve an old building where it is practical than to replace it by a modern imitation; and in a wealthy country like England the mere question of a few hundreds a year paid to some architect to watch and take care of a vast cathedral ought not for a moment to be allowed to weigh in the balance against the danger and loss sustained by any neglect of these magnificent examples of ancient art.

We presume that the Peterborough tower will be rebuilt as nearly as possible to its present design, though, perhaps, the pinnacles, which date only from the end of the last century, ought to be omitted, or re-designed, as they are singularly ugly and out of place.

A drawing by King, in the *Monasticon*, shows this tower as crowned by a stumpy octagonal lantern, apparently of wood; and in earlier times there can be no doubt that this was capped by a lead or slate-covered wooden spire. When King made his view the leaden spire still existed upon the great bell-tower at the north-west of the west front, but that crowning the lantern had even then disappeared.

If the design for Peterborough Cathedral had ever been completed, it would have possessed five spires, two of stone and three covered with lead. The two stone ones alone remain at the present time.

We will next week give a view of the cathedral.

The following is the letter sent by Mr. Pearson to the Dean, acting upon which it was resolved to remove the tower:—

"13, Mansfield-street, London, W., Jan. 2.

Dear Mr. Dean,—I yesterday again carefully examined the central tower, and with very great regret I have to report that the settlements are decidedly much more marked than when, a few months ago, I looked at them, and there are besides several new cracks being developed. It is perfectly evident, therefore, that the greater part of the tower is in more or less a state of movement, and, as it is impossible to say when or how this might be seriously accelerated, I would strongly advise that the services in the choir and those just outside the choir be discontinued. This may appear a strong measure to recommend, but, looking at the state of the tower, I feel that I should not be justified in doing otherwise. I further advise that very nearly the whole of the upper part of the tower be taken down, so as to relieve the arches of the crossing and the piers of as much weight as possible, and also to prevent the possibility of any of it giving way suddenly, and cutting through the roofs to the floor below. The pulpit, organ, and screen had better be removed at once. The nave can easily be arranged so as to adapt it for the services, and the organ can be put up behind the temporary stalls.

Believe me to be, dear Mr. Dean,
Yours very faithfully,
JOHN L. PEARSON.

The Very Rev. the Dean of Peterborough."

The Dean writes,—"The first step to be taken was to guard as far as possible against accidents and to provide for the continuance of the services. The fine organ standing on the screen, and the massive stone pulpit erected in memory of Dr. James, a former canon of the cathedral, from the designs of the late Mr. E. M. Barry, were both immediately under the central tower, and it was of the greatest importance to remove them before touching the tower. A telegram was sent to Messrs. Hill, the builders of the organ, and they lost no time in sending down some of their men to superintend its removal. This has now been safely effected. The family of the late Dr. James have generously offered to remove the pulpit at their own cost and to re-erect it hereafter, and this will be accomplished with as little delay as possible. Late on Saturday night the preparation of the nave for Divine service was completed. We are fortunate in having on the spot a builder, Mr. John Thompson, whose large experience at Chester, Ripon, and other cathedrals where he has been employed, has fitted him admirably to cope with such an emergency as this. He has sent for two steam cranes, and is making every preparation for taking down, under Mr. Pearson's direction, the three shattered sides of the tower."

Canon Venables, with regard to the future arrangement of the choir, says:—

"It may seem premature to express any opinion as to the reconstruction of the choir, when all efforts are being concentrated on rescuing the lantern and the adjacent portions of the cathedral from the destruction that threatens them. But I trust I may be permitted to express my earnest hope that, when the time shall have arrived, the choir may resume its original dimensions, which were so sorely curtailed half a century since by the late Mr. Blore, during the restoration under the auspices of Bishop Monk, who then filled the decanal seat. The old monastic choir, as at Norwich, Westminster, Winchester, and other Benedictine churches, occupied the lantern space, and some of the easternmost bays of the nave. If I am not mistaken, the choir-screen at Peterborough, as now at Norwich, stretched across the nave at the first pier of the lantern, a second screen standing as in that cathedral at the second pier. . . . . The close stone screen, a modern work of Mr. Blore's, forms an impenetrable barrier between worshippers in the nave and the ministrants in the choir. This is now being taken down, and I trust may never be put up again,—certainly not in its old place. I would say the same of Mr. Blore's woodwork. When the choir is reconstructed after the completion of the substantial repairs, an opportunity will be afforded of reproducing the old Benedictine arrangement which I trust will not be lost. Light low screens should be erected across the transepts. A screen of open woodwork, such as those at Winchester and Chester, should mark the western limits of the choir. I should wish to see the organ re-erected in its old place in the centre of this screen.

May I add a word in support of the recommendation that the central tower, when rebuilt, should be heightened by at least one story? At present it is miserably low, and quite out of proportion with the rest of the building. As originally built by Abbot William of Waterville, in 1154, this '*magistra turris*' rose three stories above the roof. But the legs were unequal to the weight, and, some time in the fourteenth century, the grand fabric was taken down and the present feeble lantern constructed, the cathedral in consequence losing its crown of glory. I see from his printed report that Mr. Pearson considers this 'a matter well worth consideration.' I trust it may be not only considered, but carried out."

Mr. Pearson states that the south-eastern pier of the tower shows singularly conflicting indications of failure. The pillar is depressed on the choir side at the triforium level to the extent of 3 in., on the transept side to the extent of 6 in., and at the clearstory level to the extent of 4½ in., while the arches on both sides are distorted. The lantern stage of the tower is in a dangerous condition; there are large rents in the walls following up others which show themselves distinctly over the main arches. There are other fractures in almost every direction, and many large pieces of the stonework of the windows appear to be on the point of falling.

PUBLIC WORKS AND BUILDINGS IN LONDON AND SUBURBS,

IN THE SIXTEENTH, SEVENTEENTH, AND EIGHTEENTH CENTURIES.*

A.D. 1600-1601. The next bill in this account amounts to 2,540*l.* 14s. 9½d. for works and buildings "made and donne vpon her Ma^ties^ house of Whitehall, alias the newe Pallace of Westminster and diverse other places thereonto belonging and adioyninge," viz.: Masons occupied in planing and squaring Reigate paving, and new bottoming an oven in the pastry; mending with new and old stones sundry ovens in the house; breaking sundry holes in the arbour in the privy garden; mending the stone battlements over the chapel and great chamber "with divers mantles and jambes of chimneys aboute the house"; mending and paving in the privy kitchen and other kitchens about the house; mending the Purbeck paving in the place where the crane is made for taking up the beer; repairing with Caen stone the pinnacles over the hall; making new boards for divers chimneys about the house; making a "longe steppe" of Caen stone for the door out of the great chamber into the closet; working Caen stone for windows in the outer room of the chapel, cleaning, fitting, and setting up to stone panels in the still-house with border, and other work done there; making a furnace for the library next the privy chamber to air the books; working upon two stone windows of Caen stone, the one of four lights, and the other of three lights, in the outward room within the chapel; cutting away in stone buttresses and water-tables to place six great seats for the Queen in the privy garden, and setting up ironwork in sundry stone windows; making and setting up seven stone "beasts" with sundry other works. Carpenters occupied in fastening and hanging up the new arbour over the privy garden door with six long irons; working and setting up two long bases and four columns under the end of the privy bridge next the stairs; making and setting up a clearstory window with two lights over the gallery next to the bear-stake; making scaffolds about the privy bridge of the Thames; cutting boards into ledges and nailing them on the two rows of timber pieces; making and setting up of some timber pieces that were wanting there; working upon the causeway of bridge at the orchard there; listing and laying deals at the banqueting-house end, and in sundry places on the walk in the preaching-place; laying great long joists and planks for a bridge near Fulham; repairing the watergate bridge at Whitehall, and a bridge near Chelsea, at a gate called Bloody Gate; cutting out a chimney-way with a timber roof in the Prince's lodgings; quartering up a pane in the Banqueting-house; new joisting and planking a bridge out of St. James's Park unto Long Ditch; mending the King's Bridge at Westminster with new planks; mending and setting up of sundry partitions; new boarding and repairing divers floors in sundry rooms and lodgings; making a new frame of timber, with two pair of stairs and great "halpaces," under the Queen's window; making a new frame for the Ambassadors against the running day [tilting on St. George's day]; mending tables, trestles, cupboards, and forms; dressers in the kitchen; boarding a wall and mending a floor in the great bakehouse; making and mending sundry doors; hewing and setting up dressers; making ready the Great Chamber on the king's side with degrees and deals against Christmas; setting up a rail on the water bridge; making and setting up a "trevesse" in the chapel; making and setting up presses in sundry places; mending the pastry-wall with boards, and sundry other walls; framing and setting up and boarding a shed in the pastry-yard; making ready the Hall, the Lord Chamberlain's stand, the new year's gifts chamber, and sundry cupboards for plate in Christmas time, and of the Great Chamber for a play after Twelfth-day; making and mending sundry posts, "wayles," and bars; making a great cistern-case for the scalding-house; boarding decays in the Close tennis-court roof; mending the woodyard privy; making a frame to hang pikes on in the scullery; attending at Essex House to break open doors in the night; listing planks and laying joists in sundry places; framing and setting up a new bridge near Scotland Wharf, and ripping the same wharf; making up a timber wall between Adam and Eve Chamber and the banqueting-house; making and setting up two clearstory windows in the Lord Treasurer's lodgings; setting up shores in the still-house cellar; framing and setting up a new arbour on the lead roof next the orchard; "furringe of rafter in sondrie places"; making nine mortar-tubs and working up a small roof, with gable ends, for the little tennis-court; working upon the framed timber roof of the long range of the new buildings next the street where the officers of the household lie; framing and setting up dormers for the up windows of both sides of the same long roof; making new stairs for the said new buildings; joining and boarding gutters in the Long Gallery, next the brake and in divers other galleries, rooms, and chambers; framing and driving poles in the great pond by the lodge; rearing up a great staircase at Sir Thomas Knevitt's in St. James's Park, with divers other staircases, portal, and divers windows and window shuttings, and repairing those that were broken and decayed, with other necessary works. Bricklayers and tilers ripping, pointing, tiling, and slating the one side of the hall next to the Thames, and over sundry chambers, offices, and lodgings; making and mending footpaces and backs of chimneys, paving sundry floors and rooms with bricks; bringing up a chimney in the privy lodgings, repairing the furnaces, sinks, ovens, and sundry hot-houses; forcing a little timber window in the spicery lodgings; making a new furnace and foot-pace up to the lead in the boiler-house, and divers such like works and repairs. Plumbers ripping, scouring, and soldering sundry pipes of lead; mending the conduit heads, cisterns, and leads; setting on and mending brass cocks; laying a new trough with a spout, a cistern, and a square pipe, all with new lead, for the turning of a water-course over the privy gallery down into the preaching-place; laying new lead on the roof over the privy bridge and the washing-place in the Queen's waiter's chamber; turning the conduit-pipes that came up behind the withdrawing-chamber door to come up to the stool-house [qy. w.c.] near the same chamber. Searching and mending faults and crack upon the Parliament House, bestowing new lead in some places on the roof of the Lower House, with other necessary works. Joiners working, framing, piecing, and setting up tables, forms, shelves, brackets, trestles, portals, and lattice-windows; making a box for the Lady Warwick; making and repairing cupboards, screens, doors, and casements; planning, laying, and mending sundry sail-boards in the priving lodgings; fastening and lining an old wainscot in the garden-house. Plasterers lathing and laying with lime and hair sundry ceilings, both old and new being decayed. Mortaring the windows after the glaziers, and laying sundry rooms and floors with plaster and other such-like works. Matlayers new matting and mending the old mats in many chambers, lodgings, and closets, and mending the old therein. Glaziers taking down glass out of sundry windows, and laying it up. Mazer-scourers cleansing and scouring vaults, sinks, and channels, and burning soil. Paviours new mending many places in several offices and entries. Labourers serving and attending the said workmens, and doing sundry needful works and businesses, for the performance of which work divers provisions were made, which, with their prices and quantities, carriage, and wages of the workmen and labourers, with other charges, are particularly expressed as follows:—

Oak timber: 2 loads, 26½ feet, at 22s. the load; 3½ loads at 17s. 4d. the load; 1 load, 8 ft., at 16s. 8d. the load; 2 loads, 12 ft., at 15s. 8d. the load; 20 loads, 29½ ft., at 14s. 10d. the load; 12 loads, 28 ft., at 13s. 4d. the load; 5 loads, 7 ft., at 24s. 4d. the load; 8 loads, 23 ft., at 14s. the load; 3½ loads, 1 foot, at 12s. 4d. the load; 4 loads, 41 ft., at 11s. the load; and 6 loads, 32 ft., at 10s. the load,—in all, the sum of 104*l.* 15s. 11½d. Elm timber: 2 loads, at 15s. 8d. the load, 1*l.* 11s. 4d. Ashwood: 2 loads, at 8s. the load, and 2 other loads at 8s. the load,—in all, 1*l.* 10s.

Boards: 2 loads of oak boards at 14s. 4d. the load, 1,174 ft. at 5s. 4d. the hundred [M^l^.C. di xxiiij foote at v^s^ iij^d^ the C^th^.], 41,595½ ft. at 5s. the hundred [xlj ^m^ v^c^ iiij^xx^ xv foote di at v^s^ the C^th^.], 127 ft. at 4s. and 4s. 6d. the hundred, 484 ft. at 3s. 4d. the hundred, 356 ft. at 9s. the hundred, and 800 at 8d. and 10d. the hundred,—in all, the sum of 123*l.* 15s. 9½d.

Planks: 6 loads, 3 ft., of "forme planckes" at 18s. the load, 68 ft. of 4-in. at 4d. the foot, 33 ft. at 3½d. the foot, 73 ft. at 4d. the foot, and 16 ft. at 2½d. the foot,—in all, the sum of 8*l.* 2s. 5d.

Quarters, joists, and rafters: 9½ loads at 19s. 4d. the load, half a load at 16s. 10d. the load, 3 loads at 12s. the load, and 61¾ loads, 1½ foot, at 18s. the load,—in all, the sum of 67*l.* 1s. 10d.

Joiners' work: 3 tables, 2*l.* 4s.; 1 portal for the Lord Admiral's chamber, 25s.; a wainscot panelled door, 8s.; frames for maps and pictures, 14s.; wainscot shuttings and leaves, 2*l.* 7s. 5d.; and windows for the tennis-court, 18*l.* 8s.,—in all, the sum of 25*l.* 6s. 5d.

Stone: 362 ft. of Reigate paving at 6d. the foot; "Hardstonne pace," at 16d. the foot; 55 ft. of Borderstone, at 9d. the foot; two tons of Oxfordshire stone, to make seven beastles for the gable-ends next the street, 7s. 4d.; and two loads of "pibble" stones, 4s. 8d.,—in all, 12*l.* 18s. 3d.

Billets: 12,700 at 10s. the thousand; 3,000 at 9s. and 9s. 6d. the thousand, and 1,000 at 8s. 8d.,—in all, the sum of 8*l.* 2s. 8d.

Tallwood: 2 loads, 8s. 6d.; 1 load, 6s.; 12 loads at 4s.; and 46 "shedde," at 3s. 10d.,—in all, 3*l.* 11s. 4d.

Norway deals: 770 at 16d. each, and 40 at 14d. each,—in all, the sum of 54*l.* 16s. 8d.

Meborough deals: 460 at 14d. each, 26*l.* 16s. 8d.

Bomesparres: 280 at 12d. and 10d. each, 13*l.* 10s.

Clapboards: 20 at 6d. each, 10s.

Mats: 368 pieces of coarse mats at 1s. 8d. the piece, 375 pieces fine at 3s. 4d. the piece,

* See *Builder*, vol. xliii., p. 952; and p. 23, *ante*.

and 6 pieces of double fine mats at 6s. 8d. the piece,—in all, the sum of 95*l.* 3s. 4d.

"Punchions": 1 load, 12s., and 22 "ponchions" at 8d. each,—in all, 1*l.* 6s. 8d.

Hurdles: 12 doz. at 4s. the doz., 2*l.* 8s.

Lead: "xij^{ml} CCx^{ma} lvj^{lb}, mzt at xij^{s} the Cth, lxxij^{li} ix^{s}, ob.; Pypes of leade, xxvij^{li} iij^{s} vi^{d}., and for the castinge of xvj^{mt} iiij^{c} iij qrt^{rs} of olde leade at xv^{d} the Cth, xiij^{li} xiij^{s} vj^{d}.,—in all, 87*l.* 7s. 0½d."

Soder: "Cviij^{ma} qrt^{rs} xvij^{lb}, mzt at 6^{d} the pounde," 23*l.* 10s. 5*d.*

Hair: 162 boz at 6d. the boz; 77 boz at 5d. the boz; and brush hair at 6s., in all, 5*l.* 19s. 1d.

Straw for the plasterers, 13s. 2d.

Nails of sundry sorts and prices, 16*l.* 7s. 4d.

Copper nails and lacing-wire, 1*l.* 13s.

Ironwork of divers kinds, 161*l.* 18s. 10½d.

Parchment, "for a platte of Depteford House," 8s.

"Assidue": 12 lb., 24s.; and "for castinge it," 12s.;—in all, 1*l.* 16s.

Glass and workmanship at the rates usual and accustomed, 103*l.* 18s. 11½d.

Packthread: 300 lb., at 8d. the pound, 7*l.*

Size: russet, black, and white, for the painters, 2*l.* 7s.

Red ochre: "Vj^{c} di x^{lb} mzt at ix^{s} iiij^{d} the hundreth," 3*l.* 8s. 10*d.*

Leather threads: 16 boz, at 12d. the boz, 16s.

Earthen pots to boil colours in, 8d.

Brasswork: 8 cocks, at several prices, 2*l.* 6s. 8d.; a brazen head for the top of the crane (besides 2s. 4d. abated for old brass), 13s. 5d.; cement and setting on of cocks, 9s. 2d.; and for 9 ells of canvas to bind the broken pipes with, at 16d. the ell, 12s.,—in all, 4*l.* 15s.

Bricks: 125,000, at 10s. 4d. the thousand; 28,000, at 11s. the thousand; 57,000 of "hewinge brickes," at 12s. and 12s. 6d. the thousand; and 8,500 at 13s. the thousand,—in all, the sum of 120*l.* 1s. 11*d.*

Tiles: 67,000, at 11s. the thousand; and 7,000 at 12s. the thousand,—in all, 41*l.* 1s.

"Russetyles": 1,042, "at a penny the piece," 4*l.* 6s. 10*d.*

Paving tiles: 2,000, at 4s. 5d. and 6s. the hundred, 5*l.* 6s.

Tile-pins: 56 boz and 1 peck, at 16d. the boz, 3*l.* 1s. 6d.

Masts: 12 small masts, 4*l.* 16s.; 4, 2*l.* 8s.; 3, 2*l.* 5s.; and one great mast 1*l.* 2s.,—in all, 10*l.* 11s.

Laths: 30 loads, at 22s. the load; 1 load, at 21s. 4d.; 2 loads, at 18s. 8d.; and half a load, 8s.; 4,800 "gapline" laths, at 8d. the hundred; 1,700 hearth laths, at 9d. and 10d. the hundred, in all, the sum of 28*l.* 19s.

Lime: 14,234 lb. mzt., at 6s. the cwt., 42*l.* 14s. 0½d.

Sand: 249 load, at 8d. the load, 8*l.* 6s.

Loam, gravel, and clay: 164 loads, at 10d., 12d., and 14d. the load, 7*l.* 7s. 4d.

Hothouse pots: 4, 6s.

Baskets: 36, at 4d. each, 9s.

Shovels: 40, 1*l.* 3s. 6d.

Paper: royal pot paper, counters, dust, quills, and such like necessaries, 5*l.* 18s. 11*d.*

Candles, links, and tallow, 4*l.* 2s. 2½d.

Small necessaries: brooms, glue, soap, &c., 3*l.* 10s. 1d.

The workmen employed included masons, carpenters, bricklayers, tilers, plumbers, joiners, sawyers, plasterers, glaziers, paviors, matlayers, wire-drawers, mazer-scourers, labourers, and four clerks of works, whose daily wages were at about the same rates as those above mentioned. It does not appear that there were any apprentices paid for work done under this head at Whitehall Palace, which amounts to 72*l.* 15s. 0½d.

The taskwork included a payment of 16*l.* to William Brice and Paul Ward, carpenters, for making six seats for the privy garden, "being arched wth pillasters, architrave, freese, and cornishe, wth tapgills and covers over the heade borne with cantilevers at lx^{s} the pece, he findinge all manner of stuffe and workemanshippe"; and for working a gate at the orchard stairs with two leaves with "ballasters, complimente wth architrave, freese, and cornishe, the arche cutt through," 3*l.* 16s.

Robert Yorke, carpenter, for making pair of new stairs in the gallery between the great chamber and the chapel, 20s.; and for making another pair of stairs with case for them up to the Clerk of the Green Cloth's chamber, 25s.

William Suthes, mason, for cleaning a pair of stone arms, making a moulding of stone about the crown thereof, and for taking down and setting up again four old stone pells in the long range, 12s.

Leonard Frice, serjeant painter, for painting, stopping, and laying in oil-colours six great stone windows, 2*l.* 8s.; for laying in lead twenty-five casements, at 6d. each, 12s. 6d.; for laying in oil-colours seventy-two bars, at 1d. each, 6s.; for priming, stopping, and laying white in oil and working with "gillosses and rebeste worke vij greate postes, vj rayles, and xlj ballasters, vj^{li}"; like priming and stopping six beastes, laying them in their proper colours, and gilding them in oil, with rich gold, at 34s. 4d. each, 10*l.*; laying in with white lead in oil nine clearstory windows, at 3s. 4d. each, 2*l.* 6s. 8d.; laying in lead colours eleven wainscot casements, at 10d. each, 9s. 2d.; laying in russet water-colours a chimney pell in the closet, and for laying the side-walls and overhead on the stairs, from the closet down to the chapel, and for laying white in distemper upright bars and lockets, 17s.; cleansing a chimney-piece in the Council-chamber, and laying two rails on the terrace in white and black, 7s.; laying forty-four shores in russet colours, 39s. 4d.; laying a seat white and working "rebeste" in distemper, in the garden, 13s.; priming, stopping, and working with "rance and jasper," in oil-colours, six great seats, at 28s. 4d. each, 8*l.* 10s.; like working and laying in oil colours of the great gate upon the orchard bridge, 20s.; working with fine colours, in rich gold, of the dial right against the Queen's privy lodgings, 10*l.*; laying in black a great frame and gilding two great "boatles" round about it, and mending "the mappe of the Prince of Orrendge his warres," in the same frame, 13s. 4d.; priming and japanning a pillar with rance, 6s. 8d.; stopping and laying stone-colours in oil upon a great frame of timber on the leads next unto the orchard, 30s.; laying in oil-colours another great frame of timber in the privy garden, 24s.; for laying brown in oil a small timber frame in the preaching-place, 6s.; priming and laying in oil-colours 132 yards of lattice, in the tennis-court windows, at 16d. the yard, 8*l.* 16s.; priming, stopping, and working with jasper in oil of some works about the cocks in the privy garden, and for working the pavement of the foot-paces with oil-colours, containing 36½ yards, at 16d. the yard, 1*l.* 19s. 9d.; laying in lead-colours forty double casements, at 6d. each, 22s.; working with fine gold her Majesty's arms in the new buildings, 14s. 4d.; and for laying in lead-colours 352 iron bars, at 1d. each, 39s. 4d.,—in all, the sum of 62*l.* 17s. 1d.

Sebastian Viccars, carver, for carving a taffrail on both sides with a badge in it over the stairs at the orchard gate, 1*l.* 6s. 8d.; cutting seven beasts in stone for the gable ends of the new buildings towards the streets at 16s. 8d. each, with 2s. for sawing stone for the same beasts, 5*l.* 8s. 8d.,—in all, 7*l.* 5s. 4d. John Bucton and other plasterers and tilers for new lathing and laying 30 rods square of tiling work over the little close tennis-court, next the park, and the gallery adjoining, 3*l.* 15s.; ripping new lathing and tiling a new cross roof on the tennis-court, and for like work done in other places, containing 16 yards at 2s. 6d. the yard, 2*l.* 2s. 6d.; like work done upon Lady Burghes' lodgings, and the offices adjoining to the bowling-alley, 3*l.* 2s. 6d.,—in all, 9*l.*

William Stevenson, Anthony Woolmer, and other bricklayers, for taking down an old stone wall, and making the same up again with bricks, 160 ft. in length, 6 ft. in height, and 3 bricks in thickness, and for digging and ramming the foundations, 6*l.*; for making a return of 18 ft. long, 18 ft. deep, and two bricks in thickness, with two door-cases and eight lights of windows, 3*l.* 10s.; for colouring and pencilling the brick walls of both sides of the new buildings, 8*l.* 13s. 4d.; for tiling two squares of the old buildings next the gate, 5s.; for making the gable-end of bricks next Scotland [yard] and one chimney in the same from the ground, and taking down two chimney-tops in the same gable-end and making them up again, 6*l.*; for making and finishing a brick window of three lights in the same gable end, 8s.; bringing a foundation with bricks next to the great coal-house, 6s. 8d.; underpinning with bricks the ground plate all the length of the gallery, and seven partitions in the new building, 1*l.* 15s.; mending with bricks the foundation in the chandlery, 15s.; finishing twelve chimneys in the new building, 7*l.*; making a new chimney-shaft in the new buildings, 7*l.*; making a new chimney-shaft in the wood-yard, with other works, 22s.; bringing up a brick wall at the jewel-house, and making a brick window there of three lights, 1*l.* 5s.; mending sundry chimneys in the new buildings, paving the wardrobe with bricks, and for underpinning a staircase there, 3*l.*; making a vent for the house of office, and tiling the same, 2s.;—in all, the sum of 39*l.* 6s. 3*d.*

The same William Stevenson and other bricklayers, for their task in digging the foundations, bringing up with bricks the two sides of the old timber range, being two stories and a half in height, with twelve gable-ends; making with bricks, and finishing with mortar on both sides of the same building, 218 lights, with tiling all the roof of the same; the Queen's Majesty finding all manner of stuff, and they but the workmanship only, being let to them by great for the sum of 120*l.*

John Cleane, tiler, for ripping new lathing, and laying 14 rods square of tiling work over the clerk of the kitchen's chamber next to the chandlery, at 2s. 5d. the rod, 1*l.* 15s.

William Phillips and others, turners, for turning two columns, 6s.; 50 post-heads with acorns, for the rails before Whitehall, 1*l.* 13s. 4d.; turning a roll for the platters of Deptford House, 12d.; like turning 17 post-heads and 35 balusters, 23s. 8d.,—in all, the sum of 3*l.* 4s.

The Lady Southwell, for money by her ladyship laid out for the repairing of the house called Hances House, sometime appointed for an armory, adjoining her Majesty's orchard at Whitehall, as appears by the particulars thereof viewed by the officers of the works and allowed by the Lord Treasurer's warrant, the sum of 78*l.*

THE VICTOR EMMANUEL MONUMENT.

THE invitation to the new competition for designs for a national monument to Victor Emmanuel, which was recently issued, with the signatures of Signor Depretis, Minister of the Interior, and the Secretary of the Royal Commission, Signor de Renzis, places no limitation on the nationality of the competitors. With regard to the particular conditions of this contest it is stated that the site of the new monument is to be the northern brow of the Capitoline Hill in place of the old monastery of the *Fratri Minori Osservanti di S. Francesco*, and on the same level as the Church S. Maria in Aracoeli, on a prolongation of the axis of the Corso, the old *Via Flaminia* forming a worthy termination to that road.

The principal conditions to be observed are the following:—

1. The principal feature of the monument is to be an equestrian statue of Victor Emmanuel in bronze.

2. It is to have an architectonic background, consisting either of a portico, a loggia, or other piece of architecture, according to the taste of the artist, and which is to conceal the buildings on the right. As to the dimensions, they may be taken at 30 mètres in breadth by 29 or 24 in height, with a minimum distance from the side façade of the church of 10 mètres.

3. A series of steps are to lead up to the monument from the prolongation of the Corso, the height being 27 mètres.

Competitors have further to observe the following regulations:—

4. The models of the equestrian statue must be 0·8 mètres in height, exclusive of socle.

5. The drawings for the ground-plan are to be 1-200th, and those for the elevation 1-100th of the natural size.

6. The details are to be in one-fortieth of the monument and the chief portions of the architecture.

7. There is to be a description of the work and an estimate of cost handed in. With regard to foundations and substructure, it is notified that a lump sum of one million francs is allowed.

For the entire work, foundations, substructure, erection, sculptures, painting and decorations, the cost is not to exceed 9,000,000 francs or 360,000*l.* Competitors may either give their names and addresses, or may use a motto enclosing their names in sealed envelopes bearing the motto in question.

The competition will close on the 15th of December, 1883, at five o'clock in the afternoon, and the plans and models are not to be sent in before the 15th of November. They will all be publicly exhibited before the award of the judges is made known. The result will be published in the *Gazzetta Ufficiale del Regno*.

The author of the best design and model which shall be chosen for execution will be

charged with the duty of carrying out the architectural part or with the execution of the sculpture, and will be allowed the sum of 50,000 francs. An equal sum is to be divided amongst the next best competitors. The Royal Commission charged with the duty of conducting the competition is the same as was appointed by the royal decrees of 13th September, 1880, and 12th February, 1882.

BITUMENISED BRICKS.

IN a recent issue, the *Deutsche Bauzeitung* called attention to an experiment in street paving at Berlin. Bricks of the dimensions of 8 × 4 × 4 inches (in the quality of the usual so-called white spandrel-bricks) have been employed which have been impregnated with asphalte by a patent vacuum process. By this mode of treatment, after the expulsion of air and water has taken place, the bricks absorb from 15 to 20 per cent. of bitumen, and the porous easily destructible substance is changed into a tough elastic mass, said to be capable of resisting pressure and concussion in an exceptional degree, and resisting the ingress of moisture. The bricks are then laid upon a concrete foundation, 6 in. in thickness, by means of hot tar.

The traffic at the point in question has always been heavy, as no less than 1,000 light vehicles per hour are said to cross the spot chosen for the trial, in addition to 1,300 tram-car journeys over this portion of the roadway. No previous system of paving has been found to last beyond three months without showing signs of injury, and the opinion is expressed that this new paving material has the needful resisting properties, as it is rougher than compressed asphalte and harder than wood. Besides these advantages the points of junction are said to afford a firmer foothold for the horses, and there is no absorption of moisture. The importance of the new discovery is also dwelt upon with special reference to the construction of waterproof walls, stable-pavements, counter-walls, &c.

A more recent issue of the *Thonindustrie Zeitung* discusses the matter in a critical spirit, and records the fact that at the point named some of the bricks display, after about three months' wear, such crumbling that they have had to be replaced, which has, however, been done with comparative ease and rapidity. It is remarked that the rather sudden failure of these bricks is the more surprising as they had not previously exhibited signs of wearing away, and doubts are expressed whether the material chosen to be impregnated is really the most suitable for the purpose. An examination by Herr Rühne of specimens of the defective bricks seems to have raised in his mind some doubts as to the efficacy of the process as really increasing their resisting properties. Machine-made bricks had been used, which are, as a rule, wanting in homogeneousness, and although the surface was decidedly strengthened by the process, the middle of some of the bricks had apparently not been impregnated. He does not, however, attach any conclusive importance to these appearances, as some of the crumbled bricks were impregnated throughout. The reason of the sudden wearing away when once the outer surface has been affected is not easy to explain, as frost could not have penetrated the surface, and it is not supposed that it could have rendered the asphalte brittle. Hence it is argued that the want of complete success may be fairly attributed to the kind of brick chosen, and possibly in some degree to some peculiarity in the manner in which the process of impregnation has been carried out. The hope is expressed that further experience will remedy the partial imperfections which have been found to exist in the application of the principle indicated.

A correspondent of the same journal remarks that wall bricks can, by an old method, be impregnated up to 23 per cent. of their original weight, with a mixture of asphalte and tar, and that he fails to see the advantages of the new process. He gives various interesting details in proof of his assertion that the strength of the impregnated brick is dependent upon its qualities before impregnation, and that the process in question cannot remedy such defects as have originally existed in the bricks.

According to the quoted reports of the municipal authorities of Stuttgart, the system of laying down the bricks impregnated according to the older process, between the tramway lines, has proved decidedly successful. An extension of its application is recommended, on the grounds of the durability thus arrived at, as well as the more comfortable track which is obtained, and the contingent economy in the supply of horses for the requirements of the traffic.

NEW OFFICE BUILDINGS AT THE WATERLOO RAILWAY STATION.

THE London and South-Western Railway Company have just erected a large block of new office buildings at their Waterloo Station, in addition to the costly extensions which have for some time past been going forward at the Company's Waterloo terminus. The new offices, which were opened for business on Monday, are situated between the main approach to the station in Waterloo-road and the entrance to the Windsor and Richmond section of the line in York-road, and form a distinct block, with four frontages, the main elevations being respectively to the east and the west. The first-named frontage, approached out of Cross-street from Waterloo-road, is about 120 ft. in length and 60 ft. in depth, and is carried to a height of 60 ft., having a spacious open area or court-yard in front for the marshalling and convenience of the company's luggage and parcel vans. The ground-floor portion of this part of the building consists of a covered carriage-way, with a raised platform beyond, extending the entire length and width of the building, where parcels and luggage are received, and from which they are likewise despatched both inwards and outwards. The superstructure of the building above this depôt,—two lofty stories in height,—rests upon massive iron columns and girders, and the arches supporting the high-level approaches to the station itself. The east frontage is faced with piers and pilasters in moulded cement, each floor having a range of twelve lofty arched windows. The west or high-level frontage of the building, which is on a level with the railway and the adjoining courtyard, is reached by either the Waterloo-road or York-road incline. It is of the same length as the east frontage, faced with stock brick, with red-brick bands and arched window-heads, and Portland cement cornices and ornamentation. The ground-floor (immediately above the depôt already referred to) contains in the centre a spacious parcel and luggage office, 70 ft. by 50 ft., having a large central lift communicating with the depôt below, by which parcels and luggage are lowered for delivery as they arrive at the station. And here it may be observed that in anticipation of the Parcels Post coming into operation, the company, like many other railway companies, have made considerable reductions in their charges. On the north side of the ground-floor is what is designated the "window parcel office," and on the south side the "office for parcels from the country," and the "lost property office." The upper floor contains numerous clerks' offices.

The company's architect designed the buildings, the contractors for which were Messrs. Perry & Co., Tredegar Works, Bow.

NEW SCHOOLS AT ST. ALBANS.

IN the *Builder* for September 16th, 1882 (vol. xliii., p. 380), we gave an account of these schools,—then just taken over by the School Board. We now give two pages of illustrations of the buildings,—stating reasons for doing so elsewhere in this number.* It may be convenient to repeat here a few particulars.

In the Alma-road schools the infants' school is on the lower story and the girls' school over it. The latter is shown on the plan,—the girls' schoolroom being 68 ft. by 19 ft. 9 in., and the class-room 17 ft. by 17 ft. This school is considered by the Education Department to be capable of accommodating 155 children, each of whom has thus an area of 10·7 superficial feet of floor space. The original surface of the site being below the level of the adjacent roads the playgrounds are reached by inclined paths. The upper story is reached from the playgrounds by a stone staircase with easy steps, half-landings, and solid walls between the flights. The contractor was Mr. Christopher Miskin, of Romeland, St. Albans; his foreman on the works being Mr. Henry Hilliard.

The Hatfield-road school for boys has been erected on a site which will probably be closed up a good deal on the east,—the only side on which the buildings now come fairly into view. The architects were, therefore, instructed by the Board to make the buildings very simple in detail. The walls are of grey-coloured bricks, and the roofs covered with red Wisbech plain tiles. The school, as it stands, is considered capable of accommodating 250 children, giving each of them a floor area of 10·9 superficial feet. The entrance, cloak-room, lavatory, &c., have been made larger than immediately necessary, with a view to the school being enlarged hereafter so as to accommodate 350 children. The contractor was Mr. Daniel Ireson, of Waterloo, Northampton; his representative on the works being Mr. F. W. Austen, and the foreman Mr. Samuel Bayes. The arrangements for ventilation comprise Tobin's ventilators in school and class rooms, shown and marked T on the plans, chambers in the roofs above the collar-beams, louvred ventilators in the roofs, &c., and flues in the chimneys with Boyd's flue-plates at the sides of them. The heating throughout is by Shorland's Manchester grates. The latrines have Bowes Scott & Read's patent troughs, and Field's self-acting annular syphons, giving flushes of 100 gallons; they are said to be very satisfactory and effective.

The buildings were designed and superintended by Messrs. John & S. Flint Clarkson, of London and St. Alban's, the architects to the School Board.

* See p. 69.

NEW UNIVERSITY BUILDINGS, LUND, SWEDEN.

IN our last issue (p. 42), we gave some particulars of Lund University, and an external view of the new buildings recently completed there. We now add, according to promise, an interior view of the great hall of the University, erected from the designs of the architect, Mr. Helgo Zettervall.

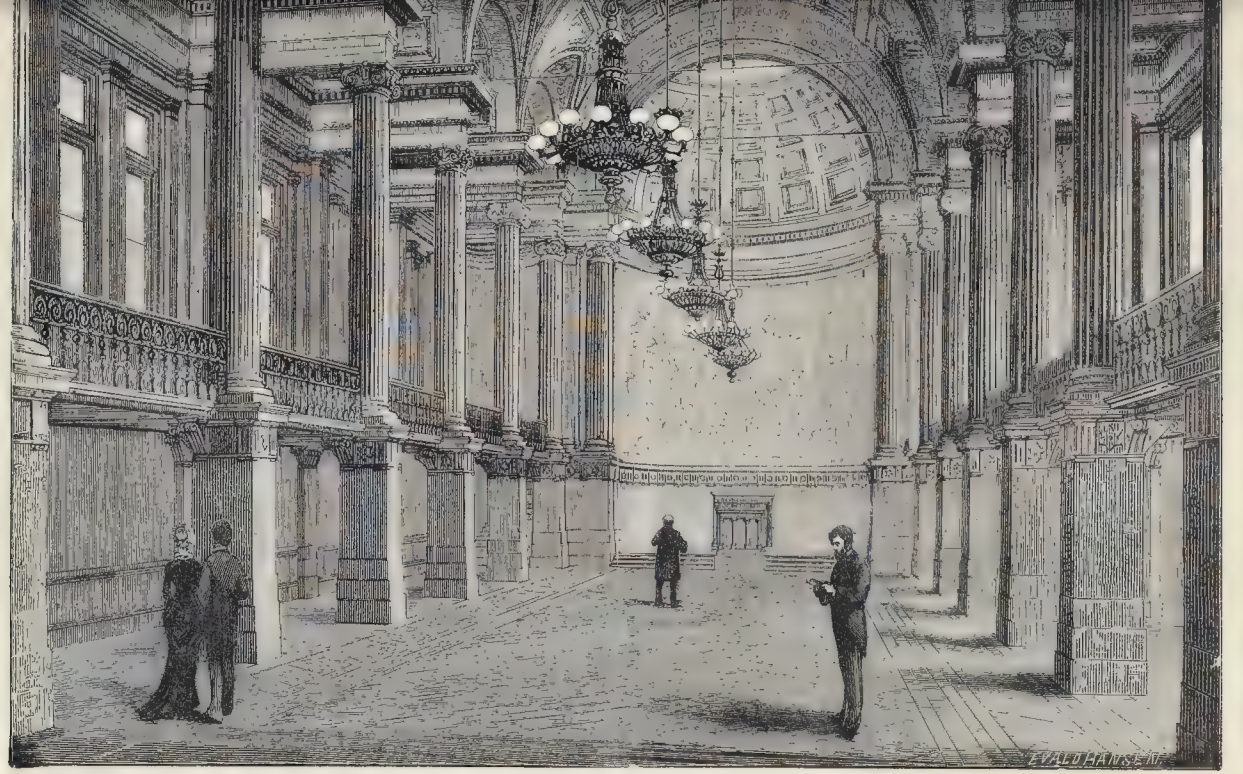
WALL-PAPER DECORATION.

WE illustrate this week one of the many artistic wall-papers exhibited by Messrs. Wm. Woollams & Co. at Manchester, and to which we briefly referred (p. 571, vol. xliii.) in a notice of the Fine Art and Industrial Exhibition now being held there. It is an original composition designed for them by Mr. Owen W. Davis, architect, in the unique style prevailing in this country during the latter part of the last century, known commonly as "Adam's," and is a well-executed specimen of the paper-stainers' art. Printed in vellum-coloured raised flock upon tinted grounds, the filling,—admirably well balanced, by the way,—terra-cotta, the dado blue, the frieze subdued green, with strings and borders in harmony, the special object of the manufacture is to provide a decoration in permanent relief, which, after serving its turn in its original form and colouring, may, when soiled with age, be perennially renewed at small cost by a coat or two of paint. It is a rich, yet delicate composition, in form and colouring a good background for the Sheraton and Chippendale furniture now so much in vogue. It will be seen by the illustration that the decoration, named by the makers the "Grosvenor," is designed to adapt itself to any pitch of staircase, the dado being arranged to accommodate itself to any rake, as well as to rooms and corridors, while two distinct borders are provided for dado rail, the one for horizontal use, the other having a form suitable for employment on the straight, or obliquely at any desired angle.

NORMAL SIZE FOR BRICKS IN SWITZERLAND.

AT the last meeting of the delegates of the Swiss Architects and Engineers' Union, the report and recommendations of a special committee upon the question of a normal size for bricks in Switzerland was considered, and a resolution was adopted recommending the following dimensions for general use:—Length, 250 millimètres; breadth, 120 millimètres; and depth, 60 millimètres. These figures agree in all but one point with those of the normal-sized bricks in North Germany, where the depth or height is only 55 millimètres. This is a very trifling difference, and the bricks of the two countries are, therefore, for practical purposes almost the same.



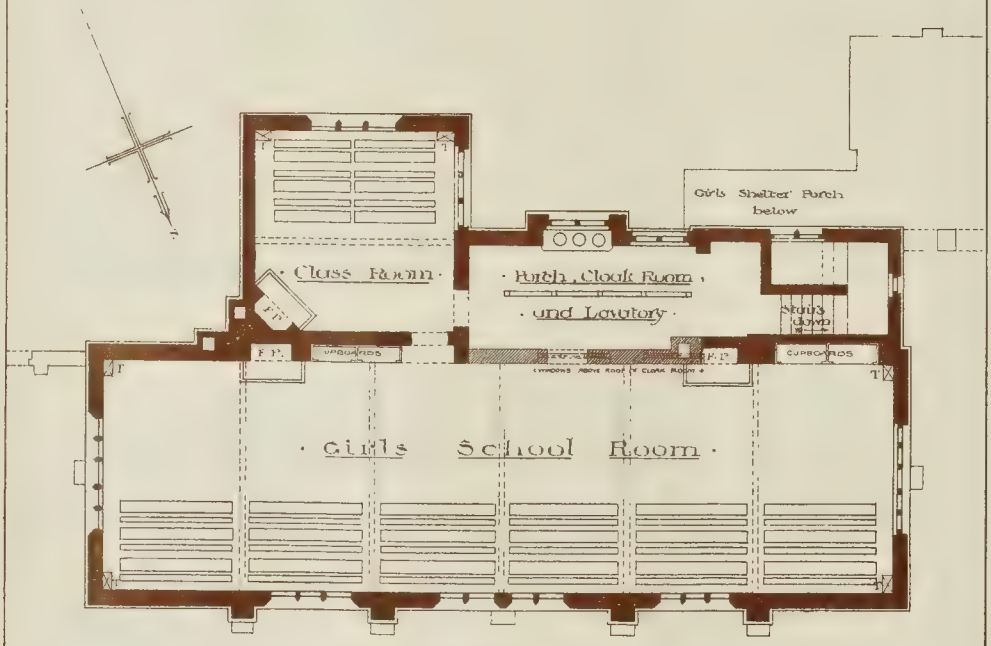


NEW UNIVERSITY BUILDING, LUND, SWEDEN. AULA.

HELGO ZETTERVALL, ARCHITECT.



· St. Albans School Board · · Alma Road Schools ·



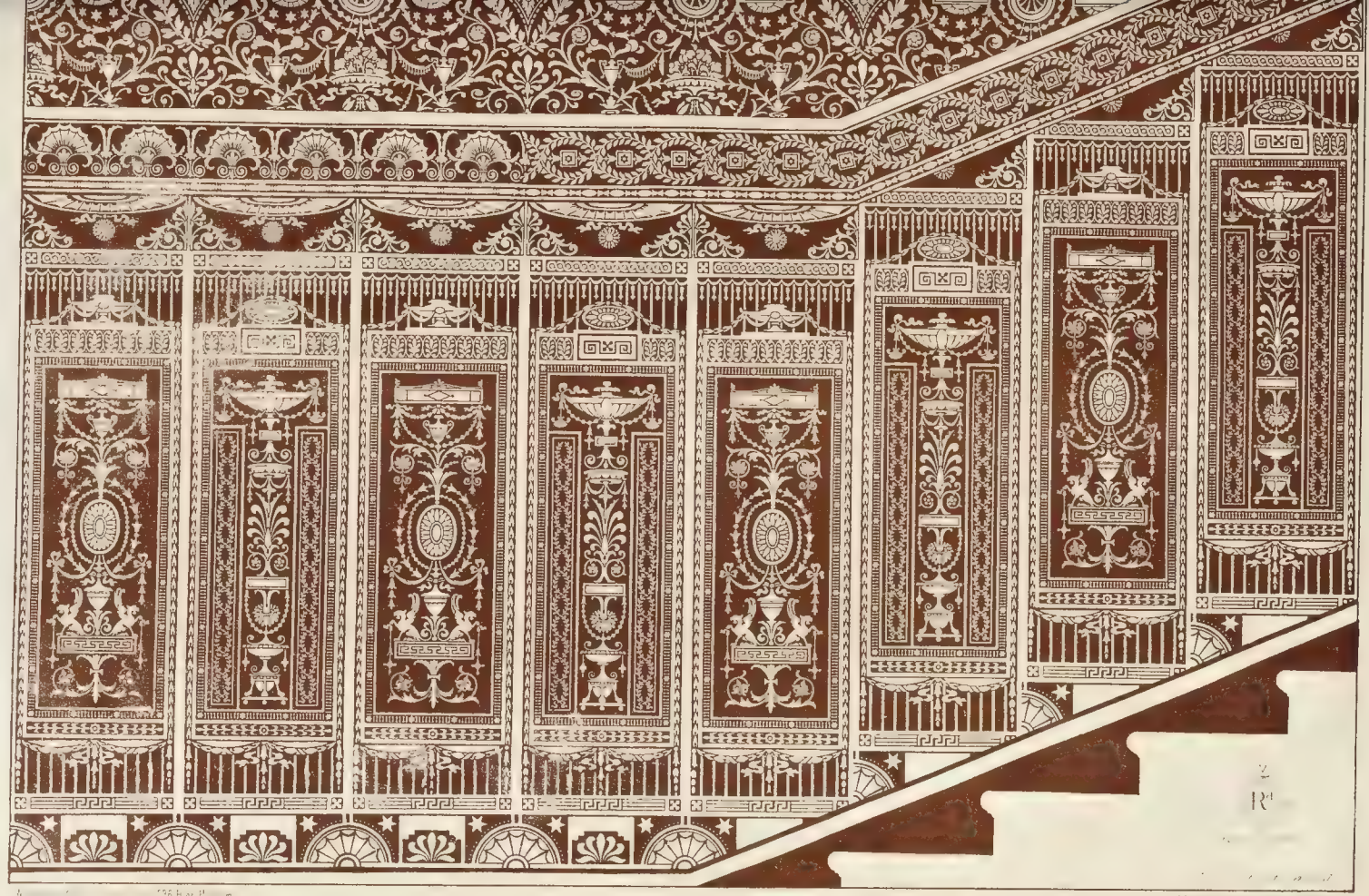
— Plan of the Girls School —

Scale 0 5 10 20 30 feet

John & S. Flint Clarkson Architects

Wyman &... ns Printers 74 Queen St





WALL PAPER DECORATION:- ("THE GROSVENOR") ADAM STYLE.

DESIGNED BY Mr OWEN W. DAVIS, ARCHITECT,

FOR

MESSRS WM WOOLLAMS AND Co

ST. ALBANS SCHOOL BOARD

SCHOOL FOR BOYS, HATFIELD ROAD



Wyman & Sons Printers 74 Queen St

ON THE USE OF BUILDING STONES.*

IN the paper I had the privilege of bringing before the Association last winter,† I pointed out the characteristics of good Building Stones, and the principal quarries in Scotland from which such could be got. I stated that what the architect had to look for was a stone that was *durable, strong*, and of a *colour* which would best bring out the architectural features of his design, and harmonise with the locality and surroundings in which it was placed. We have, fortunately, within easy reach, abundance of stone combining these qualities; but, however good or beautiful it may be, if wrongly used disappointment and failure are sure to be the result.

The laws observed in regulating the elements and forces in nature are thoroughly geometric, and the same laws are equally binding on the architect in his works. The constructive lines on which nature proceeds never fail, when free from debasing influences, to secure what we call beautiful in form, colour, or usefulness; and the same lines cannot be too closely followed by the architect or builder who desires to reach excellence in an art which is noble in the highest sense of that word.

I know that it is held by many that the architect or artist is only trammelled in his conceptions by working on geometric lines. Some men, no doubt, have an intuitive perception of what is symmetrical and beautiful, either as to form or colour, just as there are those who, without the aid of gamut or scale, have an inborn knowledge of what is harmonious in music; but I hold that in architecture, as applied to the *true* styles, a geometric basis is at the root of what we admire in the examples we have of these; and that, if a new style of architecture is to be developed, we must fall back on what guided the old designers in their original conceptions of what was not only true to its use, true in construction, true in symmetry, but beautiful as well, because it *was true*—the cube, the circle, and its geometric development, giving that which we admire and call Classic, while the circle and the equilaterial triangle supply the key to those noble Gothic structures which were erected five hundred years ago.

Before I enter upon the consideration of the uses of stone, I wish in a sentence or two to notice the use of timber and iron as constructive materials. There is a true way of using these, just as there is a true way of using other building material, such as stone; but a serious mistake will be made by the architect or engineer if he attempt to use these on the same lines as or for purposes for which, by their nature, they are not at all applicable. As to the first, the designer who understands what timber as a constructive material can do would never think of using it for the purposes of an arch; especially one which has to meet the strain of a vertical and moving load. Yet this has been done on some of our most important railways in the construction of bridges and viaducts. Neither should iron be used for purposes which stone or other material is only fit for. To build a structure on constructive lines which admit of play or movement when the weight and thrust of a railway train or moving force comes against it, or upon it, is certain in time to be fatal. Hence the care that should be taken whether with stone, wood, or iron to adopt a system of construction which will not only meet the nature of such material, but the work it has to do.

The attempt to unite wood and iron where their opposite properties can never harmonise and work together is sure to fall in the long run, as, under a strain or load, timber, from its greater elasticity, will yield to the pressure, but again recover its normal condition after the strain or load is removed. Iron, on the other hand, will keep the set it gets, and if united to the timber, is certain to drag it down to the weakness which is inherent to such a combination of material. What I have said about wood and iron is rather aside to my paper, except in illustration of what I consider so nearly allied to the use of stone, that I trust the Association will overlook the digression. The right use of stone is my subject, and I will endeavour to keep as close to my text as possible, giving in a practical way the results of my own experience, and what I have learned from others. To be in order I will consider :—

1. How to secure a foundation upon which the structure can be safely built.
2. How to place stone in the building so as to secure the greatest strength and durability.
3. How to use stone in the laying of a good foundation.
4. How to use stone in the building of retaining walls.
5. How to use stone in the building of rubble.
6. How to use stone in the superstructure.
7. How to use stone for coursed work.
8. How to use stone for ashlar work.
9. How to dress stone so as to get the most durable surface.

1. *How to secure a Foundation upon which the Structure can be safely built.*—The foundation of a building is of primary importance, as, unless it is secure, the permanency of the structure cannot be maintained, however well built it may be. Before laying a stone, the architect or engineer should be satisfied that the stratum will give equal resistance to the pressure that may be put upon it. Strata that are hard and soft are very dangerous. Even clay, if mixed with boulders (which often happens), cannot be depended upon, unless they are removed, and means taken to equalise the ground on which the buildings are to be erected. Next to rock, no better foundation can be got than sand or gravel when dry. If wet, means should be taken to drain away the water; but if this cannot be done, large flat-bedded foundation-stones, of sufficient area, fairly dressed in beds and joints, and well put together, will, as the load increases, secure a foundation that anything can be built upon. In my own experience I have often tested this, and particularly when building a bridge on a railway contract I had many years ago. This was an under-bridge of considerable span, the girders being in the form of an arch, in segments of cast iron, the security of which depended greatly on the permanent resistance of the abutments, or of the bolts which held these segments together at their joints. In digging for a foundation, it was found that the strata were very soft, being layers of sand and moss alternately, and, to prevent failure, I took the precaution to strengthen the foundation of the first abutment by driving piles to a depth of 30 ft. to 40 ft., with horizontal planking, on which the foundation-stones were bedded. Before building the second abutment, acting on the advice of a railway contractor who had had more experience than myself, I adopted a different plan, viz., to dig out the soft material to such a depth and area as secured an outward resistance to meet the pressure of the large-sized stones that were afterwards put into the foundation, course after course, until the load pressed out the water, and so secured a foundation which was equally strong, if not stronger, than the first.

Where the stratum is unequal or not to be depended upon, I know of nothing better than a good bed of concrete, certainly not less than 3 ft. thick, and no architect should neglect this where there is the slightest doubt as to the sustaining character of the ground. This is always necessary in erections of different heights, and is particularly required in churches and other buildings where the spire, tower, or other elevation bears more heavily on the foundation than the walls which abut upon them. And, in addition to this, and to make sure, I would have extra courses in the foundation of the higher and heavier portions, as in the hurry with which we build now-a-days every precaution is necessary. The same care should be taken with respect to oriel windows or projections which do not go to the full height of the building, and consequently have not the same pressure on the foundation. The walls to which these lighter projections are attached should not only be well founded, but the tie or bond which unites the one wall to the other should be left free on the upper beds, so as to allow for the subsidence of the heavier wall without causing the fractures so often seen where this precaution is not taken.

2. *How to place Stone in the Building so as to secure the greatest Strength and Durability.*—Before saying anything as to the various kinds of work put upon stone, or the modes of building, let me state that, for durability, all stones should be laid on their natural beds, especially such as are highly stratified. All stones, however compact in their nature, have a line of fracture, which the quarryman or hewer can easily detect; and although there are a few stones, such as the Liver Rock of Cragleith, Binnie, and Redhall, which show little lamination, and may be used with the natural face exposed, the use of stone in this way should be the exception, and not the rule. Another consideration in the use of stone for important buildings is that of having it quarried, stored, and seasoned for some time before being hewn and placed in the walls. By these means the natural sap is allowed to evaporate, and the stone tested as to its quality. This would add to the cost, but the money would be well spent if this precaution prevented the wasting of stones from the rains, frosts, or atmospheric influences, which, especially in our cities, soon act on the surface of a newly-quarried stone.

Stone that is quarried the one day and built in the next is in a green state, and unfit for use. It is not in condition, it is at its weakest; its pores are open and ready to absorb, not only moisture, but the gaseous and disfiguring influences which tend to its destruction. Every hewer knows that, to get a polished surface on a stone that has lain for some time, is very different from what he gets on one green and fresh from the quarry, and this of itself should be sufficient evidence to warrant the precaution I have recommended, which is to thoroughly season the stone before using.

To know what good stone really is, and how it can be best used, the architect who practises in this city, or the student, has not far to go to see, not only the most durable stone, but also variety of masonry, as exemplified in such as Holyrood, Heriot's Hospital, and the residential buildings of the old town, erected centuries ago; or, turning to the modern buildings of the new town, stone of equal durability and variety of masonry, as shown in the polished work of the better-class buildings of the terraces, crescents, and squares, such as Royal-terrace, Randolph-crescent, Moray-place, or Charlotte-square; while in George-square, Gilmore-place, Thistle-street, Rose-street, or Jamaica-street, work of a cheaper kind has been adopted, all which are not only instructive, but interesting, in showing what masons could then do in erecting buildings that have stood the test of time, which makes no mistake in exposing what is good or bad in many things besides the art of building. My next consideration is,—

3. *How to use Stone in Laying a good Foundation.*—In my paper on Building Stones I gave the result of some experiments in testing foundation-stones for the chimney of the Edinburgh Gas Company, and the result of these experiments proved to my mind that as you enlarge the area of the stone a greater proportion of resistance is gained, and that a laminated stone, such as Hailes, would increase in strength according to its surface more in proportion than that of a Liver Rock stone, such as Redhall or Craigleith. I notice this more particularly to show that a soft stone need not be rejected if laminated, of large area, fairly dressed on the beds and joints, and bedded on what I would call a swimming bed of mortar, so that every portion of the surface of the stone would get a fair share of the work it had to do. Foundations should have the courses of sufficient breadth to admit of scarcements on either side, and all round, so that the wall, pier, or pillar resting thereon may have a good footing, and equal resistance through and through to prevent sinking. I have known, from the neglect of this, worse than subsidence happen, owing to the foundation-courses being filled with ordinary rubble in the centre, which, yielding when the pressure came, brought down the building, involving not only loss of life and property, but questions of responsibility that had to be settled in a court of law. The subsidence of the walls of a building occasioned by a bad foundation or inferior work does not show itself all at once,—it takes time to tell whether the foundations have been well or ill laid upon an unyielding strata, badly bedded stones, or a faulty construction; but once it does begin to fracture, the unequal, and what I would call the unfair, strain that is thrown upon other portions soon leads to serious consequences.

4. *How to use Stone in the Building of Retaining Walls.*—The chief object here is to build so as to lean to and resist pressure from behind. To do this satisfactorily the excavations should be dug deep enough to secure the resistance necessary to meet the thrust when it comes; the walls should be built of the largest material that can be got, and bedded at right angles to the batter on the face. Small-sized stones in such a wall are useless. Heavy material, well dressed and bonded together so

* By Mr. Jas. Gowans. Read before the Edinburgh Architectural Association on the 17th inst.
† See *Builder*, vol. xli., p. 673.

that when the pressure comes,—in most cases suddenly,—every stone will be ready to take its fair share in preventing an overthrow,—that is what is wanted, not small-sized material, which has no time to bond and get that unity of resistance which such a structure requires.

5. *How to use Stone in the Building of Rubble.*—Of walls built of rubble there is a great variety. Common rubble masonry or walls built with stones of irregular shape as they come from the quarries, if well put together, well dressed, well knocked to their bed, and built from front to back, so as to bond and get them to work together, enduring walls may be built; but if, on the other hand, as is too often the practice, such work is done by running up one side of the wall before the other, without bond or ties, such as are required to unite the whole, then nothing but failure can be the result. There is another kind of rubble, of which we have some admirable examples in the city,—that is, coursed rubble. This work was done entirely with the piened hammer, without chisel mark of any kind, and when well bonded and backed, walls of the most enduring kind were got. Where what is called squared rubble is adopted, with ordinary rubble for backing, the practice of running up the outer face should not be allowed. No worse masonry could be built than this, and it is to be regretted that so much of this kind of work is being done in our city. It is not only bad in itself, but leads to our younger masons being trained to a most objectionable style. Speculation in building, where cost appears to be the first consideration, has led to much of this kind of work, although I am by no means sure but what there is something else to be blamed, and that is, that many of our masons have not been properly trained owing greatly to their being allowed to break their indentures, and not serving their full time of apprenticeship. Masons were better trained when it was more the custom than it is now of indenturing apprentices for a term of years, usually five. Three were devoted to the art of hewing, and two to the art of building. When the term expired it was usual for the master to attach a certificate to the indenture stating how good an apprentice he had been, and his qualification to take his place as journeyman; and he was proud of the document as showing what he was and what he could do. This was a good custom, and one which I should like to see revived by the masters or workmen's unions, whose interest it should be to have well-trained men in their ranks.

In specifying rubble work architects should be careful in making clear the kind of work they require, as many questions have had to be settled in court, which might have been avoided if more clearly described, or if, what is better still than any specification, the kind of work was shown to contractors before estimation. There are so many different kinds of rubble, such as common, squared, random, hammer-dressed, nidged, and pick-dressed rubble, and rubble where the stones are limited in length, height, and breadth of bed, which comes to be a puzzle to the mason, if specified for walls such as I have seen built in this city. These should be made perfectly clear by the architect by *sample*, so as to prevent after-disputes, and show exactly how the stone is to be treated.

Another kind of rubble which was much in vogue when the houses in Moray-place, &c., were built, as shown in the back walls of the same, and also in the front of the older houses in George-square and Gilmore-place, was that of *coursed* rubble. As the term indicates, the stone was taken from the rubble, squared and faced entirely with the cairn hammer I have before alluded to, and it is well to notice from these examples how shapely and well done the work is,—some of it brought to a surface by squaring the stone so as to show the natural face, and others by using the piend for dressing off any inequalities, and bringing it more within the term of what we call "*nidged*" work, only with much less labour than that required for this more costly style of masonry.

How to use Stones in the Superstructure.—There are many ways of building, but whatever kind of work is adopted, whether ordinary rubble stone, cubic stone, or ashlar, the great secret is to make every stone do its fair share. The true way of doing this is to build the walls from front to back of stone, as nearly equal in thickness as possible,—that is of stones of cubic dimensions, or stones of a large area, examples of which we have in the remains of Egyptian and Cyclopean masonry. This is particularly desirable in the space between the foundation courses, and where the face of the wall comes to be seen good masonry is required for this, although it is often otherwise, owing, perhaps, to its being buried and out of sight. For the abutments of bridges or piers of viaducts, cubic stone only can be used with safety. Where a great load has to be carried, to build with cubic stone facing and rubble stone backing, is a mistake, unless the rubble stone is of large size, and carefully bedded. With cubic stone and ordinary rubble you have in the outer face of the wall fewer beds and less mortar than in the backing, so that when the strain comes there is fracture, or a tendency for the wall to yield to the weaker side. Walls, as a rule, are much too thin, to allow of the interior of a building being kept at a desirable temperature, thick walls are necessary. I would have all outer walls of not less than 2 ft. 6 in., and, as applied to chimney heads, you will never have a good draught in chimneys that are thin after passing through the roof. Unless they are thick, the current gets chilled and choked, owing to the cold damp air it meets with from the thinness of the masonry; and, further, it leads to disfigurement, by the use of cans, cowls, and such like contrivances, of what the architect should make one of the most telling features.

7. *How to use Stone for Coursed Work.*—The variety of this work lies more in the mode of *dressing* than of *building*. There are, for instance, *hammer-dressed* and *nidged* coursing, both done with the hammer, the difference between which has led to many disputes. Specimens of ordinary hammer-dressed coursing may be seen on the back walls of the older buildings of the New Town, while in many of the same where modern additions have been made, nidged coursers have been used, both as different as to cost as that of ashlar and ordinary rubble work. There is also *pick-dabbed* coursing, which requires to be clearly defined, as without a specimen it may be interpreted to mean work done with the ordinary pick, which belongs to the builder; or it may mean work which can only be done by the point or pick dabber of the hewer. But before leaving this part of my subject, I do not know that anything more valuable could be done through your Association than to have a clear and well-considered specification prepared, treating of *all* kinds of work. This would be certain to lessen, at least, the differences so often arising between architects and builders as to what is meant.

8. *How to build with Ashlar-facing and Rubble Backing.*—For ordinary purposes where there is no great load to carry, to build a substantial wall, the ashlar should be well squared on the beds and joints, and laid in a good swimming bed of lime, not stones with slack beds, which the builder has to pin up to bring to the plumb, but square, well-hewn beds which will bear equally on the mortar and stones below. The builder has no excuse for not bedding them well, as with the machinery now in use, such as steam cranes and such like appliances, he never needs to put his hand to the stone, but can at once have it lifted and rebedded without the slightest effort or trouble on his part. A great mistake is often made in laying ashlar with too thin a bed of lime, and also jointing too closely. This may look well, but hard to hard is bad masonry, as when the pressure does come a fracture from the face is sure to follow; and I have observed buildings where the architect or clerk of works was anxious to show thin beds and close joints sadly defaced although otherwise well built, and that with the hardest of material. All ashlar work after being backed up should have the joints well grouted with thin lime, this especially in walls that are much exposed to rain and in such a climate as ours. The backing of ashlar, or hewn work of any kind, should be of large-sized rubble,—every stone being well knocked to its bed, not simply tapped with the light hammer now in use or the edge of the trowel, but with the old-fashioned cairn hammer which every good builder had beside him on the scaffold fifty years ago.

I cannot help noticing here how different the tools which builders now use are from what they were in the time I have referred to. Then they had a large-sized trowel with which they did not spare the mortar, and the large hammer which was freely used and never failed to bring the stone to its bed. Another tool was the hawk-hammer, with one end of which the stone was squared and the other the inequalities were dressed off. The mash and pincher, first used by the hewer forty years ago, were handy tools for bending the checks of rybats, and removing the rough along the edges of the stone. Now these, with the clourer, are part of the builder's kit, and are used by him for doing that which the older hands accomplished with the hammer,—work that was not only cheaper done, but far more tradesmanlike in appearance. Now it is a small trowel, and the lightest of hammers, which, if used, scarcely affects the stone at all. In short, the ordinary rubble building of the present day is not such as will maintain the character our Scottish masons had when I first remember.

9. *How to Dress Stones so as to get the most Durable Surface.*—Of the various kinds of work adopted, and of which we have admirable examples in this city, I am of opinion that polished work is the best not only for securing durability to the stone, but also for bringing out the beauty of its texture and colour. Hammer-dressed, nidged, pick-dabbed, broached, scabbled, droved, and tooled work, all tend to bruise the surface of the stone and thus expose it to the atmosphere, while the rubbing necessary for polishing removes the bruised material, and presents to wasting agents a surface more likely to prevent decay than any other kind of work I know of.

I have endeavoured to make this paper as practical as possible. Its consideration may be of some value to the architectural student, as it is a matter of regret that buildings on which the architect rests his reputation, and to which his genius has been applied, should perish either from faulty stone or bad masonry. Five hundred years ago, when those beautiful examples of Gothic architecture were erected, with their traceried windows and vaulted roofs, the architect and builder seem to have gone hand in hand not only in planning, but in building up, on true constructive principles, edifices which have withstood the ravages of time for so long a period.

Before closing, I wish to allude to a custom which prevailed when such buildings as Heriot's Hospital were erected. Then every hewer indented his mark on the face of the stone he had hewn, and it may be of interest to visit this building and observe how carefully this was adhered to. You can by these means nearly ascertain how many hewers were employed on the work, how the structure was built up round and round, and how those most expert in their craft had allotted to them the stones to dress which required the greatest skill. I have seen the same marks on buildings I have examined all over the country. I had a hobby for collecting these some years ago, and visited many of the principal cathedrals and buildings in England. I made a large collection, but unfortunately have lost the record. But it is a custom I should like to see revived, as, in my opinion, it would not deface the stone if done with the delicate and enduring touch which these old masons gave to work to which, no doubt, they attached a high value. Mark masonry, as one of the degrees of Freemasonry, had very likely something to do with the custom, but, although a Freemason myself, my paper precludes me following this phase of the craft further than to mention it as something that is, at any rate, suggestive.

With these examples before us, the appliances we have, and the teaching which every architectural student or working mason can get, we should be able to cope with those who have preceded us. I believe in the earnestness of the architectural student of the present day, but I am not so sure about the technical teaching or training the apprentice mason seeks after. When I first remember there were in the city many drawing-classes, chiefly attended by young men who were either masons, carpenters, engineers, or mechanics of a like kind. There were Ruthven, on the Bridges; Milne, St. James-square; Moffatt, George-street; Paterson, Stockbridge; and others, all teaching drawing, and making good incomes from the crowded classes that attended them. Now we have such institutions as the School of Art to take their place; but I question very much if the classes are as well attended there as the others were in the time I have referred to. Besides this, there was at every important building a drawing-class, usually conducted by the chief foreman or clerk of works, which had the effect of theoretically educating the workman to a proficiency he could not otherwise have attained. In every squad there were numbers of men who were fit, from their in-

telligence and training, to act as clerks of works, or foremen; and, in mentioning the former, I am of opinion that the well-trained mason is better for such a trust than the joiner.

No mason or joiner can be perfect in his trade, or have his heart in it without a knowledge of drawing. As to masonry, I know of no trade that affords greater scope to the studious mind. To be proficient, his head and his hands must work together. There is endless variety in the operations he has to perform, and it is far removed from work that is nearly, if not altogether, mechanical. I trust that as education (especially technical) advances, we may have a race of masons who will be something beyond mere machines, and who, by their training will help in no small degree our architects to carry out buildings whose architecture will be worth copying even by generations to follow us.

PORTLAND CEMENT:

ITS MANUFACTURE AND USES.*

Tensile Test.—All cement used in this country is tested for tensile strength before it leaves the works, sample briquettes being made from each day's grinding, and also from each shipment, collected as above described, either by handfuls from the spouts, or by small quantities from each sack. It has been until lately the practice to give the briquettes a sectional area of 1½ in. by 1½ in., equal to 2¼ in., but they are very generally nowadays with 1-in. section. The form of the briquettes considerably influences the results obtained, and the manipulation of them further affects the tests. Indeed, there are many men who are never able to obtain satisfactory results, and two individuals using the same cement, the same moulds, and the same testing machine, will differ by 100 lb. per inch of section in the tensile strain of the samples they manipulate. A fixed quantity of water should be used for each gauging, and there should be just sufficient to work the quantity of cement to be mixed into a fat paste, which is then placed in the mould and allowed to set. It is the practice to shake the moulds, which are laid on pieces of slate or glass, in order to get rid of air bubbles; but there is little doubt that this also affects the result, as the particles of cement, not having the same specific gravity throughout, the coarser and heavier portions fall towards the bottom of the mould, and the tensile strength will not be the same throughout the section, and there will be a tendency towards fracture, commencing on one side before the other, and the result will be below the average strength of the cement. On the other hand, if the air bubbles are not removed, there will be a loss of section equal to their collective area, and the result obtained will also be below the strength of the cement. It is my own practice to work the cement to some extent in the moulds, and to shake them a little. . . . .

Breaking Briquettes.— When the briquettes are set sufficiently to enable them to be removed from the moulds, they are placed in water, and remain there for six days, when they are broken in a testing machine, and the resulting strains are recorded in a book kept for the purpose, and in which also the tests for carbonate of lime, and the days on which each kiln is loaded and drawn are also entered, so that the test for carbonate of lime, for the slurry with which any kiln is loaded may be known, and also the tensile strength of the cement produced from that kiln. This is the practice I follow myself, and, though I am bound to confess that it cannot be carried out thoroughly on account of the quantity of clinker which must, sometimes, be put in the clinker store, and which cannot be referred to any particular kiln, yet, as in the case of the test for carbonate of lime, and the weighing of the chalk and clay, it is a guide.

Testing Machines.—There are many machines in general use for testing briquettes, those best known being DeMichele's, Adie's, and Michaeli's. I use De Michele's machine; it is simple, strong, and steady, and there is every reason why the result obtained should be accurate, it being impossible to strain the briquette before the testing commences; and this is not the case with Adie's machine, as the briquettes have to be screwed up against the lever, and if this be done carelessly the briquette may be damaged before the weight is applied. In Michaeli's machine the load is applied very steadily and gradually, as this is done by filling the vessel with water, but the double system of levers tends to inaccuracy.

Requirements in Germany. — In Germany there is a standard specification for cement: the test for grinding is that there shall not be a residue of more than 20 per cent. after the cement has been passed through a sieve having 76·2 meshes per lineal inch. For the tensile test the cement is mixed with three times its weight of standard sand, and is tested after twenty-eight days, when it must bear 142 lb. per square inch of section.

Twenty-eight days' Test.—There are considerable objections to this specification; it is impossible to produce a standard sand which shall be always the same, and any variation will affect the testing of the cement. No doubt twenty-eight days' tests are of great value, and it would be a good thing if they could be obtained without inconvenience, but such tests cannot be made by the manufacturer at his works; if they were necessary, a full month's stock would always have to be kept in hand, besides accumulations, and the storage room required would be enormous, and most expensive.

Specifications.—In this country, unfortunately, there is no standard specification, and each engineer specifies in accordance with his own ideas; and the result is, that the manufacturer may have several conflicting specifications to meet at the same time; and not only this, but specifications are often conflicting in themselves. The specification of Mr. Bernays, engineer to the Chatham Extension Works, is as follows:—

The cement must be of uniform good quality, finely ground, and weighing not less than 112 lb. to the imperial (striked) bushel. All cement that does not bear, without breaking, a weight of 650 lb. upon the test blocks, of 1½ in. by 1½ in. section will be rejected. The specification of Mr. Grant, engineer to the Metropolitan Board of Works, is, put in the shortest form. The cement shall be ground so fine that the residue on a sieve of 5,806 meshes to the square inch shall not be more than 10 per cent. by weight. The cement is to be gauged with three times its weight of dry sand, which has passed through a sieve of 400, and been retained in one of 900 meshes per square inch. All cement that when neat sets in less than two hours, must bear without breaking a weight of 142 lb. per square inch, and, if it take from two to five hours to set when gauged neat, it shall bear a weight of 170 lb. per square inch twenty-eight days after gauging. As written, there are no means of comparison between these specifications, as the tests in one case are made at seven days, and in the other at twenty-eight days, and in the first case neat cement is used, and in the second a mixture of sand and cement; but reduced to equal terms the requirements would be somewhat as follows: Grinding.—Mr. Bernays requires a maximum residue of 20 per cent, after passing through a sieve of 2,500 meshes per square inch. Mr. Grant requires that the residue, after passing through a sieve of 5,806 meshes the square inch, shall not be more than 10 per cent. Tensile Test.—Mr. Bernays requires that the briquettes shall not break at seven days with a weight of 288 lb. per square inch; Mr. Grant rejects any cement which breaks with a weight of 400 lb. per square inch.

One engineer will specify that the cement is to weigh 109 lb. per striked bushel; another requires that it shall weigh 116 lb., and at the same time be quick setting, and have a tensile strength at three days of 150 lbs.; at seven days of 400 lb., and at twenty-eight days of 500 lb. per square inch. This is contradictory: cement which weighs 116 lb. per striked bushel must be heavily burnt, and heavily burnt cement, as a rule, means that it is slow-setting cement. Slow-setting cement will not give a tensile strength of 150 lb. per square inch, at three days, unless it is very highly burned, and in this case, though it may give the required strength of 400 lb. per square inch, at seven days, it is not likely to have a strength of 500 lb. per square inch at twenty-eight days.

Fine Grinding.—The question of fine grinding is a much-vexed one, and the tendency is for engineers to specify that cement shall be ground more finely than was formerly required. It is certain that the cement which will not pass through the meshes of a sieve with fifty wires per lineal inch has little or no cementitious value by itself; but I do not think that it is at all proved that it has no value when mixed with finer ground particles; on the other hand, the coarser particles of cement are generally those which are best burnt, and would, therefore, if reground, make the best cement; and the very fine particles are, as a rule, weak in cohesion. It seems that finely-sifted cement has less strength than that which is unsifted, when gauged neat, but that the reverse is the case when a mixture of three parts of sand with one of cement is used; such a mixture, however, is not one which is much employed in practice. The question arises: is the forty per cent. additional strength, which Mr. Grant claims for cement ground to the German specifications, or somewhat finer, maintained in ordinary concrete, as generally used. If it is, then, by all means, let us have finely-ground cement, but let its use be universal, not occasional; in fact, let there be a specification drawn up which shall meet the views both of engineers and manufacturers, and let it be used for all cement. This question of fine grinding must be reduced, like a great many other things, to the standard of money. Is it cheaper, with the same efficiency, to use cement of ordinary quality, at the market price, or to pay a higher price for very finely-ground cement. In cases where the carriage is not heavy, and supposing the loss in the coarser cement to be due to the percentage of coarser particles, and that these have no cementitious value when mixed with the finer cement, which, however is, I think, not yet proved, then the balance is slightly in favour of the ordinary cement of commerce. But, supposing Mr. Grant's estimate of the value of finely-ground cement is correct for concretes, which I also do not think is proved; and when the carriage is heavy, finely-ground cement will be cheaper, at a considerably advanced price, than that which is more coarsely ground. My own feeling is that cement might be much more finely ground than it is at present, at slight cost; but when such fine grinding as that specified by Mr. Grant is required special machinery becomes necessary, and the cement must be handled twice, and the cost of manufacture is greatly increased. Notwithstanding the arguments of Mr. Grant, and others, and the practice in Germany, I do not think that the case, except when carriage is a heavy item, for or against fine grinding is proved; there is also another point to be considered in cases, as at the Chatham extension works, where the concrete is made in the proportion of twelve to one,—would there be sufficient of the finely-ground cement, when used in the proportion of twenty to one (which would be the mixture required to give the same strength, if the finely-ground cement has forty per cent. more value than that which is coarsely ground) to fill up the interstices? If there is not, then the whole argument in favour of finely-ground cement, when used for concrete of this quality,—and a very large quantity of cement is used in this way,—falls to the ground.

Cooling.—All cement should be kept at least a fortnight before it is used, and during this time it should be spread out on a dry floor to a depth of not more than 3 ft., and as much less as possible, and turned over at least twice, so that it may be thoroughly cooled, and any free lime which may be present may be slacked. The desire evinced by many engineers for high tensile tests involves the danger of the presence of free lime; where this exists the ultimate disintegration of the work constructed with it is more than probable, for a high tensile strength at seven days, which often means the presence of an excess of lime, does not by any means guarantee that the strength at twenty-eight days will be, as Mr. Faija says it should be, 25 per cent. higher than it was at seven days; rather the reverse. A sample of cement, which broke at seven days after gauging at 300 lb., will often, after the lapse of a year, have a strength of 700 lb. per square inch, while the sample which broke at 450 lb. at seven days will, at the end of the year, give no higher test, and at the end of three years will probably have begun to disintegrate. Cement made with a large proportion of lime, and lightly burned, is most dangerous. Heavily-burned cement is hard to grind, it is generally slow setting, and it gives a low tensile strength at short periods, and gradually increases in strength for an indefinite time. I submit the following specification for your consideration, it will not meet all requirements, no standard specification will do that; but if some standard specification could be agreed on it would be a benefit alike to engineers

* A paper read before the Civil and Mechanical Engineers' Society, Dec. 21, 1882, by Reginald E. Middleton, A.-M.I.C.E. See p. 36, *ante*.

and manufacturers; you may imagine how it must hamper the latter to have to meet the requirements of half a dozen entirely different and conflicting specifications at the same time, each necessitating a different mixture of chalk and clay, a different rate of burning, and a different fineness in grinding.

Proposed Standard Specification. — The weight per bushel, after cooling, to be not less than 112 lb. and not more than 118 lb. per striked bushel, the measure 6 in. deep, the angle of inclination 45 per cent., and the length of the board 2 ft., and the fall from the board to the top of the measure 6 in., the cement being fed from a flat plane at the level of the top of the board into the board.

The tensile strength of the test briquettes seven days after gauging and six days after immersion in water to be not less than 335 lb., and at fourteen days not less than 385 lb. per square inch.

All the briquettes to be of the form shown at No. 4, and one standard machine to be used for testing. The cement to be ground to such a fineness that, on sifting through a sieve, having fifty meshes per lineal inch, the residue shall not be more than 10 per cent.

Analysis—The following is an analysis of finished cement, taken from Mr. H. Reid's work on the subject:—

Silica	22·74	Alkalies	0·63
Alumina	7·74	Sulphate of lime	1·66
Oxide of iron	3·70	Carbonic acid	3·50
Lime	56·68	Undissolved residue	0·53
Magnesium	0·57	Water	1·90

Remarks.—Portland cement is much more easily made in winter than in summer. In hot weather the cement made in exactly the same proportions, and burnt to just the same extent as at other times, will set so rapidly that it can scarcely be handled, and it is also very apt to crack. This arises presumably from the difficulty of getting rid of the mechanical heat in the cement. It is perfectly true that the manufacture and use of cement has made rapid strides of late years; but there is more yet to be done, both in the direction of improvement in regularity, and in reduction in prime cost. Cement manufacturers are generally troubled with bad water, and this is a fruitful cause of expense. Fuel is a large item, and this might, I think, be reduced; and labour, again, is a heavy charge, and in many cases machinery could do the work better and more cheaply, as for instance, in distributing the cement and shipping it; and last, but not least, means should be found for more efficiently crushing the clinker before it goes to the mill-stones, and for grinding it after it has got there. All these things are matters of detail, only to be arrived at tentatively and after careful observation.

Uses of Cement.—The uses to which Portland cement may be put are various, but it is most extensively employed in the manufacture of concretes, and in this form it serves for the construction of dock walls, retaining walls, foundations, piers and jetties, sea walls, bridges, floors of bridges, and of houses, warehouses, dwelling-houses, sewers, sewer-pipes, flags, tiles, baths, bricks, mantelpieces, mouldings, and ornamental work generally. The Chatham extension works are built almost entirely of concrete in the proportion of 12 of the aggregate to 1 of cement, mixed and laid *in situ*, with a facing of concrete made in the proportion of 6 to 1. The Albert Dock is made almost entirely of concrete laid *in situ*. Dover and Tyne piers and others are made with blocks of concrete. The roadways of a large proportion of our streets are laid on a foundation of concrete, many of our sewers are made entirely of concrete, and sewer-pipes, which are far stronger and more watertight than those constructed of stoneware or fire-clay, are made of the same material, which is also used where fireproof floors are wanted. Foundations are almost invariably made of concrete, which adapts itself to irregularities of surface. Concrete bricks made of breeze and cement in the proportion of 6 of the former to 1 of the latter, and pressed in an hydraulic press, can be made in the morning and built into the work in the evening, and this about the same price as stock bricks, and they can be turned out in almost any weather. Houses may be built of concrete laid *in situ*, and they have the advantage of being almost entirely vermin proof, but they have also the disadvantage that they are very hard to pull to pieces and alter. Concrete may be made into slabs and polished, or it may be used for ornamental mouldings and cast like metal or clay; and it is exceedingly well adapted for such work, for it takes a very sharp impression, as may be seen by any one who looks at the face of a concrete retaining wall, where the grain of the timber used in building will be found exactly reproduced in the cement. Any desired colour may easily be given to the concrete through the medium of the aggregate. Concrete is particularly well adapted for engine and machine foundations, the engine or machine may be blocked up to its proper position and the concrete cast under it until every cranny is filled and the bolts are set perfectly solid in the mass. Concrete slabs are used for paving footways, and offer a much more even and enduring surface than York flags, that is if they are properly made; and this proviso holds good for all concrete works; it must be properly made, care must be taken that the cement is of good quality and not liable to blow, that it is to say, that it does not contain free lime, that it is properly slacked, and that it is not used in the manufacture of concrete after it has once set, unless it is reburnt and reground. Failures in concrete walls are common, not because the concrete is faulty, though it will not adapt itself to circumstances as a brick wall will, and any settlement will cause cracking, and these cracks cannot be easily mended, but because sufficient care is not taken to make the foundations secure, and the wall is carried up to its full height in short lengths, whereas the building should be constructed to as great a length as possible at once, but only to a height of 1 ft. 6 in. or 2 ft., and when the next layer of concrete is laid the surface of the last layer should be cleaned and damped, and if it has been standing for a long time it should be dusted with neat cement. Concrete should be made as required; if it is allowed to set before being put into the work it is useless, and setting begins very early; some light burned cements, when gauged neat, will begin to set within forty seconds of the time when the water is added, and all cements set quicker in hot weather than when it is cold. The more the cement is agitated, the longer time will it be before it sets, and concrete takes longer to set than neat cement, otherwise it would be almost impossible to handle it.

Stucco.—Portland cement is largely used for stucco, and it often fails and flakes off; this again is caused either by the cement not having been sufficiently cooled by natural heat, or by the surface of the wall not having been properly damped, causing the pervious bricks or stone to absorb the moisture required by the cement. Improper materials are frequently mixed with cement; when sand and gravel are used, they should be clean and sharp. Loam or anything of that nature kills cement.

Proportions.—The proportions to be used in the manufacture of concrete must depend entirely on the work to be done, and on the nature of the materials which can be obtained to form an aggregate. We have seen that a proportion of 12 to 1 gives a good result when large masses are used, as in the case of foundations, dock-walls, piers, and jetties built *in situ*; but the sand and stone, or whatever the aggregate is formed of, must be sharp and strong; if soft and porous stone and dirty sand be used, a large proportion of cement will be required. For small work a proportion of six to one is satisfactory, and this is, I believe, a strong enough mixture for flags 3 in. thick, if concrete made in the proportion of two parts of well-washed granite chippings to one part of cement be used for the face ¼ in. thick. No sand should be used in facework, for if it is present the concrete will wear into holes, as may be seen in many concrete walls. Broken slag makes good concrete, and so does broken brick, but whatever be the material used for the aggregate there must be a sufficient proportion of finer matter, whether this be sand and cement or cement alone, to fill up all the interstices, and make the whole one mass.

Water.—The quantity of water to be used in mixing must vary with the materials employed; for instance, broken brick will require more water than granite; and in frosty weather as little water should be used as is possible. As concrete sets more rapidly at a high than at a low temperature, and it will not set safely in frosty weather, it is desirable, in the construction of slabs, mouldings, and ornamental work generally, that the temperature during the time of setting should be high, and as even as possible; and to meet this end Mr. Faija has invented and patented a process by means of which, slabs or blocks can be moulded one day and turned out the next without resorting to hydraulic pressure, thus doing away with the necessity for a large number of moulds, and reducing the cost of manufacture; and, as I have said before, concrete is eminently adapted for the manufacture of mouldings, which can be made comparatively light, and at the same time very strong.

Cost of Concrete.—The cost of manufacturing concrete varies very largely in different localities, and depends on the distance the cement has to be carried, and on the price of a suitable aggregate at the spot where it is to be used; under ordinary circumstances it is much cheaper than brick or stone work of equal strength, so far as the actual material is concerned, but it cannot be used in the same manner, but must be made into bricks or blocks, or cast into a wooden or metal framework of the form of the building or block to be made, and the cost of such framework must be added to the price of the material and labour. In the case of a dock, or other large work of that description, the cost of the framework will scarcely affect the price of the concrete, but when a single house has to be built, special frames must be made, and they will form a large item in the total cost. When, however, the same frames can be used for many buildings, this expense will be greatly reduced. For a single house it is more than questionable whether stone or brick would not be cheaper than concrete, as either is certainly handier to work with. Mr. Bernays puts down the price of concrete made in the proportion of twelve to one at 7s. 2d. per cubic yard; of nine to one, at 8s. 2½d.; of six to one, at 10s. 3d. per cubic yard; to which must be added from 4d. to 6d. per yard for framing. I believe that pressed concrete bricks may be made cheaply, and that they would be easy to build with and serviceable, and that they can be made with sharp square edges, and faced as required, and at a reasonable price.

Altogether the field for the use of Portland cement is very large, and will, I believe, be still further extended, as greater confidence is placed in the material, which will, in its best form, outlast any stone. I have no doubt that improvements will be made in the manufacture of Portland cement beyond those which have already come into effect, and I trust that both engineers and manufacturers will direct their attention to its perfection and to the extension of its uses, and that between them they may arrive at some standard specification which shall be accepted on all hands.

THE FALL OF A FACTORY CHIMNEY IN BRADFORD.*

THE inquest as to the death of the fifty-four persons killed by this disaster was resumed on the 11th inst., when

John Dobson, mason's labourer, formerly in the employ of Messrs. John Moulson & Sons, the contractors for the erection of the chimney, said that the structure was begun in the year 1862. The foundation stones were laid upon concrete. Four shafts were first sunk, one at each corner, about 8 ft. in width and 20 yards in depth. The shafts were carried through a bed of coal to a depth of 5 yards or 6 yards. The concrete was laid on a substratum of clay and stone, and filled up the shafts. A bed of concrete 2 ft. or 3 ft. in thickness was made, and upon that the foundation stones were laid. When they had erected the chimney to a height of 70 ft. the workmen noticed one morning that it had gone out of plumb. The masters were acquainted with the circumstance, and the work was stopped for ten or eleven weeks, when Woodward, the "Manchester Steeple Jack," came over and straightened it. The chimney was found to be 36 in. out of plumb. After the first cutting it was still 18 in. out of plumb, and the chimney was again cut in the same place, and made straight. Two or three years ago he noticed that the chimney leaned a little in the same direction as it did before it was straightened. He formed the opinion that it had given from the foundation.

By Colonel Seddon.—The space under the foundation from which the coal had been taken was packed with backings.

William Shackleton, mason, said he helped to build the chimney after it was thirty-four yards high. When the structure was seventy yards high they stopped eleven weeks, as the chimney

* See p. 60, *ante*.

was out of plumb. He then refused to work at the chimney any more because it was getting so high and the weather was bad. They put in plenty of "throughs." They were 2 ft. 3 in. apart in height. The stones used for backing were as big as he could lift. The lime was not riddled.

Mr. William Moulson, of the firm of Moulson & Son, who built the chimney for Sir Henry Ripley, stated that he was asked in 1862 to tender for a chimney like one their firm had just built at the Bowling Dye Works. It was to be eighty yards high, with a 9 ft. flue, 24 ft. at the base, with two courses of footings and a foundation of 2 ft. of concrete. The footings were to be 28 ft. square for the first course, 12 in. thick, and the second course 26 ft. square, 12 in. thick. He also, at Sir Henry's request, tendered for a chimney with a 10 ft. flue. Sir Henry selected the 9 ft. flue chimney, and asked the firm to go on with the work. The amount of the tender was 942*l.* 5s. 10d., and 40*l.* for the top. At Sir Henry's request, a tender was got for sinking five pits to the bed of coal, as a foundation. The packing was to be done by daywork, the materials to be all found. Sir Henry told witness that he would get his architect, Mr. Andrews, to prepare plans and to set out the ground. The foundation over the five shafts was to be 2 ft. of concrete. The coal was usually about 2 ft. 6 in. thick at that point. Finally, Sir Henry, with the assistance of Mr. Andrews, his architect, and others, selected the site of the chimney. Finding an indentation of the ground, they examined it and discovered it to be an old shaft up which coal had formerly been worked. They all fell in with Sir Henry's suggestion that this would do, if opened out, for the central foundation pit. The contractor for excavating proceeded to re-open and fill it with packing, after which the other shafts were sunk in due course. All the shafts were filled with packing of Skipton lime, broken stone, engine ashes, and sand, put in as hot as possible and blended. It was not rammed, but was occasionally levelled. The five shafts having been filled up, a bed of concrete, 2 ft. 6 in. thick and 30 ft. square, was placed over them. Upon this, two courses of sound rag foundation-stones, 30 ft. and 28 ft. square, each a foot thick, the joints being crossed and filled in with lime-mortar, were placed. The stones were properly faced and levelled. Mr. Illingworth was the leading man in watching the putting in of the foundations, Mr. Andrews, the architect, not being there. Before the erection of the chimney was commenced, Morpeth, the clerk of the works, with his (witness's) concurrence, suggested that the fire-brick and red brick linings were too light, and that red bricks ought to be substituted for the packing. Sir Henry replied that he thought the packing ought not to be dispensed with. Thereupon Mr. Morpeth said that he had not had much experience of stone chimneys, and that Sir Henry had had considerable experience in building matters. Witness supplied Sir Henry with the difference of the cost of packing, dressed insides and red brick, and the packing originally agreed upon. At Sir Henry's suggestion the thickness of the brickwork was increased to 18 in. halfway up the chimney, and 14 in. for the upper half. Mr. Morpeth, however, said he would rather have it the other way. Witness afterwards agreed with Mr. Ripley that packing for the hearting with the increased thickness of brickwork would be strong enough, and the work started accordingly. No architect was present at the interview at which these arrangements were made. His firm had no specifications either for this or for three other chimneys they built for Messrs. Ripley at their dye works. Mr. Morpeth, the clerk of the works, was constantly superintending, and never complained about the work. When ten yards of the chimney had been built, Sir Henry Ripley said it would look very plain without ornament, and he got designs for holes and panels. Witness, his father, and Mr. Morpeth, protested that these adornments would weaken the structure, but Sir Henry smiled and said, "You must do it my way." The plans were amended accordingly, and holes and panels were built in the chimney as the work went on. On the morning of the 8th of June, when about 70 yards of the chimney were built, it was found to be leaning. Mr. Woodcock and some clerks examined it, and bared the foundation. Mr. Morpeth said that the foundations had given a little on the side towards which it leaned; thereupon the services of Woodman, the "Steeple Jack," were secured. Having examined the chimney, this man convinced Sir Henry that he could make the chimney perfectly straight, and, with Sir Henry's consent, he cut through the chimney in two places on the side opposite to which it leaned. The structure was then believed to be perfectly straight. The builders went on with their work and finished the chimney by the end of November.

Did you form an opinion at the time as to the cause of the canting of the chimney?—No, unless it was, as is often the case, that the sun had softened the work on the south side. I also thought that the foundations had given way a little. Witness went on to say that three years after its completion their firm, at the request of Sir Henry Ripley, took out certain bulges on the side opposite to where it had been cut. They laid bare the hearting, which appeared to be sound. They were not limited, but were to effect all necessary repairs. The straightening operations would necessarily break a large number of the "throughs." He had noticed within the last five or six years that the chimney was leaning more than before, and that it was worse still about six weeks since. When the chimney was half built Sir Henry Ripley said he thought it would look stiff, and that it had better be carried to a height of 100 yards, but after the "Steeple Jack" had done his work that idea was abandoned. The total weight of the chimney standing upon this 30 ft. square base would be from 4,000 to 5,000 tons. In his opinion, the strength of the chimney lay in the inner lining rather than in the backing. His firm selected the best men they had to do the work, and their instructions to the men were to do the work to the best of their ability. They were paid for day work. There was no fault found with their not getting on fast enough, and they took their own time. The firm wished to make as good a job of the chimney as they could.

Colonel Seddon.—Do you now think that the effect of the alteration suggested by Sir Henry Ripley was to weaken the chimney; that is, the suggestion to substitute common brickwork below, and so reduce the thickness of the backing?—I think it would strengthen the chimney considerably. This opinion as to the superior strength of the lining I base on the fact that the beds are level and thin, making the work more solid and firm.

Do you think that in this case the inner lining could have stood without the backing?—Yes.

Joseph Moulson, of Little Horton-lane, said that at the time of the erection of the chimney he was foreman to Messrs. J. Moulson & Sons. He superintended the sinking of the shafts for the foundations. The walls of the old pit shaft were found to be in a very good condition, there being no bulges anywhere. They extended to the bottom of the bed of coal which had been got. The roof of the workings in which the coal had been got thirty years before was in fairly good condition. He was not sure that the four shafts sunk for the foundations were taken down to the bottom. The workings were filled up and lightly packed for a radius of about twelve yards round the old pit shaft, then the headings were filled in with concrete. The shafts were filled up with concrete, which was also used for the bed of the foundation.

By Mr. Atkinson.—I had had thirty years' experience of laying foundations at that time. The work was thoroughly well done, and the means adopted were the best that could be devised under the circumstances. I was aware of the height to which the chimney was about to be carried, and I considered the foundations strong enough to bear the weight.

The Coroner.—Within the last two or three years, has there been a deep cutting made in connexion with the Great Northern branch line on the south side of Ripley-street?—Yes, it was made a few years since, and is almost in a direct line south with the chimney. The cutting is from 20 ft. to 30 ft. deep, as far as I can tell, and it is from 60 yards to 80 yards from the chimney.

In making the line, do you know whether the company packed or let down the old workings?—I cannot say.

A Juror.—Is it falling ground down to the chimney from the railway?—Yes.

Are the concrete foundations of the chimney lower than the railway line?—I should think they are about on the same level.

William Boocock, a coal-miner and shaft-sinker, said that he had fifty years' experience in his trade. In the year 1862 he was employed on the Newlands chimney foundations, working under Thomas Pitts, who died ten years ago. Witness saw the old pit shaft opened, and assisted in clearing it out. As nearly as he could remember, about 12 yards square was clear, the seam of the better bed coal being reached.

By Mr. Atkinson.—Four pillars of coal, each about two yards by one yard in thickness, had been left at the bottom of the shaft. They were 30 in. high. The workings were packed six yards beyond that.

The inquiry was again adjourned.

ARTANE INDUSTRIAL SCHOOLS.

THIS school, which is situated three miles from Dublin, was visited recently by the Lord Lieutenant. The building comprises a central block affording ample accommodation for the Community, the extensive class-rooms, trades and training rooms, dormitories, and main staircases, being situate at either side, east and west. The main corridors at back extend through the entire building into which all the apartments open. The chapel on the first floor, and refectory under the same, extend out at the rear of the central block. All culinary offices, &c., are in immediate connexion with the refectory on the ground-floor.

The principal apartments being in three stories about 18 ft. from floor to floor, afford accommodation for 700 boys, independently of the Community. Perfect ventilation has been insured throughout by apertures for fresh air, 6 ft. above floors, acting vertically, and foul air exits under ceilings in all the apartments. The main dormitories, having windows at either side, contain about 120 beds each, allowing 700 cubic feet air-space to each boy.

The entire frontage measures 366 ft. by 58 ft. in depth, and 78 ft. in height. The unusual height and extent of the edifice render it a most conspicuous object in the landscape for miles around, and the upper stories afford charming views of scenery over land and sea.

The style of the composition is Italian, the walls being of limestone from the district, in combination with Portland cement concrete, with which all the jambs, arches, fireplaces, niches, &c., have been executed, with decided economy; the entire front and ends, with all decorations, being in Portland cement, and the entire cost has been estimated at about 40,000*l.* It has occupied about eleven years in construction.

Special provision has been made for life protection in case of fire. Grand staircases, 6 ft. wide, are provided at either end of the main building, and also stairs at either end of the central block, the upper apartments and corridors being in direct communication throughout the entire length on each floor.

The designs were prepared by Mr. Charles Geoghegan, architect, under whose superintendence the entire works have been executed.

SETTING A CHIMNEY UPRIGHT.

THE large chimney at the Staleybridge Spinning Company's works, New Mill Yard, which is near its completion, and will be seventy-five yards high when finished, has unfortunately commenced to lean, and was a week ago over 20 in. out of plumb. The architects, Messrs. Potts, Picup, & Dixon were uneasy over the same,—no doubt on account of the sad fatality at Bradford, and, again, on the builders refusing to finish the chimney. But on the 2nd inst. the able services of Mr. Jos. Ball, "Steeple Jack," of York Castle, Oldham, were called in. This person, who has had a lifetime of practice attended with success, has, I am glad to say, brought the chimney plumb within 4 in. up to Jan. 15, and has gratified the directors with a promise that he will have the chimney straight by their meeting on the 18th, and will complete the brickwork and build on the new top in the course of a few days after. If he is successful,—and which I hope he will be, without damage to life or property,—I will write you in due course. THOMAS JACKSON.

The Royal Academy. — At a general assembly, held on Tuesday evening, Mr. Benjamin William Leader, painter, Mr. Thomas Brock, sculptor, and Mr. Francis Holl, engraver, were elected Associates.

ON SCHOOLS.

THE new Board Schools in Icknield-street, Birmingham, were opened on Monday last by Mr. A. J. Mundella, the Vice-President of the Council of Education. The schools are on the system of separate class-rooms, and have been erected, at a cost of 10,700*l.*, to accommodate 870 children; that is, at a cost of 12*l.* 6s. per child. There is attached to the schools a science-class, which will accommodate about 90 additional children.

Mr. Mundella made a speech, some portions of which, bearing upon school buildings, are here given:—I rejoice to find that the school is built on a principle which I have always advocated. I have seen this kind of school in almost every country in Europe, and in most of the States of America, and it possesses in a very high degree all the physical conditions which are requisite for successful teaching. After the Parliamentary session I was passing a holiday in Switzerland, to get a breath of air on the Alps, and the landlord at Lucerne showed me the new schools, of which he said the inhabitants were proud. Lucerne is a town of 20,000 inhabitants, and the Swiss are poor people; but they have erected a magnificent and almost palatial building of freestone, with large folding-doors that open into a hall of marble, with a fountain and a bust of Pestalozzi in the centre. They have wonderful mechanical contrivances for giving object-lessons, and a science-room, fitted with a magnificent laboratory. Yet this is only an elementary school. It will accommodate 800 boys, and they consider it cheap at about 25,000*l.*; that is, at a cost of about 31*l.* per child. I am sure that if the School Board of the wealthiest English town had attempted anything like this they would have been consigned to the winds at the very first election. I hope that the day will soon come when the walls of school-rooms will be beautiful. Nothing will do so much to elevate the masses; nothing will do so much to render people dissatisfied with the squalor and misery of their own homes, as cheerful, bright, and somewhat decorative schoolrooms. This is a genuinely philanthropical movement, teaching, by the example of the schools, the working masses to take a greater interest in their homes. The class-room system is an aid to the teachers, by not making the demands on the children which are made when they are disturbed by external circumstances. It may be asked why, if I approve of the class-room system, the Department did not prescribe that system? To that question I would reply that they consider it better to leave the Boards free to find out by experiment what is the method best suited to their locality, and the result may be that Englishmen will work out a system which, though not the same as the American system or German system, will be more thoroughly adapted to the wants of the English people.

With regard to instruction in the elementary sciences, it quickens the children's aptitude for the acquisition of knowledge in other branches. It is quite necessary, however, to bear in mind that, before attempting higher grades of schools, we should make sufficient provision for all the children who require the mere rudiments of education. If I am asked whether there is not danger of over-educating, I say, no; and I will tell you why. Our idea of education is the lowest, certainly, on this side the Alps. Those who have had the longest experience in education, those nations which have spent most on it, are at this moment making the greatest efforts. The educational impulse throughout Europe is something one can hardly believe, and it is so because the people on the Continent have found that knowledge is power, not only military power, but industrial power. Whereas in Birmingham, last year, the expenditure on education was 2s. 3d. per head, in Paris it was 12s. I urge you not to rest until every child in our country is well trained in the love of truth, of virtue, and of God.

To show what progress has been made under the Education Act of 1870, I will give you a few statistics. In 1870 there were school-places in elementary schools for 1,878,000 children; in 1882 they were 4,538,000. The scholars on the registers numbered in 1870, 1,693,000; and in 1882, 4,190,000. The average attendance in 1870 was 1,152,000; and in 1882, 3,015,000,—nearly three times as many. In 1869-70 the grants amounted to 1,072,000*l.*; in 1882-3, to 3,599,000*l.*; and the next Budget the amount would probably be 3,800,000*l.* I am the Oliver Twist of the Government, continually asking for more. Not only has there been this increase in the educational provision of the country, but a still more satisfactory thing is the increase of quality in the education. What are the results? We can see some of its results already, but are only yet on the threshold of the work. Education is telling on juvenile offenders and on the manners of the young people of the population, and it will soon tell, I hope, on the language of our streets and workshops. Crime and pauperism are undoubtedly decreasing, but we have yet more persistently to go deeper down to the residuum and bring the poor Arabs out of the streets. I congratulate all the workers in primary education on the work they have done and are doing. They are civilising the people of England, doing the noblest work this great nation has ever put its hand to.

Mr. Chamberlain, Member for Birmingham, and President of the Board of Trade, also addressed the meeting, saying:

The educational accommodation provided in the whole country since 1870 has increased 148 per cent.; the average attendance has increased 170 per cent.; in Birmingham the accommodation has increased 100 per cent., but the average attendance has increased 202 per cent. That is to say, for one child who went to school in 1869 in Birmingham, three are going now. I consider that the result of the last School Board election in this town was a vindication of the policy of the old Board; I do not believe in cheap school buildings. Education is a privilege and not a punishment, and we want to make it attractive and not repulsive. Still less do I believe in cheap education. Anything more mean and contemptible than the doctrine of cheap education I never heard of. The national education given in the elementary schools should be the best possible of its kind. Where is this doctrine of cheapness to end? Some people would save the money which is expended in beautifying our parks and public gardens with the flowers which, at a proper season of the year, are to be found there. When I think of the way in which wealth is distributed in this country, when I think of wanton luxury and wasteful extravagance on the one hand, and grinding poverty and unremitting toil on the other, I do not admire the wisdom nor envy the generosity of the man who would refuse to do all in his power to level the distinctions which now separate class from class, who would refuse the very poorest of his fellow citizens every facility in his power to better his condition, who would deny to the poorest the opportunity of enjoyment, and the advantages which education brings in its train. I hope the Birmingham School Board will go on boldly in its noble task, and that every child in Birmingham needing instruction will soon have its appointed place in the national schools, and that in those schools it will receive such an education as will develope to the utmost its faculties, fitting it for its duties as the future citizen of a free State.

MR. P. H. CALDERON, R.A., ON AFFECTATION IN ART.

MR. P. H. CALDERON, R.A., in distributing the Government and other prizes at the St. Martin's School of Art, Endell-street, on Thursday evening, the 11th inst., made the following remarks. He said:—I do not intend in any way to attempt a lecture to-night, but I want to say a few words to you as one art-student speaking to other art-students. We all belong to the same profession, therefore let us talk together like fellow-students. From what I recollect of these schools of art, they were all founded some thirty odd years ago by some very clever people, with the Prince Consort at their head, with the intention,—not of creating artists, as so many people fancy, because artists somehow or other will always come to the top, whether you have schools of instruction for them or not. There were no art schools to speak of in the time of Hogarth, or of Sir Joshua Reynolds, or of Turner,—but the intention of the promoters of these art schools was to create art-work, and perhaps behind all there was an idea that the general public who would not enter the schools at all, would yet benefit by them in an artistic sense. That they be benefited by them, and that they will be benefited by them a great deal more in the future, I think we may very safely assert. I should like, then, to divide the students into three portions. I believe a small, a very small, minority of you are very likely to become artists in the sense of the word as usually accepted; that is to say, people who paint figures or landscapes, or who sculp, but they will be a very small minority, and one need not say much about them. Next, and probably the largest class, will be those who will become art-workmen or art-workwomen, those who will devote the whole of their lives to the improvement of art-manufacturers. Then there will be a small residuum who will become neither the one nor the other, but who will certainly have gained some benefit from their connexion with these schools. The instruction they had received will surely tend to their greater happiness, to their leading better lives, and to their appreciating the beauties of nature with a much keener sight than could have been hoped for otherwise. It will even make them, if one may use so ambitious a phrase, better citizens in this sense,—that in the old days of Florence the citizens had to select the artists to execute the public works, and they were able to do this because art, as it were, permeated the very atmosphere, and every one more or less imbibed a feeling for art. So if a church was to be built, or a gate to be put up, the work was always given to the best man. Well, then, looking upon you as those who, for the most part, are going to adopt art in some form or other as the business of your lives, I may just say that there is one piece of advice that cannot be given too often to those connected with art and art-manufacture in this country, and it is this,—avoid affectation. Always aim to be simple and to be true, and to avoid affectation as you would avoid scamping your work, or anything else that is objectionable. To put that in a homely way to you, I would say that, of course, when you, as young fellows, begin your art work in life, it is very natural, and there is nothing blameable in the fact, that you should turn to other authorities to assist you and guide you in your first steps. But remember this, that whereas the true, correct, and beautiful things of this world are quite out of our reach in the way of imitation, the false and sham things are always easy to copy. If, for instance, in the street, or anywhere else, you see a remarkably well-formed, handsome man or woman, and you want to describe that individual to a friend, you will find it almost utterly impossible to reproduce him in your description, because there will be nothing peculiar to lay hold of. If you wanted to make a slight sketch or caricature of the Parthenon you would find it utterly impossible to do so. There is no such thing as a caricature of the Parthenon. If you wanted to make a caricature of a Titian, I defy you to do it. It is not to be done; but if you see an unfortunate creature whom God has afflicted by making him a hunchback, there is no difficulty in making a caricature of him. If, instead of the Parthenon, you get an ultra Flamboyant style of architecture, which is of itself almost a caricature, there would be no difficulty in designing something that would make people immediately say, "This is the architecture of a certain date." And so in painting. Although you may find it utterly impossible to make a drawing exactly like a Raffaelle or a Titian, if you were to take a Botticelli there would be no difficulty in making a caricature of that which would fasten the attention of people, and make them call out, "Botticelli." Remember that affectation is always easy; imitation of defective things is always easy. But you have not to imitate these things; you have to found yourselves upon what is really true, and having embodied and made part of your art the works of a great man, you have to bring out, not Botticelli, not even Raffaelle or Titian, but yourself. I have mentioned Botticelli, but do not for one instant imagine that I am endeavouring to run down the merits of a man who was an extremely remarkable master of his time. He was a man of infinite accomplishments,—a musician and a poet, as well as a painter,—whose drawing in parts was so excellent that no man can refuse to admit it; but he was a man through whose whole life-work there runs a little strain of affectation that throws a blemish on it all. Florence is full of frescoes by Botticelli. The galleries contain collections of them, and look at them all and study them all; there is scarcely one of them where you could find a figure that has not some little trifle almost impossible to describe,—some little trace of affected grace which spoils the vitality of the whole thing. I mention Botticelli because it

seems to me that his influence is a great bane of our time. Within the last twenty years the influence of Botticelli has come amongst us as a sort of poison. Many men of immense talent, men of refinement, men of high education, wishing to be artists, had looked round for something to cling to and to fasten their art upon; and finding they could not fasten it upon Titian or Raffaelle, or Velasquez,—it is utterly impossible, because they are quite unapproachable,—they have fastened it upon a man whose work it is comparatively easy to imitate, and so we are flooded in paintings of long, consumptive, long-necked creatures with long hair, fit subjects for the hospitals, things that are purgatory to the real artist, and yet things that he fears to say anything against for fear that he should be thought jealous of their painters. To those amongst you who intend to be artists, I would say, fix in your minds this: always think of it; never let it slip out of your mind. Be original. Every great man, every really great man, every man of ascertained, undisputed genius, had this quality, he has been a man full of common sense. Whether you take Shakspeare as a poet, or Titian as a painter, or Phidias as a sculptor, there is no one single grain of insanity in the whole of them. Whatever they did was sane, while their creations were also sane. No man has been more fanciful than Shakspeare in his "Tempest" and "Midsummer Night's Dream," in his most poetic conception of the little beings that shelter under the leaves of plants, but the connoxion of all of them is perfectly sane, and they act on the rules upon which every sensible person acts. The same is true of Titian, whether he painted nude gods and goddesses,—and they were ordered by lewd princes who desired them; whether he painted "Holy Families" or "Last Suppers," his people always acted sanely. It is the same with Raffaelle as with Titian, the same with the gods and goddesses of Phidias, the same with the noble people of Velasquez, and all the great painters. There are no feeble or moonstruck people to be found in their work. They are all clear-headed people; therefore, if I might sum up these words with a short sentence which strikes me at this moment, which will readily fix itself upon the memory, I would say, "The nearer you get to perfect sanity the nearer you will be to God."

The Rev. R. G. Maul, who has been honorary secretary of the school for upwards of twenty years, and is vacating the post on account of his removal to the country, was then presented with a portfolio of very beautiful sketches, contributed, amongst others, by Seymour Lucas, T. H. Schafer, J. Parker, H. C. Pocock, Ned Swain, J. E. Breun, H. G. Moon, A. W. Mason, F. Callcott, and others.

OBITUARY.

Mr. William Higgs, a well-known builder, who was President of the Builders' Benevolent Institution in 1877, died on the 3rd inst., aged fifty-eight, deeply regretted by all who knew him. He was for many years a Guardian of the Poor of Lambeth, and a deacon of the Metropolitan Tabernacle (Mr. Spurgeon's). The successful career of the deceased offers a signal example of perseverance. He was apprenticed at the age of thirteen years to his uncle, Mr. Joshua Higgs, then of Davies-street, Berkeley-square, and as soon as his apprenticeship expired, he determined to start in business for himself, having saved out of his earnings the sum of 50*l*. He very soon made his way, and in a few years had a large business, his indomitable perseverance and strict integrity keeping him in the right course to make his mark amongst London builders and men of influence. When at the age of about thirty-five years, he was carrying on as much work as any builder in London at the time, the following large works being in course of progress under his immediate supervision, almost simultaneously,—the Guards' Barracks at Chelsea, the Royal Marine Infirmary at Woolwich, the Metropolitan Tabernacle, and Office of Works contracts, London. The principal line of his business ran in Government contracts at her Majesty's dockyards, arsenals, and public buildings, barracks, police-stations, post-offices, &c. His natural generosity always came to the front when he happened to be the successful contractor for works in connexion with philanthropic objects. The London Orphan Asylum at Watford, and the Royal Albert Orphan Asylum at Bagshot, are both witnesses to this fact. It is said of him that no employer was more respected, for he was fair and honourable in all his dealings, and always had the welfare of his men at heart. On the first Saturday half-holiday he gathered all his *employés*, with their wives and families, in his grounds at Stockwell; he also gave an annual Christmas tree and entertainment at his workshops, Crown Works, South Lambeth. He took a great interest in the poor, and was for twenty-one years on the Lambeth Board of Guardians, where his judiciousness and business insight were always manifest. Amongst his private speculations were the large and well-known Crown Swimming Baths, Kennington Oval, and the Victoria Baths, Peckham. He retired from business in 1874 when Messrs. Hill, of Islington, joined his eldest son as his successors, the business still going on as Messrs. Higgs & Hill, Crown Works, South Lambeth. Since then his time has been fully occupied with the many works of charity to which he had put his hands, especially those which emanate from the Metropolitan Tabernacle, where he had long been Mr. Spurgeon's right hand, being a trustee and treasurer of the Stockwell Orphanage. His health had been failing for the last two years, but no serious termination had been anticipated. He passed away somewhat suddenly at his residence, Gwydyr House, Brixton Rise.

Mr. John Spicer.—Last week passed away another of the by no means small class of conscientious speculative builders that we have known during our professional career, and many of whom we still know despite the popular idea that nothing but shiftiness and chicane are to be found in the calling. Mr. John Spicer, whose death we thus record, commenced building in Pimlico in the early part of the year 1845, and in 1856 took very largely of the building land in South Kensington on the estates of the Colonels Robert and James Gunter, his earliest undertaking there being the completion of the whole western side of the much-appreciated "Boltons." Since then, his building progress has been steady and successful, Moreton-gardens, Bolton-gardens, Gledhow-gardens, and Wetherby-gardens, having been built by him, and several of the large mansions in Cromwell-gardens.* Thoroughness was with Mr. Spicer a first consideration. Few men have given more thought or care to their business, and his desire always was that whatever he undertook should be done in the best manner.

THE JUNIOR ARMY AND NAVY CLUB, ST. JAMES'S STREET.

THIS club was opened on the 13th inst., after enlargement and partial reconstruction. The site on which the club is situated is 154 ft. long and 48 ft. wide, the longer frontage being in King-street, and the shorter in St. James's-street. The lighting of the basement is good, and the accommodation is ample. The kitchen is lined throughout with white tiles, and adequately fitted up. Larders, pantries, cellars, still-room, and servants' hall, and every requisite for the service of a large establishment, have been provided. There is a lift to the principal serving-room from the kitchen, and another from the still-room to all the upper floors.

The entrance-hall, with the passage leading from it, is paved with white marble, and from the back of it rises the principal staircase. In arranging this there was considerable difficulty, as it was desired to secure an ascent more easy and comfortable than the original staircase afforded, or the space would readily allow, but this has been surmounted, and a very satisfactory staircase obtained, made of oak throughout. The dado is not yet fixed. The drawings for the staircase were prepared by the architect, Mr. Wyatt Papworth, with great care, and equal pains have been taken to secure first class materials and workmanship. There are handsome spiral balusters, and the newels, which are bold and massive, are capped alternately with mural and naval crowns. The stairs are well lighted by a large skylight and gas sun-lights, thereby ensuring good ventilation.

The rooms on the ground-floor are 20 ft. high; to the east of the entrance-hall is the ground-floor smoking-room, 37 ft. by 18 ft.; round the walls a shelf is provided, on which glasses can be placed, so as to obviate the necessity for small tables. On the other side of the entrance-hall is the morning-room, which is divided into two portions, communicating by wide openings, on both sides of a fireplace; one portion, 43 ft. long and 21 ft. wide, has three bow-windows looking into King-street, and the other, 37 ft. long and 14 ft. wide, has a bow-window at the end in King-street, and three windows, one of which is the large bay, newly built, looking into St. James's-street. Beyond the ground-floor smoking-room are the stairs to an entresol, containing an unusually spacious and well-lighted lavatory, a large dressing-room, three bath-rooms, which will also serve as dressing-rooms and other conveniencies. The ventilation and the sanitary arrangements have been carefully attended to.

The first floor is appropriated to the smoking-room and coffee-room. The former is in two portions, corresponding to the morning-room below, and with a similar bay-window in St. James's-street. It has a parquet floor, carved wooden chimney-pieces of good design, and tiled fireplaces and hearths, as in the other principal rooms. The furniture of this room is entirely new, and made of oak, covered with olive green morocco. Seats are provided in it for about sixty persons, but double this number could with ease be accommodated. The coffee-room has a width of 23 ft. and total length of 85 ft., and it has also a parquet floor, tiled hearths, and fireplaces, and large mirrors like those in the morning-room.

On the second floor, in the St. James's-street front, is the library, a comfortable well-lighted room. The billiard-room on this floor is lighted from the roof, and affords space for two tables, with plenty of seats; it can, if necessary, be divided into two rooms, and has a lavatory adjacent to it. Next is the card-room, giving ample room for four card-tables, and the remainder of the floor is utilised for club offices, other dressing-rooms, &c. On the floor above this, which is entirely new, there is accommodation for about forty servants.

The committee consider that the club is much indebted to the architect, Mr. Wyatt Papworth, who designed the re-construction and alterations so as to secure every available inch of the space, and who has managed with great tact the many negotiations with the Crown Architect, and given his able assistance during the progress of the work; to Mr. J. Hungerford Pollen for his very valuable advice as to furnishing and decorating the club rooms, which has enabled the committee to lay out to the best advantage the funds available for this purpose; and to the club builder, Mr. W. Cole, who has devoted his whole time and energies to the work from the commencement, and has shown great skill in overcoming many difficulties of no ordinary nature.

* The list of the present tenants on the estates includes some well-known names, viz.:—Colonel Henderson; Mr. F. A. Milbanke, M.P.; Mrs. Otto Goldsmidt (late Jenny Lind); Madame Albani; Mr. W. S. Gilbert, &c.

COMPETITIONS.

Swansea Baths and Laundry Company.—Neither of the fourteen plans sent in will be adopted; the premium has been awarded to Mr. Fowler, of Brecon.

New Municipal Buildings, Nottingham.—Full instructions and plans of site have been issued to architects with reference to the competition for these proposed new buildings, signed by Mr. S. G. Johnson, Town Clerk, and Mr. M. Ogle Tarbotton, Consulting Engineer to the Corporation. In the first instance, only plans will be required or accepted, and elevations will not be admitted. From the plans sent in in this preliminary competition, a limited number, not exceeding eight, will be selected, the authors of which will be invited to enter into the second competition, in which, of course, elevations, &c., will be included. There is no undertaking to employ the selected architect, but the architect whose design appears to be in all respects the best will be awarded a premium of 300*l*., to merge in the commission if he be appointed to carry out the work. The architect whose design is selected as second best will be paid a premium of 200*l*.; while the author of the third best design will receive a premium of 100*l*.

Electric Exhibition at Vienna.—An International Electric Exhibition will be opened in Vienna on the 1st of August next, closing on the 31st of October.

TO RENDER TEXTILE MATERIALS INCOMBUSTIBLE.

AT one of their recent meetings, the Société d'Encouragement de l'Industrie accorded to M. Abel Martin a premium of 1,000 francs for his method of rendering textile fabrics, &c., incombustible. The following are the preparations used :

For light-coloured materials :—Sulphate of ammonia (pure), 8; carbonate of ammonia (pure), 2½; boracic acid, 3; borax (pure), 2; starch, 2; and water, 100 kilogrammes. The solution was applied at a temperature of 30° C., the materials being saturated several times with it. The liquid costs less than 1½d. per litre.

For painted curtains, stage wings, furniture, panelling, window blinds, &c. :—Sal ammoniac, 15; boracic acid, 5; soaked glue, 5; gelatine, 1½; water, 100 kilogrammes, with sufficient lime. This mixture must be kept at a temperature of 60° to 80° C., until it assumes the consistency of oil, when it is applied with a brush. Stage wings, &c., already painted are coated with the solution on the other side. Frames and posts receive two coats. With one kilogramme, which costs about 7*s.* 6d., 7 square mètres may be coated.

For coarse curtains, cords or ropes, straw and wood, &c., 15 kilogrammes of sal ammoniac, 6 of boracic acid, 3 of borax, and 100 kilogrammes of ordinary water are taken. The mixture is kept at a temperature of 100° C. for from fifteen to twenty minutes. This liquid costs about 2d. per litre.

For paper of every description, the following ingredients are taken :—Sulphate of ammonia, 8; boracic acid, 6; borax, 2; and ordinary water, 100 kilogrammes. This mixture is heated up to 59° C., and costs 1½d. per litre.

BUILDING PATENT RECORD.*

APPLICATIONS FOR LETTERS PATENT.

74. J. Betjeman, London. Fire-screens. Jan. 5, 1883.

102. G. D. Peters, London. Apparatus for facilitating the action of spring rollers for window-blinds. Jan. 8, 1883.

122. A. B. Wren, Bideford. Joints of sanitary pipes, &c. Jan. 9, 1883.

152. W. P. Thompson, London. Manufacture of cements, mortar, artificial stone, &c. (Com. by MM. R. Dosse and P. E. Freise, Brunswick, Germany.) Jan. 10, 1883.

158. E. Edwards, London. Apparatus for cutting marble, granite, &c. (Com. by A. Jeansanme, Paris.) Jan. 10, 1883.

162. J. Shaw and F. Milan Lockwood. Apparatus for indicating the presence or absence of water in house cisterns. Jan. 11, 1883.

169. W. Berry and P. Stuart, Edinburgh. Pavement. Jan. 11, 1883.

NOTICES TO PROCEED

have been given by the following applicants on the dates named :—

Jan. 9, 1883.

4,219. J. B. Shaw, Tunstall. Decorating bricks, tiles, &c. Sept. 5, 1882.

Jan. 12, 1883.

4,618. E. Whillier, London. Firegrates or stoves. Sept. 28, 1882.

ABRIDGMENTS OF SPECIFICATIONS.

[*Published during the Week ending January* 13, 1883.

2,590. T. H. P. Dennis, Chelmsford. Glazing. June 1, 1882. Price 6d.

The sash-bar consists of an upper part or cap, which projects over the panes of glass, and fits into a lower part, on which the glass rests, and to which the upper part is secured.

2,607. W. H. Lindsay, London. Construction of floorings for bridges. June 2, 1882. Price 6d.

These are constructed of alternate V and inverted Λ troughs connected together, the apex of each trough being formed of flat horizontal plates, one of which serves as a bearing for the roadway, while the other rests on the girders or supports.

2,614. C. E. Green, London. Domestic stoves or fireplaces. June 3, 1882. Price 2d.

The products of combustion are taken from the fire over the tops of the back down behind the same through an opening just above the bottom bars of the grate into the fire, thence through the closed ashpit below the grate to two side flues, by which they pass to the chimney. (*Pro. Pro.*)

2,717. J. Casey, London. Water-closet apparatus. June 9, 1882. Price 2d.

This provides a douche for the person while seated on the closet. (*Pro. Pro.*)

3,614. T. Hyatt, London. Illumination of gratings. July 31, 1882. Price 4d.

Instead of resting small pieces of glass in metal frames, the top is wholly formed of glass, under which are placed the lens-faced glasses. These gratings are supported at intervals by bars

* Compiled by Hart & Co., Patent Agents, 186, Fleet-street.

ELEVATED RAILWAYS.

THE advantages which have been found in London, New York, and Berlin to accrue from a properly organised system of local traffic have (according to a recent number of the *Cologne Gazette*) been fully recognised in the deliberations now being carried on in Paris and Vienna upon this important subject. In the latter city it is stated that a concession has been granted to an English contractor for a local railway, while in the former capital a warm argument is being carried on between the advocates of the London underground system and the partisans of the more recently perfected theory of Chrétien. This last-named system is based on the arguments that underground railways are too dear and too inconvenient, and that "pillar-railways" can alone be expected to be a commercial success, as they have not to pay for any ground. The profitable working of such lines is enhanced, it is urged, by the use of electricity as a motive power, inasmuch as the abolition of heavy locomotives allows of a less massive construction of the track, while the reduced intervals at which trains can be run enable this kind of railway to enter into close competition with tramways for the conveyance of passengers from one part of a city to another.

A BUILDER'S CLAIM FOR PLANS.

MAXWELL *v.* SCOTT.

IN this case (heard in the Lambeth County Court last week) a claim was made for 3*l.* 3*s.* for plans.

Plaintiff is a builder and contractor carrying on business in Brixton-road, and the defendant resides in the same neighbourhood. According to the plaintiff's statement, the defendant's brother called upon him one day, and acquainted him with the fact that the defendant wished to erect a coach-house building in the Brixton-road. As a result of this conversation, plaintiff agreed to prepare a plan of the proposed building, but had heard nothing more either of the plan or the building.

His Honour said the plan had only been prepared for the purpose of pleasing a probable customer, and plaintiff could only recover if he could actually prove that his plan had been used. Judgment would, therefore, be for the defendant.

HOUSE SANITATION AND THE NUISANCES REMOVAL ACT.

A CISTERN IN A VERY BAD POSITION.

MR. THOMAS EAST, owner of a house in Peckham Park-road, appeared to a summons taken out by Inspector Fisher, on behalf of the Vestry of St. Giles, Camberwell, under the Nuisances Removal Act, at the Lambeth Police Court, on the 6th inst. The summons set forth that at the house owned by the defendant there existed a cistern under the floor of a water-closet in such a position as to be a nuisance and injurious to health. Mr. Grain, barrister, defended.

The inspector was called, and said he examined the premises and found a cistern just underneath the floor of a water-closet. The cistern was open, and the covering was really the floor of the closet, with only a short space between.

In cross-examination, the witness said he left it to the medical officer of health to say if it was a nuisance and injurious to health.

Mr. Grain expressed an opinion that according to the Act it must be shown to be an existing nuisance.

Mr. Chance (the magistrate) said it would be injurious to health if the position of the cistern was such as described.

Mr. Grain contended that it must be shown to be an "existing" nuisance.

Mr. Chance said he could not read the Act in that way, and according to what he gathered, there was a more serious matter in the fact of a connexion of the water so close to the drain.

Dr. Bristowe (the medical officer of the parish) was called, and said he had examined the premises. With regard to the cistern, he considered it was a nuisance within the meaning of the Act, and dangerous to health. The floor of the closet was really the lid of the cistern, and anything soaking through this floor would go into the cistern. Slops or other matter spilled in pouring down the closet might go on the floor and thus soak through. Gases of all descriptions might impregnate the water in the cistern, and might induce typhoid fever. He also objected to the overflow-pipe in the cistern, which was connected with the drain, and considered there was not a sufficient trap, but at the same time believed even with a trap it would be dangerous to health.

Mr. Grain contended that the summons could not be sustained under the section of the Act, as the cistern in question could not be "premises such as would be injurious to health," and urged that the Legislature never intended such a thing. The learned counsel proceeded to argue upon other points in the law upon the subject.

Mr. Joseph Gale, surveyor, was called on the part of the defendant, and gave evidence. The defendant also stated that he had lived in the house for years, that there had been no illness, and that the tenant since had not suffered.

After a long argument upon the various points in the law of the case,

Mr. Chance said he was of opinion the matter came under the section under which the defendant was summoned. He held that the cistern was in a position which was injurious to health,—or, in the words of the Act, "the premises are so constructed as to be injurious to health." He therefore made the order asked for by the Vestry for the removal or abatement of such nuisance.

ALLEGED OBSTRUCTION OF LIGHT.

GARDNER AND OTHERS *v.* WHITELEY.

THIS was an action brought to obtain an injunction to restrain the defendant, the "Universal Provider," of Westbourne-grove, from obstructing the access of light and air to some ten houses in Porchester-gardens, Bayswater, and to recover damages for the alleged obstruction.

The case was heard at the end of June last by Mr. Justice North, sitting for Mr. Justice Kay, and the hearing lasted three or four days. The houses belonging to the plaintiffs were alleged to have been completed on or before March, 1861, and the writ in the action was issued on April 2nd, 1881. The defendant, in the autumn of 1880, constructed extensive new premises, part of which extended the whole length at the back of the row of the houses belonging to the plaintiffs, and the main question in the case was whether or not there had been any actual obstruction to the lights of the houses of the plaintiffs. A further question in the case was whether the houses belonging to the plaintiffs had or had not been completed on or before March, 1861, and that so there had been no enjoyment of the lights which were alleged to have been interfered with by the defendant for the full period of twenty years. Evidence was given at the hearing as to the exact date at which the houses had been actually finished, a question of law being involved in the case as to whether or not any right to lights could be obtained at a time when any houses were still unfinished.

Mr. Justice North, in giving judgment, dismissed the action with costs against the plaintiffs, except such as had been occasioned to the plaintiffs by the defendant's plea that there had not, in fact, been any actual obstruction of light. As to the costs of that issue, the learned judge directed a set-off as against the general costs of the action.

HARDENING FLOORS.

SIR,—I wish to harden and render non-absorbent the deal floors of a cottage hospital, and I shall be much obliged if you could indicate a process or composition for that purpose.

G. R.

*** Some observations will be found in a recent number, p. 56, *ante*. The most durable floor-paint is there said to be that composed of linseed oil varnish. It makes the floor water-resisting.

OFFICES FOR THE CHELTENHAM GAS COMPANY.

SIR,—I cannot allow Mr. Paterson's letter, published in your last week's number [p. 61], to pass unnoticed, although I cannot so presume upon your space as to give lengthy explanations of the whole facts of the case. Suffice it to say that I should not have deviated from my original estimate in the least degree had it not been for misleading representations made to me that money was not so much an object as a handsome and substantial building, and that I should not be strictly bound to my estimate. Again, when deductions were proposed to be made, still having the same idea impressed upon me, I retained portions of the additional work, so that when the second tenders were examined, they still exceeded my original estimate. Finding that the whole blame of this fell upon myself, I resolved to act solely upon my own responsibility, and to ignore all the advice so freely bestowed upon me. I therefore gained the permission of the directors to obtain a third set of tenders, the plans being reduced to

the same standard as my competition-design, the estimate for which was 5,583*l*. When these tenders were received (of which several were within my estimate) the directors refused to open them, on the grounds of their manager's objections that I had not acted entirely in compliance with his wishes as expressed at our meeting. I therefore declined to go any further in the matter, and was advised to take legal proceedings against the directors. I, however, for the sake of peace and quietness, decided to let the matter drop, the directors paying me a nominal sum for my drawings, until I observed that the directors were again advertising for tenders, when I thought it but right to publish the former lists.

ALFRED SMITH.

CIRCULAR ARRANGEMENT OF CLASS-ROOMS.

SIR,—In your last issue, in a notice of the designs for the new Finchley Board Schools, you refer to certain schools of the Sheffield School Board as having class-rooms arranged on a semi-circular apse round a central hall. Will you allow us to state that this idea was embodied in the designs which we submitted for the City of London School four years ago,—long before the Sheffield schools were designed,—and that our designs were not only publicly exhibited with the others, but that this "circular" arrangement was specially referred to in your journal at the time?

F. H. FOWLER.
THOS. W. ALDWINCKLE.

THE NEW LAW COURTS.

SIR,—Amongst the many notices of, and criticisms on, the New Law Courts, I have not seen any remarks on the remarkable shrinkage of the woodwork in the ceilings of all, or nearly all, the courts. As seen from the galleries, it has a very bad appearance. Could not some means be taken during the vacation to remedy it? H. S., Clapham.

Miscellanea.

"Silos" for "Ensilage."—The method of preserving crops which is known as "ensilage" has attracted considerable attention in this country during the last year or two, and the question is now raised as to the cost of the "silos" or pits in which the crops are kept. Mr. W. A. Gibbs, of Gilwell Park, Chelmsford, well known for his efforts to save crops in another way, writes to say that from America it is reported that Mr. Mills has had two silos constructed of 40 ft. long, 13 ft. wide, and 20 ft. deep. The walls are 2 ft. in thickness, and made of concrete and stone, faced with cement. The cost of these is said to have been about $700. These two pits held the produce of thirteen acres, which is stated as 600 tons. In order to ascertain what silos of these dimensions would cost us in England, Mr. Gibbs obtained an estimate for two exactly similar in size and mode of construction, and found they would cost him 700*l*., but the contractor explained that if gravel existed on the estate for the making of concrete they would probably be made for 400*l*. On the other hand, he pointed out that if in sinking 20 ft. or any less depth it caused an influx of water, this would largely increase the cost, and he declined to be bound by any definite estimate of cost that would cover that contingency. Professor J. E. Thorold Rogers writes,—"The Board of Trade and the Foreign Office do not seem as yet to have got much information on 'ensilage.' Mr. Loring's report states that the cost of silos, per ton of capacity, varies from $4 to $5 for walls of heavy masonry and superstructures of elaborate finish, and 50 cents. or less for the simplest wooden silos. Earth silos without wall can be excavated with plough and scraper, when other work is not pressing, at moderate cost. Either concrete building is far dearer in England than in the States, or Mr. Gibbs's contractor has asked him a very large price. I saw Mr. Mills's silos. They cost 700*l*. He told me that they cost too much, and that if he were building now, he could make them much more cheaply. I may add that American farmers buy cement, and build concrete themselves."

St. Paul's Church, Stratford.—A memorial pulpit was erected in the above church the week before Christmas. It is in memory of the late vicar. The style is Late Decorated. The main body of the pulpit is in Caen stone, but it is enriched by various coloured marbles in columns, pillars, &c. The carving is carried out in the natural form. It has been executed by Messrs. Jones & Willis.

The Sanitary Inspection of Houses.—In a lecture delivered before the Society of Arts, on Wednesday evening last, Mr. Burton, the chief inspecting engineer to the London Sanitary Protection Association, gave some account of the work of the association. He stated that, in the two years during which the association has been in existence, he and his assistants had inspected 523 houses. In twenty-nine of these they had found the drain entirely stopped up, no communication at all with the sewer, and all the foul matter sent down the sinks and soil-pipes being simply deposited under the basement of the house. In 166 houses they found the soil-pipes leaky, allowing sewer gas and, in many cases, liquid sewage to escape into the house. In 194 houses the overflow-pipes of the cisterns were led direct into the drains or soil-pipes, thus allowing sewer-gas to pass up them and contaminate the water in the cisterns, as well as pass freely into the houses. In 357 houses, or about three-fourths of those examined, the waste-pipes from sinks and baths were found to be connected directly with the drains, allowing the sewer-gas to pass up them, instead of being led outside the house, and made to discharge over trapped gullies in the open air, so that nothing could pass up them except air. *Apropos* to this, Mr. Alan S. Cole writes to point out that the subject is one in which his father, the late Sir Henry Cole, was interested, having, shortly before his death, drawn up a scheme for organising guilds of health in every parochial district throughout the United Kingdom. The guilds of health were suggested with a view of supplementing and increasing the efficiency of local boards. Their primary object was improvement in domestic sanitation. The only particulars of Sir Henry Cole's scheme which have been printed appeared in the *Builder* about a year ago (vol. xlii., p. 175).

Society of Painter-Etchers.—The exhibition of this Society for 1883 will be held in London, and will open on the 1st of March, for (about) six weeks. All forms of engraving on metal, whether by the burin, the etching needle, by mezzotint or aquatint, or by whatever other process the artist may choose as a means of original expression, are understood to be included in the term "painter-etching," and, subject to the approval of the Council, are eligible for exhibition, whether the artist sending them be a Fellow of the Society or not. Works sent for exhibition, besides being original, must be the *bonâ fide* property of the artist, and directly contributed by him, or by his written authority. No works being the private property of a collector, or forming part of any printseller's stock, or which have been previously exhibited or offered for sale elsewhere, can, under any circumstances, be admitted. All works intended for exhibition must be forwarded (suitably framed) on or before the 21st of February, 1883, to Messrs. Hogarth & Sons, 96, Mount-street, Grosvenor-square, W. The works submitted for exhibition must be accompanied by a letter to the honorary secretary, Sir William R. Drake, F.S.A. (under cover to Messrs. Hogarth), written on one side only of the paper, containing the title of the work, its price if for sale (inclusive and exclusive of the frame), and the name and address of the contributor; and a duplicate copy of these particulars must also be securely pasted on the back of each frame.

The Consumption of Coal in London.—It is stated that notwithstanding the increase which took place in the population of the metropolis last year, and the large areas that were covered with buildings, in which fuel for gas and other purposes would be required, nearly 2,000,000 tons less coal was entered within the area of the City duty in 1882 than was the case in 1881. This diminution of consumption is attributed to increased economy and to the effect of the many fuel-saving and heat-economising appliances introduced a few years since when coal was abnormally high and somewhat scarce. No doubt these causes had some share in reducing the consumption, but probably the main cause of the reduction was the mildness of temperature which prevailed for the greater part of last winter.

In re "Messrs. Bull & Sons' Liquidation." The London and South-Western Railway Company have instructed Messrs. Perry & Co., of Tredegar Works, Bow, to complete all works which Messrs. Bull & Sons had in hand for the Company, and Messrs. Perry & Co. have made arrangements to continue the works, so that there will be no delay in the progress thereof.

Two Terrible Disasters.—Fire has played sad havoc with property during the last few weeks, but two of the latest disasters caused by fire have involved the burning to death of a very large number of persons. From the other side of the Atlantic we learn that New Hall House, Milwaukee, the largest hotel in the State of Wisconsin, which had rooms for 800 guests, was, on the 10th inst., totally consumed by fire, and almost without warning, so sudden was the outbreak. From the windows of the hotel dozens of the inmates leaped together, and from the bedrooms individuals sometimes jumped, sometimes shrank back into the flames. Stone-street was speedily covered with bodies of the dead and dying. The loss of life is chiefly among the eighty-seven servants, who slept in the sixth story, from which the fire immediately cut off access to the lower stories. Of sixty maid-servants, forty-nine are reported missing. The number of fatal casualties is estimated at 100. It is stated that in the corner of every stair-landing stood a fire-escape, and there were several more outside; but everybody was so bewildered with fright that no one could bring the escapes into use. "Traveller" writes that in many American hotels there is an effectual means of escape provided in case of similar disasters. "On every landing there is a notice fixed up which points out to the visitor the direction of the fire-escape. This escape consists of a staircase built absolutely outside the exterior wall of the hotel, and to this staircase there is access from each landing. These escapes are generally covered by a zinc roofing, and are used by the servants of the hotels." This is a matter demanding due attention at the hands of those who are responsible for the safety of the inmates of the large hotels which are now becoming so numerous in this country. ——From Bernarditscheff, in Russian Poland, comes the terrible news of the burning of a circus, involving the loss of at least 150 lives. It is stated that through the careless handling of some fireworks on the stage the curtain caught fire, and the flames spread in a few minutes to the wall and the roof. The members of the orchestra were the first victims. The audience, 800 in number, rushed frantically to the door of exit, which, however, opened inwards, and as the crowd pressed forward it was rendered perfectly useless. A rush was then made to the side doors, both of which proved, unfortunately, to be nailed up. The circus is described as a wooden building, which, from its construction and its material, offered every advantage to the flames. To add to the danger, the partitions were filled with straw, so that it would be difficult to find a more inflammable building.

Memorials at Woolwich.—The Woolwich Memorial to the late Prince Imperial of France was unveiled on Saturday last by H.R.H. the Prince of Wales. The statue is by H.S.H. Count Gleichen, the granite in the pedestal coming from Mr. D. D. Fenning's quarries at Mull. The granite for the Military Memorial, unveiled at the same time, came from Mr. Fenning's quarries at Shap, the granite in both cases being wrought at Mr. Fenning's works at Shap.

TENDERS

For alterations to the Mackworth Arms, Commercial-road East, for Mr. Thomas Hill, exclusive of pewtering and gas-fitting. Messrs. Wilson, Son, & Aldwinckle, architects, 2, East India-avenue. Quantities supplied:—

Hall, Beddall, & Co.	£2,455 0 0
Spencer	2,430 0 0
Hearle & Son	2,250 0 0
J. & H. Mills	2,114 0 0
Cox	2,076 0 0
Beale	2,023 0 0
Shurmur (accepted)	2,016 0 0

For additions to the City of London Brewery, Upper Thames-street, for the directors of the City of London Brewery Company (Limited). Messrs. Scamell & Colyer, architects, 18, Great George-street, Westminster. Quantities supplied by Messrs. R. L. Curtis & Sons:—

Contract No. 1.—*Building.*

		Old Materials.
G. & S. Williams	£10,480	£100
T. Rider & Sons	9,938	50
Langmead & Way	9,875	75
W. Brass	9,853	50
Mowlem & Co.	9,645	100
H. Lovatt	9,600	75
J. Morter	9,333	100
J. Brown	9,120	150
B. E. Nightingale	9,061	80
T. W. Smith & Son (accepted)	8,770	140

Contract No. 2.—*Ironwork.*

Handyside & Co. (Limited	£4,239 15 9
Young & Co.	4,053 0 0
Moreland & Son	3,890 12 0
Dawson & Nunneley	3,608 6 9
Thornewill & Warham (accepted)	3,462 0 0

For alterations, improvements, and repairs to the Albion Mews, Hastings, for Mr. Edwin Plummer. Mr. Arthur Wells, architect, Hastings, & 70, Chancery-lane :—

Rodda	£1,360	0	0
Brown	1,299	0	0
Vidler	1,226	0	0
Howell & Son	1,200	0	0
Cruttenden	1,148	0	0
King	1,100	0	0

For alterations in, and paving of a portion of, the Cattle Market, Norwich, for the Norwich Corporation. Mr. W. W. Lake, City Surveyor :—

Read	£2,675	0	0
Batch	2,499	0	0
Hammond	2,480	0	0
Youngs & Son	2,163	0	0
Downing & Son (accepted)	2,000	0	0

For the erection of two blocks of dwelling-houses on the Bridge House Estate, Brockley, London. Mr. W. Charles Evans, architect, 3a, Poet's Corner, Westminster Abbey:—Mr. T. Gregory, Clapham Junction (accepted) £3,288

For Dr. Stafford's house, Rose Villa, Windlesham, Surrey. Messrs. Byrne & Wilmot, architects, 303, Strand, and Windsor :—

Norris	£2,751	0	0
Woodbridge	2,389	0	0
Pither	2,299	0	0
A. L. Oades & Sons	2,295	0	0
R. Squelch	2,220	0	0
Charman	2,182	0	0
Hann & Co.	2,160	0	0
Watson	2,130	0	0
W. Reavell	2,100	0	0
J. Higgs (accepted)	1,977	0	0
Kingerlee	1,969	0	0
Halley	1,954	0	0

For rebuilding No. 6, Albion-terrace, Page Green, Tottenham, for the directors of the Capital and Counties Building Society. Mr. H. A. Rawlins, architect :—McCormick & Sons (accepted).

For new billiard-rooms, and other additions to the Albany Club, Holloway. Mr. H. A. Rawlins, architect :—Steed Bros (accepted).

For works to No. 28, Hoxton-square, Shoreditch, for Mr. G. W. More :—

J. Webb	£399	0	0
J. Ivory	365	0	0
G. Bulford (accepted)	358	0	0
S. Bartram	320	0	0

Accepted for the erection of a new ale tun-room, works to river wall, boiler house, chimney shaft, ice machinery room, and other works, for The City of London Brewery Company (Limited), Upper Thames-st. Messrs. Scamell & Colyer, architects and engineers, 18, Great George-street, Westminster. Quantities by Messrs. R. L. Curtis & Sons:—

Contract No. 1.—*Building.*			
T. W. Smith & Sons, London	£8,770	0	0
Contract No. 2.—*Ironwork.*			
Thornewill & Warham, Burton	£3,462	0	0
Contract No. 3.—*Boilers.*			
Thornewill & Warham, Burton	£860	0	0
Contract No. 4.—*Millwright's Work.*			
Thornewill & Warham, Burton	£2,090	0	0
Contract No. 5.—*Cooling Machinery.*			
Siebe, Gorman, & Co., London	£1,420	0	0
Contract No. 6.—*Backmaker's Work.*			
Ramsden, London	£1,340	0	0
Contract No. 7.—*Slate Mason's Work.*			
Ashton & Green, London	£625	0	0
Contract No. 8.—*Pipe Connexions.*			
Bindley & Briggs, Burton	£3,795	0	0

For building episcopal residence in Edinburgh-road, Portsmouth, for the Right. Rev. Bishop Virtue, D.D. Joseph Stanislaus Hansom, architect, 27, Alfred-place, West, South Kensington. Quantities by Mr. Henry Smith :—

Claridge, Banbury	£8,230	0	0
Ward, Portsmouth	8,222	0	0
Tyerman, London	7,990	0	0
Light, Portsmouth	7,660	0	0
Hayter, Portsmouth	7,590	0	0
Crook, Southampton	7,187	0	0

Accepted for new high altar, reredos, and pulpit, for the Servite Church, adjoining St. Mary's Priory, 264, Fulham-rd. Mr. Joseph Stanislaus Hansom, architect :—

G. Porter, Chelsea	£855	10	0
Stained Glass.			
R. L. Boulton, Cheltenham	75	10	0

For decorative repairs, and alterations to Belgrave House, Richmond, for Mr. W. Colman. Mr. Richard Peters, architect, Wool Exchange, Coleman-street :—

T. Enor Julian	£110	0	0
L. H. Chitty	88	2	0
T. Watson (accepted)	67	15	0

For additions to South-street Boys' School, Coventry. Mr. Herbert W. Chattaway, architect, Trinity Churchyard, Coventry :—

G. Storer	£275	0	0
J. Wilson	265	0	0
J. Woof	237	13	3
Blakeman & Turner	226	0	0
A. Waters	214	15	0
A. Lester (accepted)	197	10	0

For fibrous plaster decorations of artists' work at the Grand Theatre, Islington, for Mr. Charles Head. Mr. Frank Matcham, architect, Rugby Chambers, Bedford-row :

J. M. Boekbinder (accepted) £1,414 15 0

TO CORRESPONDENTS.

R E M. (first part of paper appeared in last week's issue).—W. W. (send specimen).—R. R. R (glad to hear from you).—H. A. (3 ft.).—S H —D & T H A R.—J. R.—S. & C.—J. S. H.—P. F. R.—D. D. F.—A. S.—P. & Co.—W. G.—R. B. & Son.—W. P. B.—T. W. A. —W. B.—A. W.—W. P. G.—C. & Son.—S. F. C.—F. R. W.—W. P.—J. C.—C. G.—B. & Co.—H. W. C.—H. & B.—M. O. T.—H. & W.—R. W. J. W. C.—A. B.—R. W.—M. O. T.—E. G.—J. G.—B. F E—C Y.

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The Builder.

Vol. XLIV. No 2086. Saturday, January 27, 1883.

ILLUSTRATIONS.

Peterborough Cathedral: Tower and Clearstory 110
Royal Courts of Justice Chambers, Strand (Double-page Engraving).—Mr. William Wimble and Mr. Goymour Cuthbert, Architects... 112, 113
Additions to a Factory at Northampton, showing Detailed Construction of Ironwork of Roof.—Mr. Thos. Garratt, Architect 115
Christ Church Cathedral, Dublin: View of Nave, looking East; Interior of Baptistery 108, 117

CONTENTS.

More Failures of Foundations and of Superstructures 97
Christ Church Cathedral, Dublin 99
Modern Berlin 101
Acquiescence in the Interruption of Light 102
Heating and Lighting 103
The Decoration of St. Paul's Cathedral 103
Architecture of the Himalayas: Royal Institute of British Architects 104
"Antony and Cleopatra" 106
Royal Architectural Museum 106
Peterborough Cathedral 106
Royal Courts of Justice Chambers, Strand 106
Additions to a Factory at Northampton 106
The Ornament of the Period 119
Architectural Association 121
The Wellington Statue on its Way down 122
Work in Birmingham 123
Sanitary Inspection of Houses 124
The Model By-Laws 125
New West St. Giles's Church, Edinburgh 125
Obituary 125
Pontefract New Town-hall 125
The Bradford Chimney Disaster 126
Inspection of Nuisances 126
London Water 126
A New System of Chimney-cleaning 126
Hertford Castle 126
Enlarging the School Board Offices 126
Hardening Floors 126
Setting a Chimney Upright 126
Fraudulent Gifts 126
Leeds Church, near Maidstone 126
Miscellanea 126



More Failures of Foundations and of Superstructures.

IN the closing week of 1882 our attention was forcibly called to those dangers to which structures of any considerable magnitude are exposed, owing to artificial subterranean disturbance, at a depth below that to which the attention of the architect is usually directed in dealing with his foundations. During the opening week of 1883 an echo of scarcely less loud a warning has been heard, with reference to dangers more patent on the surface of the ground, and especially due to those changes in clay soils which may be effected by the course of the seasons, and to which buildings are more particularly exposed in the case of any new earthwork being executed in their vicinity.

Of these demands for the consideration of the architect by no means the least important is furnished by the report of Col. Yolland, of the Royal Engineers, to the secretary of the Railway Department of the Board of Trade, on the particulars of the fall of a railway bridge on the London, Chatham, and Dover Railway, between Bromley and Bickley stations, by which seven out of eight workmen, who had taken shelter in a hut inside the southernmost arch of the bridge in question, were suddenly killed. The report professes to deal with the cause of the accident; and while this is a circumstance on which those engaged on structural works are to be congratulated, the lesson pointed by the catastrophe is one that much deserves attention.

The failure of the Ivy Bridge, the inspector of the Board of Trade states, was due to the subsidence of the north pier. It is not quite intelligible what the reporter means by saying "the base of the pier appeared to have passed through the footings on to soft yellow clay"; but we conclude the meaning is that the footings were laid on a structure of this clay, overlying the blue clay. Without speaking too positively as to the precise geological age of the deposits in question, we are aware, from personal experience, of the existence in this part of Kent of an extremely treacherous yellow clay, often mixed with the *débris* of shells, which will stand at hardly any slope, and with which it is extremely difficult to deal. A large cutting on the South-Eastern Railway, near New Cross, long gave excessive trouble from the presence of this material; and on the Gravesend and Rochester Railway, in a small cutting of less than 10 ft. deep, the occurrence of this shell-bearing clay rendered necessary an amount of excavation, wholly disproportionate to the depth of the cutting. In the case of Ivy Bridge it appears to be the opinion of the inspector of the Board of Trade that this layer of yellow clay acted as a lubricant, allowing the pier to move laterally to the north about 12 in., while at the same time sinking vertically about 1 ft. 2 in. Our own experience of similar soils leads us to regard this opinion as highly probable. The important question, however, here arises, "how long a time did this squeezing and sliding process occupy?" As to this, it is desirable to have all the information that can be collected. Col. Yolland's report would seem to point to the movement as comparatively recent, and as not unobserved. But as a question of public safety, the notation of the length of warning that is given by any structure sliding or tottering to a fall is of primary importance. On this we had occasion to remark as to the fall of the Bradford chimney. It is of the utmost importance to all architects or persons occupying, or having charge of buildings erected on treacherous soils, to have the fullest information that can be collected as to the length of warning that is given of disasters.

Col. Yolland thinks it probable that "the subsidence of the north pier, after having stood for twenty-four years without exibiting any weakness of any kind, may have been facilitated by the removal of the earth under the north arch, and that the water, during a somewhat wet season, had passed down to the clay under that arch, softened it, and permitted the clay to be pushed upward, lifting up the rails of the gas-works siding to the extent of about 4 in., and allowing the north pier to settle down and then slide towards the north." The only hesitation that we feel in accepting this view is due to the consideration of the impervious character of clay. The surface of clay is only to a certain extent absorbent, and becomes softer and more slippery from rain; but unless that be "poached" or puddled into the mass below by the feet of horses or other means, the clay itself acts as a lute to keep the water from sinking in. In fact, that is the main difference between the pervious and the impervious soils of the geologist.

It is conceivable that if any passage that might act as a funnel was unintentionally formed, the rain might penetrate between the yellow and the blue clay, thus facilitating the sliding of the former, with everything that it supported, on the latter. But the usual semi-fluid character of the yellow clay is enough to account for movement, even without any additional dose of water; and we are more disposed to look to the removal of earth which had acted as a counterbalance-weight, than to any other cause, for the commencement of the movement that resulted in the fall of the pier. Experience has shown how slight a matter may turn the scale of a balance. No one who had not investigated the subject would have anticipated that so slight an addition to the load borne by the girders of a railway bridge as was caused by the spreading of 2 in. or 3 in. of gravel over the roadway, would be enough to make all the difference between safety and destruction. Yet it came out clearly on the inquest on the persons killed by the falling of the Dee Bridge, at Chester, in 1847, that it was to this very cause that the catastrophe was due. The factor of safety in the structure was far more closely approached than the engineer was aware, and the additional tons of material, which came to more than the platelayers in any way thought about, so strained the power of resistance that the first succeeding train broke down the main girders. We should like to know the cubic quantity and weight of earth that had been removed,—for the purpose, as we understand, of widening the line,—in the present case. Whether our theory be right or not, it is highly important to have all the facts, among which those determining the dates of the movement are not the least important.

Very different in its geological circumstances was the failure of the retaining wall at the Vriog cutting, on the Dolgelly Railway, near Barmouth, on the evening of the 1st current. There the line of railway, so far from lying on soft clay, runs along the face of a cliff, some 50 ft. or 60 ft. above the sea. Above the railway, again, is the turnpike-road, sustained by walling, which is said to have been loosened by the late heavy rains. The spot had been passed by a watchman not long previously to the passage of the train, when all was clear; and it was conjectured that it was the vibration caused by the train itself that finally brought down a portion of this wall. At all events, the engine came upon a mass of *débris* which precipitated it, together with the tender, on to the beach below.

It would be unsafe to speak with any decision without a visit to the spot; but it may be well here to remark that, as a general rule, the fall of retaining walls is due to the omission of proper weep-holes. The scarp of a rock, supported by a retaining-wall, may either be drained, at the same time that it is protected from the action of the atmosphere, by its revetment, or it may be allowed to become the background of a thin vertical sheet of water, held up by the masonry. In the latter case, a little addition to the height of the column, such as may be caused by heavy rain, may be enough either to overthrow the wall, or so far to balance

its equipoise that the vibration of a train will be destructive. Whether this was, or was not, the case in the Vriog cutting we trust the inquest will make plain. In all cases of the fall of buildings that have stood for years there must be a cause, and the interest of architecture demands that the cause, in every case, be made plain. Things do not tumble of themselves, nor is time alone an element of overthrow.

This remark very forcibly applies to another case of failure, in a building that has stood for upwards of five centuries. "Several large gaps," the morning papers announce, "have, during the past few days, shown themselves in the great central tower of Peterborough Cathedral." It is added that Mr. Pearson, when called in, declared the tower to be unsafe, and that the Dean and Chapter have given orders to have it taken down. It is a matter of much interest to ascertain the cause of so serious a failure. The fall of a spire may be due to the decay of wood-work; but in a stone tower there seems to be no room for decay. In the case,—which will be in the recollection of our readers, and as to which we laid before them the result of personal examination on the spot,—of the ancient tower of St. Alban's Abbey, the excellence of the work of the old church-builders was exhibited in an unmistakable manner. The movement in the tower of St. Alban's Abbey, which, but for the prompt and efficacious measures taken for its arrest, would have resulted, in a few hours, in the fall, not only of the tower, but also certainly of the north transept, and probably of a considerable part of the chancel of the church, was due to the unscrupulous manner in which holes had been hewed out from the very piers of the tower itself for the construction of tombs. It will be important to ascertain whether any similar liberties have been taken at Peterborough.

It will be also important to know the geological facts of the case. Peterborough stands on the very edge of the Fens; but as to what stratum directly underlies the abbey we are unaware. Æthelred is said to have obtained from Pope Agatho extraordinary privileges for the Abbey of Medeshampstead in 680, by which it was raised to the privileges of a vice-Papal see, — pilgrimages to the church of St. Peter in this monastery being allowed, for certain reasons, to be equivalent to a pilgrimage to Rome itself. Its abbot was summoned to Parliament in 1538. The last abbot, John Chambers, was consecrated bishop of the new see of Peterborough in 1541 or 1542. A copper coin, or token, exists, which bears two swords crossed, between three crosslets, on the obverse; and the legend, "The overseer's halfpenny of Peterborough, 1669," on the reverse. But these are not the arms of the see of Peterborough, which are "gules, two keys crossed in saltire, or, between four cross crosslets fitchy." (The latter are shown sable in the peerage we consulted, but this would be false heraldry). The town is said to be naturally very badly off for water, the supply being taken chiefly from shallow wells. We refer to this not as regards any action taken under an Act passed in 1876 for obtaining a supply of water from Wilsthorpe, in the county of Lincoln, eleven miles distant, and the opening of new springs under the powers of that Act, but as serving to indicate that the town, and thus possibly the cathedral, are most probably situate on the palæolithic gravel of the valley of the Nene. At all events, why a tower founded in 1350 should suddenly give warning of decay in 1883, is one of those phenomena the clear explanation of which is a debt due to Architecture herself.

The architect cannot be too much on his guard against the treacherous character of clay as a foundation. Under that common title are comprised, indeed, a large variety of strata, of different physical characters as well as of different geological ages. But the difference between the plastic clays of the tertiary and post-tertiary epochs, and the clay slates of the Laurentian deposits, is mainly a difference in consolidation. Heavy pressure for long periods of time has driven the water not only from its mechanical mixture, but, it may be thought, from its chemical alliance with the alumina of the ancient rocks. Thus what was once a series of annual deposits of lake or river mud has become compressed and solidified into a form resembling the leaves of a book when those leaves have become adherent to one another. And so much have these leaves become altered in texture in this secular press that they are actually employed as the covering of roofs, to turn off water, which they no longer absorb. Between the Welsh clay slate, however, and the Kentish yellow clay there is an indefinite series of beds, distinguished from each other by more or less hardness, compactness, and dryness. The London clay at some depth requires the use of the pick to make any serious cutting in its substance, although the soft rock, which is its true character, may show little or no signs of stratification. The Oxford clay, again, which also requires the use of the pick, comes out in cakes or plates, very distinctly stratified, often marked in the beds with glittering ammonites, of golden aspect, and capable of resisting exposure to the weather for some years before it returns to mud under heavy rain. The "Rab" of Pembrokeshire, which resembles the "killas" of Cornwall, is an indurated and stratified clay, which breaks into small nodules almost like those into which serpentine divides. These are sufficiently baked by nature to form excellent footpaths. Some beds form very fair horse roads, although under the action of wheels they are not long in returning to mud. The varying, but usually abominable, character of the roads in Pembrokeshire is due to the use of rab, poverty being as usual a bad economist, and the avoidance of the first cost of stone metalling entailing a far greater expense on the owners of vehicles that frequent the cheaply-covered roads. In parts of Pembrokeshire, again, clay slate is used for road metal, with much the same results as the hardest rab.

With the use of these naturally indurated clays may be compared that of brickbats, clinkers, and burned clay. We have experience of the manufacture and use of the last material in many parts of England, especially on some sections of the Midland Railway, as ballast. It is, all things considered, perhaps the worst ballast anywhere used. If well burned, it forms, in the first instance, an admirable bed for the sleepers. But it at once commences a process of disintegration, which the use of the platelayers' beaters hastens. It first becomes sticky, then ceases to drain water through its interstices, and finally returns to mud. Broken bricks behave much in the same way, their power of resisting disintegration varying with the degree of burning, as well as, to some extent, with the nature of the clay. Even clinker-burned bricks are not absolutely reliable as material for roads, though the true clinker, or slag from iron and lead works, forms an admirable road metal.

Such being the unreliable character of clay when exposed to atmospheric influences, even where, by natural or artificial means, it has been to a very great extent deprived of water, and indurated accordingly, it is obviously of no small importance to the architect to collect any instances of the behaviour of this geological rock *in situ*, especially when exposed to any change of pressure or of exposure. As to this, the railway works of the past half-century, and the sewerage and tunnel works of London and the Thames valley, afford some very important data.

When the London and Birmingham Railway was commenced, Mr. Robert Stephenson adopted an ellipsoidal cross section for his tunnels, which were all provided with brick inverts. The Watford tunnel penetrated such solid chalk that the late Sir Charles Fox, who was resident on that contract, suggested the omission of the invert, and that the side walls of the tunnel, instead of resting on a stone skewback, which formed the abutment of the invert, should be built with the footings usual to a wall of curved batter. Mr. Stephenson approved this suggestion, which effected a saving of more than 3*l.* per yard run of the tunnel, and this important work was executed accordingly, with complete success.

The economy thus attained at Watford stimulated Mr. Birkenshaw, then resident on the Camden Town contract, to propose the adoption of the section without invert for the Primrose-hill tunnel. The structure was accordingly commenced on this plan. But it had not proceeded very far when it became evident that what miners call "creep" was going on. The bottom of the excavation rose, under the pressure of the superincumbent mass. And it soon became clear that if the tunnel were made without an invert, the time would not be long before it would become wholly impassable; in part from the rising of the floor, and in part from the squeezing inward of the sides. In fact, the whole mass of clay that forms Primrose-hill, hard as it was to the touch, and requiring the use of the pick for its excavation, is proved by the experience of this tunnel to be a true semi-fluid; slow, no doubt, in the motion of its particles, but moving with all the force due to the weight of the mass above the point under trial.

If any doubt be entertained as to the accuracy of the statement that London clay, although apparently solid, and so hard as to require the use of the pick in excavation, acts with the slow but formidable force of a true semi-fluid, the statement may be supported by the experience of the small footway-tunnel under the Thames at Tower-hill. It is much to be desired that there should be published a full account of that ingenious and successful work. We speak of it from memory, having visited it during progress, but we believe that the wish for a good description of its detail has long since been expressed by the secretary of the Institution of Civil Engineers.

The little tunnel in question was essentially a 6-ft. or 7-ft. driftway, bored through the London clay. It avoided the enormous expenditure incurred by its precursor, the original Thames Tunnel, by being laid out at a depth that allowed of this natural protection from the inburst of the river. A circular shield, as far as we remember, was used in the front of the works, the miners cutting out the clay, a portion at a time, in advance of the shield, which was then pushed forward, and the space which it had occupied filled up by wrought-iron tubing, in, we think, three segments, to form the permanent sides of the bore. Through holes in these plates grout was forced, so as to fill up the interstices between the outside of the plates and the inside of the excavation. To this, which we regarded first as useless, and secondly, as positively objectionable, as bringing lime into contact with wrought-iron plates, we have before demurred; but with this one exception the whole conduct of the undertaking was remarkably skilful and happy. We may add that the use of the electric telegraph facilitated the progress of the work in a degree that no one who had not the practical experience of running long headings without this appliance can realise.

But the point of interest to our present inquiry is this:—The shield was advanced with but slight pressure into the excavation prepared for it. But when the work was suspended for two or three shifts (as for Sundays, for example), the difficulty of moving the shield became greater, and that in proportion to the delay. It was quite conceivable that if this structure had been left alone for a certain time it would have become immovable, or at least have broken before it could have been pushed forward as a whole. This was due to precisely the same semi-fluid action of the clay as at Primrose-hill, and although in one case the geological rock in question was below the river, and in the other well above water level, besides being massed in a form likely to throw off water as much as possible, the action was identical. As to the rapidity of action, indeed, in the two cases, we cannot speak with certitude. It may have been greater under the Thames than above it; but we are by no means clear that such was the case. But that in both cases a slow steady movement of the particles of the clay to fill up the hole that had been cut through it took place, and that it did so with the force of semi-fluid action, is a positive fact. And it is one, we may add, of which it is of great importance for all those who build on this stratum to be fully aware.

In those costly works which have been executed on the Northern and Western lines from London, and which are now in course of execution on the South-Western and some other lines, modification of the original cross section of the cuttings is not unusual. In some, the bottom of the slope is replaced by brickwork; in some, by a concrete wall. The three-arched bridges are underpinned, and a double width for the line is attained as cheaply as may be. Now, in any case where pressure on the London clay is seriously modified by these works, the greatest vigilance should be exercised. We do not by any means assert that the fall of the Ivy Bridge was due to the removal of pressure, and the disturbance of counterpoise. We should decline to commit ourselves to a positive expression of opinion on the subject, under any circumstances, without being professionally asked to do so.

And, in point of fact, we have not inspected the spot.

But we think it will become apparent, from the experience above detailed, that the cause of the movement is more likely to have lain in the disturbance of equipoise than in any infiltration of water under a pier that had stood for more than twenty years. And whether that be the case or not, we are sure that the subject is one demanding the very serious attention of professional men.

We may, indeed, add to the proofs which we have before cited of the slow but sure movement of apparently solid London clay an illustration within the knowledge of every reader. Who has not looked, with distaste if not with wonder, at the large cast-iron arched girders that span, at frequent intervals, the open cutting between Euston and Camden-town stations? To what is the presence of those ugly struts due? The answer is, to the creep of the London clay. The retaining-walls through this cutting were built with the utmost care, and on the most approved section, in 1835. They are founded on a layer of 2 ft. of concrete, and the bottom of that layer, being laid out at right angles to a tangent to the outer curve of the wall at the spot, was expected to act as an abutment, and to bear up the retaining-wall against any thrust due to any movement of the clay behind it. And so, for some time no doubt, the work stood. We are not now aware of the date of the insertion of the struts, of the character of the menace which led to their introduction, or whether the distance between the walls was found to be diminishing, or the balance line of the railway to be rising. But having given details with which we are personally familiar, we point to those others which are beyond our own actual knowledge, but of which the facts are patent to all the world, while their history, if accessible, will be found to afford a fresh proof of the treacherous and unstable character of foundations on London clay, when the equipoise which has subsisted for centuries is disturbed by the work of man.

CHRIST CHURCH CATHEDRAL, DUBLIN.

THE splendid volume giving an account of the restoration of Christ Church Cathedral, Dublin,* is of interest for more reasons than one. It includes a history of what is known of the building and establishment connected with it from the earliest time, by Mr. Seymour, the precentor of the cathedral, and an account of the whole process of restoration, the state in which the building was and that to which it has been brought, written by Mr. Street, who undertook to complete this portion of the work on the death of Mr. R. J. King, who had been occupied on it; and this essay was the last writing which Mr. Street produced on a professional subject, it having been, in fact, completed only a few days before his death. The essay is not only interesting for the account which it gives of the gradual progress made in tracing out as far as possible the original design of the building, but also for the full expression of the writer's views in regard to the principle of restoration and the much-argued question of the manner in which Mediæval buildings were carried out, and the degree of individual freedom allowed to the workmen, on which latter head Mr. Street's sober and considerate remarks are well worth the careful attention of some of those sentimental enthusiasts who think that Mediæval cathedrals arose spontaneously by the inspiration of the workmen. The account is profusely illustrated by engravings, two of which we are enabled to reproduce in this number of the *Builder*, and the binding, paper, and printing are of the most sumptuous description. This high finish in the production of the book has been adopted, in part because it was desired to make it a memorial volume to the memory of Mr. Street, as well as a memorial of the munificence of Mr. Roe, who bore the whole expense of the restoration. As a formal recognition of his claims to be remembered, the volume opens with a dedicatory preface to him, written by Sir Theodore Martin. Portraits of Mr. Roe, of the Lord Primate, and of the Archbishop of Dublin are introduced; that of Mr. Street might well have been added; the want of it seems the only deficiency in the book.

We have not space to dwell specially on Mr. Seymour's historical chapter. It records the probable founding of the original cathedral, of which only a few bits of carved stone are now remaining, by Sitricus or Sitric, king of Dublin, who, about 1038, "gave to the blessed Trinity and to Donat, first bishop of Dublin, a place on which to build a church of the blessed Trinity"; it appears to have been originally a secular foundation, but established as a monastic one a little later than the middle of the twelfth century. The church was then apparently rebuilt as a priory church, with a short choir with an apsidal termination. At the beginning of the fourteenth century the steeple was blown down, and towards the middle of the same century the choir was rebuilt on a long and narrow plan, probably much inferior in effect, even in its best days, to the original choir. Henry VIII. dissolved the Priory, and established a Dean and Chapter and constituted it a cathedral foundation. In 1562 the vault pushed out the walls of the nave, and fell in, carrying away also the west front. "The southern arcade was replaced in that same year by a hideous blank wall, and the stone-groined roof by mean and naked rafters." Subsequently the spire had to be taken down, the tower showing symptoms of inability to bear the weight. It is not till the beginning of the seventeenth century that anything definite is heard about the reinstating of the fallen portion; Archbishop Jones rebuilt a part of the church which had lately fallen, and repaired the steeple, placing also three vanes on it. The state to which the building was reduced in 1633 is graphically indicated in a quotation from a letter from Archbishop Bramhall to Land. After describing the generally ruinous condition of the churches of Ireland, he adds, "In Christ Church, the principal church in Ireland, whither the Lord Deputy and Council repair every Sunday, the vaults from one end of the minster to the other are made into tippling-rooms for beer, wine, and tobacco, demised all to Popish recusants, and by them and others so much frequented in time of divine service, that though there is no danger of blowing up the assembly above their heads, yet there is of poisoning them with the fumes. The table used for the administration of the blessed Sacrament, in the midst of the choir, is made an ordinary seat for maids and apprentices." During Strafford's administration, a public order was made prohibiting such practices, and enjoining the removal of all such houses and buildings as had been erected against the walls of the church so as to stop up light, endanger the fabric, "or any way annoy the said church." Little, however, was done towards getting the fabric into a better state till the end of the century, when some repairs were made under the direction of the then Dean and Chapter. An incident in the history of the cathedral, shortly after this, was the purchase of a portion of Renatus Harris's organ, which was built in rivalry with one of Smith's for the Temple Church. Smith's was finally chosen for the Temple, and the Christ Church people bought a part of Harris's, which they subsequently parted with, for no sufficient reason, to the parish of Wolverhampton. The cathedral is thus connected with a very celebrated musical controversy, for such that between the adherents of the two rival organ-builders was. Another musical incident in its history is the fact of the assistance of the cathedral choir, in 1762, in the first performance of the "Messiah," which Handel undertook in Dublin, on the special condition of the assistance of the Christ Church choir, which seems to have preserved its status and repute throughout all the architectural vicissitudes of the establishment.

At the commencement of the present century the then Dean and Chapter endeavoured to call public attention to the dilapidated state of the Cathedral, and memorialised the Lord Lieutenant on the subject, but with no avail. Nothing more seems to have been attempted till the accession of Archbishop Trench in 1864, whose sympathy in the matter strengthened the hands of those who wished to restore the cathedral, and led to one definite step, the engagement of Mr. Street to examine and report upon the state of the cathedral. His report did a good deal to awaken public interest in the subject, but no means for acting upon it were available, and in 1871 the Irish Church Act operated to dissolve the capitular body and deprive Christ Church of its endowments. When, as Mr. Seymour says with somewhat amusing *naïveté*, "every earthly prop was thus removed," there came unexpectedly the generous and public-spirited offer of Mr. Henry Roe to restore the building at his own sole cost; and, without regarding this assistance as superhuman, as Mr. Seymour's words would seem to imply, it is an instance of liberality worthy of the highest recognition.

We have thought it worth while to run through the main points in the historic account, as the scale and cost of the book will render it unattainable by any but a minority of the public. The real interest of the volume from our point of view consists, however, in the narrative by Mr. Street of his method of dealing with the cathedral; which is not only interesting as to facts, but includes some general criticisms on the whole subject of the treatment of old buildings. It must be premised that for the most part the work at Christ Church was literally a "restoration" of what had almost entirely disappeared. It was not a restoration in the sense in which the word is more commonly understood, and which implies the repairing and re-instating of details that have decayed, the removal of the lumber of various ages, and the cleaning of the stonework, &c. These usual branches of work in a cathedral restoration imply that the main portion of the architecture is there in a recognisable form, though decayed and dilapidated. But in Christ Church Cathedral the case was worse. The old building for the most part might be said to have practically disappeared, and the problem really was to rebuild it as nearly as possible in its original form, from the information which could be obtained from a few scattered fragments, a pier here and an arch there, which were left sufficiently complete to furnish the main data for renewing the design. Part of the description of the state in which the building was may be quoted:—

"In 1871, before the work of restoration or rebuilding was commenced, the Cathedral of the Holy Trinity, or Christchurch, was a cruciform church, with a nave and north aisle of six bays, and a long choir, with north and south aisles extending about half its length. The site of the old south aisle of the nave was occupied by a library, a chapter-room, a robing-room for the choir, and a lobby leading to the sexton's house, which was attached to the south-west portion of the nave. On the south side of the choir was a modern entrance, with a vestry or waiting-room attached; whilst, on its north side were a decayed room, and a house which occupied the site of an old Lady-chapel. Over the intersection of the transepts, nave, and choir,—supported upon arches rudely wrought in limestone and covered with whitewash,—rose the central tower, solidly built, but mean and bad in all its details, both inside and out. The only portions of the church in which there was anything to interest an architectural enthusiast were the two transepts, the north arcade and wall of the nave, and the two western arches of the choir. The transepts had but one old external feature,—the south doorway, forming the principal entrance to the cathedral,—and inside they had been much defaced with whitewash, and finally ceiled with lath-and-plaster vaults of the meanest kind possible. The northern nave wall was in a dangerous state. The columns, built of small pieces of freestone, with a core of limestone rubble, were cracked and bulging in all directions. The triforium and clearstory were much out of the perpendicular, and had no doubt given way before the 3rd of April, 1562, on which day the groining of the nave fell, bringing with it the whole of the south arcade, with the clearstory and triforium which it carried. The groining of the north aisle of the nave had also fallen, presumably about the same time, and the whole north wall of this aisle, being dangerously out of the perpendicular, had been propped by an enormous mass of masonry built up against it from the outside, and inclined like a vast continuous buttress against its whole length, blocking up, while it fortunately preserved, the old windows and other remains, of which more will have to be said hereafter."

The south wall of the nave, which is described in more detail than we can follow out here, appears to have been one of the instances, occasionally met with, of the attempt to imitate Gothic work at a late period; it bore an inscription dating its building as 1562, and presented the appearance of having been built up partly with old stones taken from other buildings connected with the cathedral, preserving the pointed arch and a certain amount of true Gothic detail oddly assorted. But Mr. Street decided that it could not be regarded as of sufficient interest to justify the retention of it in rebuilding the cathedral. Externally there

* The Cathedral of the Holy Trinity, commonly called Christ Church Cathedral, Dublin: an Account of the Restoration of the Fabric, by George Edmund Street, R.A. With an Historical Sketch of the Cathedral by Edward Seymour, M.A., and a Dedication by Sir Theodore Martin, K.C.B., LL.D. London: Sutton Sharpe & Co. 1882.

was hardly a single old wrought stone left, and no feature of any architectural value or beauty, and "the most conservative of antiquaries could not have felt a single pang" at hearing that the exterior was to be entirely renewed. Mr. Street, perhaps, did not fully realise how far the most "conservative of antiquaries" in these days is prepared to go; but the statement sums up clearly his judgment as to the value of what remained of the exterior of the cathedral.

The state of things thus described justifies the conclusion expressed by Mr. Street, that whatever scruples may exist in ordinary cases as to restoring old buildings, it would have been hard to find any plea for retaining Christ Church Cathedral in its late unrestored state. The donor of the funds was, indeed, most anxious that not an ancient stone which could be retained in its place should be removed, a feeling with which Mr. Street was entirely in accord. But in reference to the general question of restoration, Mr. Street here leaves on record an answer to the objection which we now so constantly hear, that it is impossible to restore an ancient building, because each age marks its own impress on everything which it does. He points out that every building has been the work of a number of men under the direction of a very few, or of one man only in many cases. "No feature, for example, is more important, or more affects the general effect of a building, than the great moulded plinth, which, as in the Yorkshire abbeys, forms the base to an entire fabric. Yet this base must have been designed by one man at once, in the space of at most a few minutes,—whether marked on a stone or drawn on a sheet of paper matters not at all,—and then its execution may have occupied a gang of workmen for weeks or months. All these workmen had to work the moulding drawn, on certain uniform conditions, of the same material and with the same tools, so as to leave no room whatever for the indulgence of any of the personal tastes or fancies of individual workmen. What is true of the plinth is true of almost every other portion of the truly architectural features of the building. Yet the combination of these strictly architectural features in one whole is no less the work of one mind and one hand than was the first section of the first moulding. The mere workman of the thirteenth century was in no respect whatever superior to the mere workman of the nineteenth century. He confined himself to doing what he was told, implicitly following the directions of his master." An illustration of another kind is adduced, in the fact of the bad building of the piers at Christ Church, all with small pieces of stone casing, with no bond, and filled in with rubble. Of the two or three dozen masons who did the work, one or two at least must have known that this was not the way to do sound work. But they, like the modern workman, threw off the responsibility, and worked as they were ordered, with no more originality in their individual work than so many workmen of the present day. We commend this practical piece of argument, derived from the incontrovertible facts of the case, to those who think the Mediæval cathedrals grew spontaneously. The fact that a building is 500 years old is an increased reason for feeling, as Mr. Street says, love and respect for its very stones. But it is quite possible to build a repetition of it so that it shall have the very effect which the original had when first built. It was the design of one man, carried out by workmen acting under his orders, just as in the practice of the present day. There might have been less of drawing, more of oral instruction to the workmen, illustrated on the spot by as much drawing as was necessary, but the relation between them and the superintending mind (by whatever title he may have been known) was essentially the same as it must always have been, for any systematic design to be carried out.

But there may be, on this basis, a question as to whether the principle adopted by Mr. Street in the restoration of Christ Church Cathedral was altogether the best, or at least whether it was the only right one. Only a few scattered bits of the original work were left from which the original design could be inferred. His principle was, as that of most restoring architects just now would be, to make the most of these as guides, and to "restore" what he conceived, from these data, the original edifice to have been. This appears to us to be more a question of circumstances than it is generally admitted to be. Where there is one pier of an arcade left in tolerable repair, so that there is no necessity to remove it, then it follows, as a matter of course, that the restoration of the other piers, even if the original work has entirely disappeared, will follow the pattern given by the remaining one. But when it is a question of only probable conjecture, assisted by a few stones which give a probable but no certain indication, then we cannot see that the architect is necessarily bound to follow these in rebuilding. In the former case he can say with certainty, "This is the old design, though carried out afresh for the most part with new materials." In the latter case he can only say, "The details and general arrangement must have been something like this"; he can only get as far as general probability. Now, so far as the interest of the matter is to consist in the historical value of the design, probabilities are worth little or nothing. In such a case certainties alone have historical value; and where certainty is out of the question it becomes in reality a matter of erecting a new building on the site of the old one, and the business of the architect is to make the best design he can suitably to the nature of the case and the requirements of the building. It is not worth while in such a case to execute an inferior design or inferior details, because they, or something like them, were probably there before. If such probabilities lead to the production of a poor effect in the general design or the details, inferior to what the restoring architect knows how to produce if left at liberty to exercise his own taste, he had better exercise his own taste and do the very best he can, rather than restrict himself to inferior precedents, which are only matter of doubt, or of probability at best. Taking the whole account of the restoration of Christ Church Cathedral, there seems rather too much made of the idea that the old cathedral has been literally "restored" to its owners. This cannot be, nor do we see that it was worth while to go out of the way to insist upon this view of the matter. The old building had practically nearly disappeared, and the Synod (which is now the title of the governing body) have a new Gothic cathedral by an architect exceptionally qualified for that kind of task, in which some of the old features have been literally reproduced, and in which it seems probable that the general design and character of the original are more or less represented. But the historical value of great portion of the building must now be, after all, very slight, and the question still remains, how much superior a building Mr. Street might have produced if he had held himself more loose from merely probable precedents, and evolved the finest phase of Gothic architecture which he had been able to produce, even with the introduction of some absolute novelty of detail, so far as that would have been in keeping with the few actual remains of the old detail.

The account of the manner in which some of the former design was recovered is, however, very interesting. In regard to the plan, the first indication was furnished by the crypt, which preserved the old apsidal termination of the east end. The choir before the restoration was a long narrow compartment, which, in reality, ran through the former east window and took in the space originally belonging to the Lady-chapel. An arch, with Transitional ornamentation, built into one wall of the choir, proved to be the original arch enclosing the east window in the central compartment of the apse; and an examination of the wall of the choir at this point revealed sufficient data to show the angle of the return faces of the apse, and also to reveal the fact that the two arches and window-heads in the return faces had sprung at a lower level than the centre arch, and were considerably narrower,—a very unusual arrangement. The setting out of the east end on these data gave a line exactly coinciding with that of the piers of the crypt-wall below. This crypt is in itself very curious; it is one of the most roughly-built crypts to be found, the vaulting being turned from massive stunted square columns with huge rough blocks projecting at the springing as abaci; some of the angles of the piers stop-chamfered with a small carved cap at the stop, others plain. The massive character of the nave piers was also remarkable,—massive, unfortunately, in appearance only, for they were one and all found to be mere casings of hewn stone, with no bond and no through stones of any kind, and the interior filled not only with rubble, but even with pieces of timber and rubbish of various kinds. Nothing more discreditable to Mediæval building has ever been brought to light, and it seems amazing that men who could have built a cathedral at all, and one with originally many fine points in it, should have been capable of building, in a practical sense, so outrageously badly. The piers were of such dimensions that, properly built, they would have carried a lofty steeple, but, as it was, they had split and bent in all directions, under the moderate weight of the walls and vault. As it was desired by Mr. Roe that the whole building should be vaulted, as much to prevent further risk from fire as for architectural reasons, the expedient was adopted on the north side (on the south side the whole of the work is new) of shoring up the superstructure with very solid timber centres, and taking down and rebuilding the piers in a more solid manner. The experiment was a difficult one, as Mr. Street has said, but not what we should call a risky one; it is simply a question of properly-constructed and ample shoring. In another place we were surprised to observe the stress laid upon the expedient for raising the arches of the crossing, which were very roughly built, and too low. This was to build a strong brick arch in cement into the wall, piece by piece; then, when it had come to its bearings, to remove the wall and old arch underneath, and turn new moulded stone arches under the brick relieving arches. This is spoken of as something very much out of the way; we have seen it done in a very matter-of-fact manner in house alterations, by persons who did not think it necessary to go back to Mediæval precedent for it. Mr. Street has recorded that he employed the same process in connexion with the work for the nave of Bristol Cathedral, and that the contractor in consequence formally repudiated all responsibility, as proper shoring was not used. We can only say, What an ignoramus that contractor must have been!

The effect of these very thick piers in the nave, 6 ft. thick to openings of only about 11 ft., is seen in the engraving which we publish, showing the view of the nave looking east *; the manner in which the triforium and clear-story are blent into one design, in a rather unusual way, can also be seen here. One peculiarity of the pier design, the use of triple fillets running up the shafts, with the necking mitred round them, can just be discerned, though the scale is too small to show its peculiar effect in marking the shafts with horizontal lines. Among other peculiar points mentioned and illustrated is the treatment of some of the capitals in the transepts, where an arris run up the centre of some of the shafts has its edge line continued up into the capital, and the capitals themselves are very peculiar in design, partaking of the character at once of Romanesque and of later Gothic. A strange feature in the building is illustrated on p. 125, a shaft on which some skittish mason has chosen to carve an ugly and unmeaning knot of flowers, or something else, looking somewhat like a sponge, a little way down the shaft, below the necking. This excrescence, which has been left untouched as a curiosity, is a delightful example of what might have been the result had the cathedrals really been carried out by workmen exercising their own sweet wills, each in his own way. A modern architect who was to find a workman performing such a freak in one of his buildings, might feel inclined to knock the man over the head with his own mallet, and would (morally) serve him right in doing so, though it might not be strictly legal. Another peculiarity of the building is the great prevalence of banding to the shafts; this will be observed in the view showing the restoration of the small apartment now called the Baptistery; but there are other more notable examples than this. The said "Baptistery" is a restoration, on some apparently very slight data, of an apartment which formerly adjoined the outer wall of the north aisle, but which has now been rebuilt one bay further westward than it formerly stood, in order to avoid encroaching upon a narrow adjoining thoroughfare.

In addition to the cathedral restoration, the work executed by Mr. Street, and of which the cost was defrayed by the munificence of Mr. Roe, included the erection of a Synod-house on an adjoining site on the other side of a street, and the connecting of this house with the cathedral in a very picturesque manner by a segmental arched bridge flying over the street

* See p. 128.

and connected by a broad flight of stone stairs with the cathedral. The bridge somewhat resembles that which Mr. Street had proposed to throw across the Strand at the site of Temple Bar, as an adjunct of the Law Courts.

In comparing the plan of the cathedral before the restoration with the plan as it now is, it is to be observed that the choir was much longer previously, and Mr. Street reduced it in length to its Mediæval dimensions, throwing the remainder of the length eastward into a Lady-chapel, as originally was the arrangement. In connexion with this point we may call attention to his remarks, which planners and builders of churches would do well to read. The long chancels of many modern churches, which are quite out of place, are derived from the long choirs of the later Mediæval cathedrals, which were the production of an epoch when there was an immense multiplication of clerical officers, who were to be set apart from the laity, and for whose accommodation these very long choirs were built. Mr. Street has observed, "The naves of our cathedrals were built for the people, who were all intended to be in sight of the choir and altar. It was by degrees, and by a deplorable perversion of the original intention, that the choirs were first filled with a larger staff of clergy, then enlarged for their accommodation, and finally screened off from the nave with solid unpierced screens, in imitation of arrangements which were intelligible in monastic churches, but not in others." When, after the Reformation, the cathedral clergy were much reduced in numbers, they did not occupy the whole choir, and hence came the anomaly of having the clergy and choristers at the west end of "the choir," the nave empty, and the congregation given seats between the clergy and the east end, and a solid screen was put across the west end of the choir, dividing it from the nave, and forming a church within a church. Mr. Street has left on record his protest against this misuse and misarrangement of our cathedrals, especially in cases where the constructional choir is not so long. He has referred especially to Westminster Abbey, a model of what a church for an English Church-service should be, with a short choir representing the apse of the old basilica, and a long nave. Yet here, as he has observed, in an artificially fenced-off choir, a couple of hundred people, selected by favour from the thousands who would like to join the service, are seated, while the larger congregation in the nave are cut off by a solid screen from the sight of the choir, clergy, and from proper participation in the service. The proper use of such buildings would be the use of nave and choir at one time and for one service, the clergy and singers occupying the choir and the congregation the nave. We quite concur with this in the main, and certainly as regards Westminster Abbey, the present arrangement of which for service is deplorable. Mr. Street was well known to be so devoted a Churchman that even the most clerically-minded of ritualists may be willing to accept a practical remark of this kind, coming from him, as worth serious consideration.

We have referred to Sir Theodore Martin's Dedicatory Preface. This is addressed "to Henry Roe, esq., D.L.," and sets forth the primary reason of the publication, in the feeling "that some fitting record should be made of what had been achieved by this remarkable combination of generosity with the highest architectural skill. Justice to both demanded that the story of Christ Church Cathedral,—its rise, the vicissitudes of its history, both structural and political, its long years of neglect and decay, culminating in what seemed likely to prove its absolute extinction,—should be fully told." It was felt that the volume could not be fitly dedicated to any one but the donor of the funds which rendered the work possible; and Sir Theodore expresses the hope that, as "good and noble deeds are the seeds of ever-spreading goodness and nobleness," this volume "may serve as an incentive to works precious to mankind, conceived in a kindred spirit." Of the spirit in which this work was done we are reminded by a quotation from Mr. Roe's letter to the Archbishop of Dublin, containing the first expression of his wish to bear the expense of the restoration,—"In offering this donation to the Disestablished Church of Ireland, I wish especially to make it a thank-offering to the Great Head of the Church for mercies granted me, and for prosperity far greater than I have ever either desired or deserved." We may add one word in recognition of the beauty of the volume in which the record has been enshrined. The beautiful paper, wide margins, the number and high character of the illustrations, and the richly-decorated vellum cover, combine to make it, even in the merely literal sense, an ornament to the finest architectural library.

MODERN BERLIN.

In these days of practical progress, pursued in every direction, and in every country, no traveller, on revisiting a spot with which he may have been familiar in past years, expects to find it unaffected by modern influences. It forms, indeed, one of his pleasures to speak of the past,—almost always, it will be found, in a somewhat regretful strain,—and it requires but very small inducement for him to commence to retail to any new-comer his previous experience of localities, totally altered in the course of modern improvements. There are some cities, however, which in this respect hold in reserve for the traveller in a more than usual degree a fund of surprise. Paris, in spite of M. Haussmann, is still singularly the Paris of the past; Rome, though tram-cars glide up and down its new and busy Via Nazionale, cut through a quarter a few years back deemed positively unhealthy; New York, though each year its houses progress in rapid jumps further up the peninsula on which Manhattan is built; Brussels, in spite of its grand new Boulevard Centrale; London, and most of our great provincial towns, through all the changes of late years, are still the cities they were in the last generation. Berlin, however, has within but a few years assumed so different an aspect to that of its past, that the inhabitants themselves fairly admit themselves puzzled; and old Berliners,—still adherents to their local beverage of "white beer," consumed out of what appear to the Englishmen to be huge finger-glasses,—will be found any evening in the older beer-houses of the city talking loudly and proudly of their old-day memories. Inhabitants who have been absent five or six years freely express their inability to recognise old landmarks in the broad, well-paved, well-lighted, well-swept, betramwayed streets which have superseded the narrow provincial highways and by-ways of the Berlin of a generation ago.

In the face of all the arguments of philosophers, humanitarians, and political economists, one is almost tempted to believe in Berlin in the actual advantages that accrue from a terrible international war; one's views at least, if not staggered, seem to require reconsideration. It is true that to other influences than those of military success the capital of the German Empire owes in great measure the rapidly-increasing position which it is every day acquiring. Its rulers are more than amply aware of the conditions which constitute the formation of a great city in these days of culture, and aided on one side by the action of the speculators, on the other by a large fund of warm civic and municipal pride,—the absence of which in our great metropolis is the cause of much that is complained of,—have been enabled to build up a capital which for many a generation yet to come will be able to supply the wants of the yearly growing population.

Our columns for a long time past have informed our readers of the enormous building activity in Berlin during the last ten or so years, since, in fact, the great Franco-Prussian war, soon after which, it is true, the speculative character of the building transactions was more of a nature to suggest the probability of commercial disaster than ultimate success. But notwithstanding the largeness of the transactions of some years past, it appears now that nothing has been overdone. Noble lines of streets with finely-built palatial houses,—mostly, as in Paris, let out in flats,—have extended and are extending in every direction, while facilities for communication with the most distant points of the town are rapidly increasing; during the greater part of the day and, rare feature for homely Germany, far into the evening, the appearance of a very large area of the city assumes an air of activity and prosperity enough to astonish the most thoroughbred Londoner, and even to lead a Londoner who is familiar with New York and other American cities into dreams of real estate speculation such as appear to be more than realised in the capital of United Germany.

One exceedingly agreeable feature to the traveller who re-visits Berlin after an absence of many years is to find that the great points he so well remembers, while to some extent changed, are decidedly improved by modern embellishments. The Unter den Linden, of world-wide reputation, is the same as ever, and yet more palatial, and if the trees do not appear to have prospered to the utmost, the tall houses on each side of the great promenade, among them the still uncompleted Ministry of Public Worship,—are more grandiose than ever, and overtop even the palace of the Emperor with its imperial flag floating in stately folds above the doorway before which stand in almost Roman solemnity the watchful and constantly-saluting sentinels. The aristocratic Wilhelm-strasse seems, if possible, to be even more stately and lofty than ever in its domestic grandeur, the brilliant electric light,—the incandescent lamp, by the way,—appearing not in any appreciable manner to disturb the retired majesty of the quiet courtyard before the great German Chancellor's palace, or the stately gloom of the tall *portes-cochères* of his ministerial neighbours.

It is impossible for the lover of art to visit Berlin without feeling the warmest glow of admiration for the peculiarly important position taken by the noble art of architecture in creating a great city, and in the German capital it is almost veneration that one is inclined to feel for the traditions of such an artist as Schinkel, whose bust, in company with those of Gottfried Müller, Winckelmann, Cornelius Rauch, and Schadow, so fitly adorns the great colonnade of the National Museum,—Schinkel's own noble conception. It is, indeed, somewhat surprising when we remember how little our people generally at home are familiar with their indebtedness to our great architects of the past that abroad we should so soon seem to possess a personal acquaintance with the great architects whose creations are ever embellishing and enriching the cities of the world. Fortunately for Berlin, the modern workers in the great field of architecture appear to be sufficiently respectful pupils of the master, and throughout the modern work that is now going on in Berlin it is impossible not to be alive to the influence that their classic teacher has had on the men of to-day. Although it would be rash indeed to assert that there is no vulgar, coarse, or pretentious work, there is really so much to admire for its science, its refinement, and its general excellence, that none but an exceedingly bigoted critic would be disposed to cavil. If the work is executed in a very different spirit to what appears at present to be prevailing in our country, it is impossible to deny to it the possession of "style," the attainment of which it will behove our architects to consider closely in their own apparently less pretentious creations. Modern necessities demand great cities, and great cities demand fine houses, and the adequate and healthy accommodation, within a given space, of the largest number of people. Living under very different conditions, working under very different laws,—a material point,—the results obtained by foreign architects are, of course, singularly unlike our own, but we should hesitate before,—as is too often the case,—condemnation is pronounced. We are all too apt to question the merit of types of character and of work, especially foreign, when differing from our own.

With the beautiful belt of greenery which surrounds London, and, indeed, all our great cities, being yearly encroached upon by the advance of bricks and mortar, does it not behove our leading spirits to consider whether we are not doing wrong in not commencing to rebuild on new lines, as all foreign cities are now doing, our existing houses and streets, too often unhealthy, ill-suited for their purpose, and occupying in a most wasteful manner invaluable ground. A visit to Berlin, as a characteristic type of a foreign city of modern growth, is calculated to arouse such thoughts as these, when one finds whole neighbourhoods that once were dens of misery swept away, and replaced by broad streets and tall, well-built, well-drained houses. Why in our midst, as strikes the eye so constantly in London, should we find, at but a few steps from our most populous and gaudy thoroughfares, some of the most wretched dens of squalor that the world knows?

A city like Berlin understands, however, that in addition to grappling with these great hygienic questions,—which must sooner or later be grasped in earnest in our great metropolis, the largest and richest city in the world,

as we are so constantly proud of asserting,—there are other points equally necessary to be considered for the creation of a capital worthy to be the centre of a great empire. Certainly, if academies, museums, and industrial and educational institutions are all that is required to form correct centres of information, Berlin just now can very justly lay claim to a very high position. At the moment we write, there exists in Berlin almost what may be called a feverish desire to do something more than emulate the other great centres,—London, Paris, Boston, and New York,—in the wide field of recognised intellectual authority.

It is somewhat singular in this age of *brio* and celerity,—in this period when so many artists and their friends at home are devoting their well-instructed minds and industriously-occupied days to the reproduction of an artistic period that can, it must be admitted, never be regarded as anything approaching the highest, —that Berlin, one of the great modern centres of artistic civilisation, should be strenuously endeavouring, with the utmost success, to secure treasures of art that bid fair to make the Berlin Museum the successful rival of the Louvre or our own famous institution in Great Russell-street. Certainly, as day by day,—for that is just now the case,—the value of the Pergamon sculptures owned by the Museum is being discovered, the lovers of the marvellous art of the Greeks are discovering fresh beauties which seem to satisfy the most positive ideal of perfection.* Heavy cases of treasures still continue to arrive at the Museum in Berlin, but at present only a few, comparatively, of the Pergamon sculptures are exhibited in positions in which they can be fairly judged. To many of these we have already referred in these columns, and the art-loving world will be soon as familiar with the delicate Selene figure, the great Zeus group, the fiery horses, the Athene group, with the curious resemblance in one figure to that of Laocöon, and many others of the Pergamon altar sculptures, as they are with the Parthenaic or the Phigalian marbles, or our own more recently acquired treasures from Ephesus, which, it is to be hoped, will before long be considerably added to by the exertions of our Museum authorities. This is a direction in which it behoves our country not to allow itself to be outstripped, in the interest not alone of England but of art generally.

While speaking of the Pergamon sculptures, it is impossible to imagine anything more satisfactory or instructive than the large drawing by Herr Thiersch, representing, in accordance with the discoveries up to February, 1882, the restored condition of the once famous altar known to Biblical students as "the Throne of Satan" (Rev. ii. 13). Mr. Bohn was, if we mistake not, the first to present a restored view of the Acropolis of Pergamon, his sketch having been skilfully reproduced in a recent issue of the *Century Magazine*. Herr Thiersch's drawing is, however, in accordance with still more recent discoveries.†

That the Berlin Government should have obtained almost at the same moment such Classic treasures as the Pergamon marbles, and the interesting gathering of MSS. from the Hamilton collection, among them the Renaissance designs of Botticelli, illustrating Dante, is characteristic. That the Germans deserve all the credit, and no one is to blame for allowing them to secure the earlier treasures, is, of course, beyond doubt; but that they should have borne off within a few months the Hamilton MSS. certainly seems to afford grounds for the accusations that have been somewhat freely made as to the possible existence of neglect or indifference somewhere. Not that we, for our part, having looked carefully at the Botticelli outlines, feel that England is likely to suffer in any respect by the loss of the famous Dante and its pictures, because it may be found when these works,—twenty out of eighty of which are at present being exhibited in the Berlin Print Room,—are submitted to the fierce light of modern criticism, that they are deficient in those peculiar graces that have secured for Botticelli the admiration of many modern lovers of art. These newly-acquired treasures are so satisfactorily exposed to the public, who so freely avail themselves of the opportunity for their examination, that we expect for some time to come to hear a great deal regarding these works of the popular Florentine master.

The many other treasures acquired by the German Government from the Hamilton collection are exposed to view with equal liberality, and they certainly possess a value and an interest enough to command the highest regard of the most fastidious, but fortunately for England, which has now lost these works for ever, it will be found that the collection,—40 out of the 700 of which are exhibited with the Botticellis,—possess no quality in any way superior to what our own great public museums already show to the public. Among the many very beautiful illuminated volumes, one little work is architecturally interesting, a Latin MS. of Cyriacus of Ancona, of about 1450, illustrated with pen-and-ink drawings, the page laid open exhibiting the view of the west front of the Parthenon. This is a MS. which we hope may before long be rendered familiar to the architectural public by some one of the many existing processes of photography.

Not content with this successful purchase, the Berlin artistic authorities have, within only the last few days, decided on the acquisition of Dr. Giers's interesting collection of Japanese paintings, consisting of over 100 *kakemonos* or religious scrolls, and as many albums and other illuminations illustrative of the history of Japanese art from the Middle Ages,—a collection at this moment on view in the superb new Industrial Art Museum, one of the most recent noble additions to the German capital. Had we not secured, some years back, for the British Museum, Dr. Anderson's beautiful Japanese collection, we might here again feel sore at the triumph of the Berlin authorities.

In practical as well as æsthetic directions Berlin is yearly making strides towards a position with the aims of which the general public in England is not sufficiently acquainted. We are too apt to continue to speak of the German capital as the old Berlin of the past. New influences are at work which, within a few years, cannot fail to produce the most astonishing results. The ten years of beneficent and progressive legislation which the Germans have now to look back upon have worked positive wonders for Frederick the Great's once little capital on the banks of the Spree. To all interested in the growth of our great cities,—yearly more and more tending to centralise within their walls the life of the country,—a visit to Berlin is a necessity. Illustrations and descriptions, such as these pages have endeavoured from time to time to give, can afford, after all, but a feeble idea of the reality. By an acquaintance with what our foreign neighbours are doing, our great cities, their great institutions and their great factories, will be rendered still more noble, more valuable, and more useful than they already are. The facilities of communication in the present day have placed this suggestive means of instruction within the reach of all; it is not till a general concensus of public opinion is roused that any steady progress can be effected.

* Among the wonderful series of sculptures brought from Pergamos, one female head in particular,—a mere fragment, without a trace of shoulder, and sadly mutilated, —promises to be before long a rival to the greatest marble beauties existing in London, Paris, or Naples.

† Among the latest arrivals from Pergamos are, if not the most important, some of the most beautiful finds yet made. These consist chiefly of a series of architectural details of the most interesting description. Two small niches, about 6 ft. high, of Parian marble, one Ionic, the other Doric, and containing each a statuette, are, we may safely say, simply delicious morsels of Greek architecture.

ACQUIESCENCE IN THE INTERRUPTION OF LIGHT.

It will be interesting to observe at some future time whether any practical result will follow from the protracted labours of the Institute Committee on the Law of Light. At present it may be likened to the celebrated Congress of Vienna, of which a humorous diplomatist remarked that it "*danse, mais ne s'avance pas.*" We have more than once stated our doubts whether the committee will effect any radical change in the law, but some improvements in details may, if the matter is energetically pushed, perhaps be obtained. There is especially one point upon which there would seem to be room for some kind of change, and that is in regard to the interruption of the enjoyment of light and acquiescence in that interruption, so as to make it not only an interruption in fact, but an interruption in law, and thus become a bar to the further enjoyment of the right by the owner of the dominant tenement. The first suggestion to be made in regard to this point as to the period of interruption which should have the effect of barring the right is that the time might advantageously be shortened. In ordinary cases, if the interruption has continued for six months, the possessor of the light cannot consider, with any justice, that he has been allowed too short a period to vindicate his rights. In general, a man will discover immediately a structure is erected which darkens his windows that his rights are being invaded, and it does not appear to be fair to a person who is erecting a new and perhaps costly building that it should be allowed to remain for several months without expostulation, and then that perhaps nine or ten months after it has been up legal proceedings should be taken. It is right that owners of property should be vigilant, and it does not conduce to practical convenience that laxity in vindicating rights should be encouraged, and consequently there seem to be strong reasons why the present period of interruption should be considerably shortened. On the other hand, whilst we would shorten this period to six months, we would render it incumbent for a man who is obviously about to darken a neighbour's windows to serve a notice on the occupier of the house, addressed to him and to all persons interested in the property that he claims a right to darken the apertures in question, and that he intends to exercise the right which he claims. Because it would never do to ignore the position of reversioners interested in the dominant tenement. It is true that under the fourth section of the Prescription Act the acquiescence must be "for one year, after the party interrupted shall have had or shall have notice thereof, and of the person making or authorising the same to be made." But a more formal notice, such as we have indicated, would appear to be advisable, so as to prevent the possibility of disputes arising.

But upon the actual question of acquiescence it seems also to be desirable that some kind of legal declaration as to what shall constitute acquiescence should be formulated. At present acquiescence is a matter of fact, to be determined by a judge alone, or by a judge and jury. The latter tribunal must say whether, from the circumstances placed before them, they consider that there has been a practical acquiescence in the interruption. In the well-known case of Glover *v.* Coleman (Roscoe's "Digest of the Law of Light," p. 19), Mr. Justice Brett seemed to consider that "the jury might reasonably find that the plaintiff did not acquiesce, and that they might reasonably find that he did not submit, because, although in one sense he submitted, yet he had discontent in mind, and had expressed his dissent to the person who had caused the interruption in a way which showed he did not intend to submit." Therefore it comes to this, that it cannot often be predicated with certainty what facts do or do not constitute legal acquiescence. In some circumstances they may be so obvious that there can be little doubt one way or another; thus, if an action were threatened, though not actually begun during the year, it would be obvious beyond doubt that the person who claimed the right to the light, the owner of the dominant tenement, had neither submitted to nor acquiesced in the interruption. But what seems so very desirable is that there should be no uncertainty about this point, so that any one may, if he will take the trouble, know exactly what he has to do if he would vindicate his rights. And here it appears to us that the Committee of the Institute have a practical opportunity of making a useful change. It might quite reasonably be enacted that any interruption of the enjoyment which continued for six months should be deemed to be a legal interruption unless within that period legal proceedings were begun in order to vindicate the impaired right. It is to the advantage neither of the owner of the dominant nor of the servient tenement that there should be any uncertainty as to what constitutes acquiescence, nor that too long a period should be left open if proper notice,—a point to which we have already adverted,—is given to the person who occupies the dominant tenement. There is no reason why negotiations, if both parties are in earnest, should be long. If both desire to vindicate a supposed right, let it be done without loss of time, and if some kind of compromise can be arrived at it will be the sooner brought to some definite point by the knowledge that, if this does not take place, the aid of the law will be invoked. At present, unless the obstruction is a serious one, a very considerable time often elapses

before the owner of the dominant tenement makes up his mind as to what action to take, and meanwhile every week's delay is, so to say, building up a legal acquiescence. It is, therefore, apparently obvious that the changes which we have pointed out would be steps in the right direction, and they seem, at any rate, to be worth very careful consideration.

HEATING AND LIGHTING.

A GREAT deal has been said of late, and a great deal has yet to be said, on the subject of heating and lighting our homes and our places of amusement, and most foreigners, but especially Americans and Canadians, visiting London are chilled in the first place, but of late have been warm in their expressions regarding our imperfect means of producing an agreeable atmosphere in our apartments. Too many of us, it may be fairly admitted, are disposed to repose with undue complacency in the comfortable possession of bedroom and sitting-room fireplaces that have pleasantly warmed us and our grandfathers for many generations past; we indulge not unfrequently during certain periods of the year in bad complaint at the price and quality of the coal, and are rarely free from the unpleasant consideration of a very heavy coal-merchant's bill; the kitchen-fire alone gives constant cause of discussion, almost more than the most fault-finding Englishman cares to indulge in. It is said that we like to grumble, and a Canadian gentleman has lately remarked in the *Times* that we are so inveterately given to poking our fires that the use of anthracite coal is a positive impossibility in this country, seeing that "hard coal" alone exists in a state of combustion during hours of undisturbed rest.

The question of the use of hard or soft coal is one that, in point of fact, is perfectly understood by the practical man, and consists simply in the knowledge that "hard coal" is positively incombustible without a thorough draught. With the use and the abuse and the habits of bituminous coal we are all too well acquainted, its smoke, its cost, and its "blacks." We love its companionship, its cheerfulness, and its affinities with beef and mutton, and its coquetting, delightful manner of pleasing. Perhaps we like it a little because it is supplied to us by very distinguished personages, for to a great many the only coronetted carriage that ever stops our way is that of the Marquis of Londonderry, whose coal-wagons are just now conspicuous objects in London streets.

But long before, very long before,—we have all arrived at that happy state of existence, when the cost of living will be a matter of indifference, our splendid coal-producing districts will have become mere regions for future geological inquiry, and in the meantime, and very speedily, many of us will have to put up with the inconvenience of using "hard coal," and to submit with a good grace to be instructed how to associate with all the warmth that is required for health and comfort,—the best means of simulating the moist heat that our sensitive natures and our beautiful complexions have become accustomed to. On our own part, we detest the sensation of a stove-heated apartment, and we never enter the noble halls of the British Museum at this season of the year without a feeling of discomfort to ourselves, with which we hope we have a proper amount of sympathy for the custodians of that noble institution.

But we are told, and we thoroughly believe it, that all this uncomfortable feeling, this wasted sympathy, may be avoided and saved by simply placing near the stove which heats the air-pipes an abundant supply of water in order to moisten the air before it reaches the apartment above, and also that each room so heated by a stove beneath should have placed in it a constant supply of the refreshing and life-producing element.

In America, in Germany, in Austria, it is only the vulgar and the uncultured population, the careless and indifferent, who heat their houses and workshops uncomfortably or unhealthily,—and unfortunately, in all countries, the uncultured and the indifferent form a terribly large number of inhabitants; but in America, in Germany, and in Austria, whenever consideration is given to the subject, as it is given invariably in the houses of the tolerably well-to-do, the mode of heating is simply perfect, and, in all cases at a cost infinitely less than in England, where, bad people of limited means to warm the very large rooms that most families on the Continent habitually occupy, they would have very little left of their incomes to supply the other wants of existence. After all, the most perfect way of heating large apartments consists in two essential requirements; in the first place, well-planned, well-secured, double windows, without which no means of heating whatever will be effective; and, in the next place, a well-made "porcelain" stove in which hard coal can be easily burned, by which means a room 30 ft. square, and proportionately high, may, in the coldest weather, be kept at a perfect temperature, or as high as individual taste may desire, at no very considerable cost. The simple expedient of the double window is enjoyed by the poorest throughout Germany and Austria, while the "porcelain" stove is rapidly replacing the abominable and unhealthy iron stove of the past.

As to the matter of lighting, Mr. Edison and his numerous rivals will very soon tell us something more, and any one desirous of obtaining, with no very great amount of trouble, definite notions as to the relative value of electricity and gas for large buildings, has only to visit the Savoy Theatre to enjoy the delight of a perfect mode of illumination. In private establishments electricity has with us not yet made much way, but from personal experience of the comparison of two of the largest of the many gorgeous *cafés* of Vienna,—one lighted by electricity, the other by gas,—it is not difficult to decide which is the more comfortable of the two; the absence in the electric-lighted room of that singularly exhausting atmosphere, the result of the air burned and befouled by the gas, has proved to us completely what a future lies before the domestic use of electricity for illuminating purposes. As the gas will have in such establishments to be more and more freely used to compete with the brilliancy of the electric light, so only the more will the air become exhausted and the ceiling paintings be dimmed. The struggle is likely to be a warm one yet for some time, but no one can have a doubt as to which will win the day.

THE DECORATION OF ST. PAUL'S CATHEDRAL.

SIR,—Having, during many years, thought and felt much on the subject of the proposed decoration of St. Paul's, I cannot resist the impulse, obtrusive though it may seem, in the present posture of the affair, to offer a few remarks and suggestions thereon. I do so under the impression that neither the gentlemen forming the Decoration Committee nor the Dean and Chapter claim exclusive right to deal with an edifice which every Englishman, or rather every Great-Briton and Irishman, has an interest in,—an interest increasing in proportion to his power of appreciating it; but, on the contrary, are willing to receive pertinent hints.

My attention was first drawn to the subject as early as 1852, by communications thereupon to the *Builder* from Messrs. Penrose, Papworth, Garbett, and others: after reading which I expressed my own views in a paper to the Liverpool Architectural Society, published in the *Builder* in 1853, and afterwards in the Society's Transactions. In this paper, after propounding a theory of interior decoration for a great edifice, and suggesting certain colours for the walls of St. Paul's, with a mode of treating the windows, I remarked, in reference to the dome, "It is clearly the dictate both of nature and reason that a dome should be divided neither by parallel circles nor by meridianal arcs, and should be decorated only by some delicate detached ornament, that will neither interfere with its curvature, nor disturb the breadth of its repose. But a series of pictures on a dome like those of St. Paul's at present, not only divide the dome, but by their backgrounds visually annihilate the surface they cover. The matter is made worse, however, when one picture covers the entire concave, as then the whole dome disappears at once; for wherever the eye turns, it is carried out of it; visually it is a dome no longer. I would, therefore, humbly suggest the obliteration of the present paintings, and the relief of the vast expanse of the dome by two tiers of detached ornaments of simple and dignified character, analogous in general shape and disposition to wreaths or medallions . . . . . They might be circular, polygonal, or stellar in shape, and harmoniously coloured, or there might be two forms and sizes alternating. They could be formed into hollow figures or rings, in which might be inserted sacred emblems, as those of the Christian virtues; symbolic animals, as the lion, eagle, dove; attributes of St. Paul; arms of the See of London, &c. The whole must be made the subject of careful design, and placed to correspond to the intercolumns of the dome tower below, one over each: All the minor cupolas of nave, choir, and aisles I would decorate in like manner on a smaller and simpler scale."*

The circular or polygonal features, wreaths or medallions named above, which I suggested as best calculated to preserve the spherical unity of the dome, you will perceive are an anticipation of the circular frames, confessedly the characteristic feature of the late Mr. Stevens's design, just brought forward. My circles, I suspect, are smaller and more numerous than his, but I think as large as they should be to preserve the sphericity of the dome.

But my chief object in this communication is to give you my present views and feelings on the important subject of the finishing of St. Paul's.

I feel now, as I have felt all along, that St. Paul's is in danger of serious injury to its grand and solemn spirit, chiefly by getting into improper professional hands. Nothing is easier than in the course of decorating such a building to spoil it, and unless the work be done under the direction of one competent architect, who has drunk into the spirit of Wren's design, and is entirely free from Mediæval predilections and sympathies, it may be found, after a great expenditure of both thought and money, that St. Paul's is poorer in artistic qualities than at the outset,—that in proportion as it has become beautified, the whole has grown "beautifully less." Freedom from Mediæval predilections I consider a *sine quâ non*. A modern Gothic architect could not, if he would, work in the spirit of the place; and should not be entrusted with it were he William of Wykeham risen from the dead.

Let me respectfully suggest that, before anything further be done, a large view of the interior of the cathedral in its present state, and exactly coloured, be taken, from the west end; and that the proposed scheme of colour or decoration be drawn on it, to ascertain the change that would thereby come over its spirit. Or that the scheme of decoration be tried on a fac-simile copy of it, so that the two conditions of the cathedral might be compared. The proposed treatment of the dome might be tested in like manner on a view of it from a good standpoint.

Such views seem needful to the architect in scheming out the decoration. The cost of them would be less than that of a model, and would be as nothing compared with the cost of probable blunders.

But it should be much easier to finish St. Paul's than to finish some Gothic cathedral, as in the case of Cologne Cathedral; in which the difficulty would be to get into the spirit of its age. The spirit of St. Paul's is that of the present age, its style being the Italian style of the day, with which we have full sympathy. I believe all that is really needful to be done could be done in a comparatively short time, and at inconsiderable cost.

Reference is often made to how Wren himself would have finished it; or what he intended. It would be interesting, of course, to learn what his wishes were. But St. Paul's should be finished not as Wren would have finished it, but as he should have finished it,—as the building demands to be finished.

Though I have high authority, including clerical,† against me, I should earnestly recommend that no historic painting be introduced into the cathedral, not only because making a pictorial Bible of it would be less consonant with the spirit of Protestantism, which dwells in the Bible itself, than with that of Catholicism, but because no effort of the art of painting can do justice to the sacred narratives, or do aught but disappoint the devout reader of the text, if they do not, indeed, fall short of his own conceptions of the subjects, more especially with regard to what must ever be the central figure in them,—that of the Saviour. This has

* See *Builder*, vol. xi., p. 53.

† The making the cathedral a great pictorial Bible was earnestly advocated by Archdeacon Hale in a discussion at a meeting of the Royal Institute in 1853, reported in the *Builder* (vol. x., p. 460), and approved of by the late Sir G. G. Scott.

scarcely, if ever, been satisfactorily rendered, even by the great masters of the Roman and Florentine schools. "The Christ of Michelangelo," says Fuseli, an eminent painter as well as critic, "is severe; the Christ of Raffaelle is poised between the heraldry of Church tradition, and the dignified mildness of his own character; the Christ of Guido is a well-suspended corpse." Perhaps the most successful Gospel scene ever painted is the "Last Supper" by Leonardo da Vinci. Of it the same eminent critic affirms, "The face of the Saviour is an abyss of thought, and broods over the immense revolution in the economy of mankind, which throngs inwardly on his absorbed eye," and "that neither during the splendid period immediately subsequent to Leonardo, nor in those which succeeded to our own time, has a face of the Redeemer been produced which approached the sublimity of his conception." And yet, as Vasari asserts, he left the head imperfect and unfinished; showing, it is evident, that he could not satisfy himself or reach the embodiment of what he conceived to be the result of the union of divine or incomprehensible and infinite power with the purest humanity. He found, in some village haunted by villains, a fit model for the face of Judas, and so succeeded in rendering his character, as well as the characters and emotions of the other disciples, to perfection; but he found no human face from which he could climb to a conception worthy of the countenance of Christ.

If, then, the greatest masters of the greatest art-period of Christianity, including the divine Raffaelle and Guido Reni, on whose pencil grace and beauty were said to dwell, have so far failed, who can hope that a collection of New Testament subjects painted at the close of the nineteenth century, — a period when, from the prevalence of a more worldly spirit, there must be less sympathy among painters with the character of Christ, would be anything but failures in the all-important point of expression, however perfect in design, composition, colour, or chiaroscuro? Titian and Vandyck have painted portraits which condense into one point of time, and exhibit at a glance, the whole history of eventful lives; and I doubt not our living painters could do wonders in the same way But who could do justice to the moral grandeur of face and mien of the Redeemer? What tender or magic strokes of art could form a countenance the index of a mind of spotless purity, of unrivalled benevolence, the visible manifestation of his religion? The endeavour to do it would be the finite attempting to grasp the Infinite.

Set our figure-painters to adorn the New Houses of Parliament and the New Courts of Justice with scenes from the history of England and Scotland, and they will do justice to their subjects and honour to themselves; but fill St. Paul's Cathedral with historic pictures of Biblical scenes and transactions, in oil or fresco, by the best historic painters in England or Europe, and the general effect will be insensibly to lower the sacred volume, more especially the great Biography, in the minds of the people. Not even the parables of Christ could be adequately illustrated, as their characters include generally the Divine Being. These and the sacred narratives are so poetically and vividly presented to us in the Scriptures that they paint pictures themselves on the reader's imagination superior in most instances to the highest efforts of art. As sketches, in which the ideas of the composition and character are only just touched upon, give more pleasure to the imagination than the finished work, so in reading poetry, the imagination supplies more, probably, than any painter could produce. Writing is the most perfect vehicle of knowledge, and, when elevated into poetry, which large portions of the Bible are, it is also the highest; and the painter, as Sir Joshua Reynolds remarks, has but scanty means of exerting those powers over the imagination which make so very considerable and refined a part of poetry.

While historic pictures, in falling short of the sublimity of the Bible sentiment and imagery, would rather lower than elevate the place, inscriptions, consisting of choice comprehensive passages from Holy Writ, more especially the Psalms and the Gospels, including the chief events they narrate,—a sort of condensation of the Sacred Book,—would, I believe, have a contrary effect, and form the highest and most spiritual adornment that could be conceived; for they would clothe the cathedral with the literary grandeur and beauty of the Bible itself. They should include the maxims and precepts which are, for the most part, so simple that the most ignorant may comprehend them, and the wisest must be charmed and awed by the majestic simplicity with which they are expressed. These passages, among which, if anywhere, are thoughts that breathe and words that burn, would be so many ever-shining lights, emitting the highest wisdom, which, if the cathedral be thrown open to the public all day long,—which I think you will grant it should be,—could not fail to have a great moral and religious influence. To the inner eye of the intellectual and imaginative they would people it with the grandest conceivable images and scenes; and to their inner ear they would make the voice of the Redeemer and His apostles resound through the vast aisles of the church.

If it be possible for man to hallow a place of worship, or to be the instrument of hallowing it, which is pre-supposed in the ceremony of consecration, then I know nothing so calculated to do it, in the eyes of men or angels, as lining it with the sublime language and imagery of the sacred volume; which would in effect be inscribing on it what was engraved on the High Priest's mitre, "Holiness to the Lord."

It would, I conceive, be most consonant with spirituality of worship,—the essence and spirit of Protestantism, which is built on the Bible alone, and not like Catholicism, on the Bible jointly with apostolical and ecclesiastical tradition; and I think the wise and prudent would rather stake its æsthetic credit on the sublime language of the Bible itself than on the most successful pictorial representation of its chief scenes. The principle I am here contending for would exclude illustrations of the *Te Deum*, as well as of the *Apocalypse*.

But this is not all: I must remind your readers that it is a matter of history that images and pictures, from having been used in the Western Church only as objects of instruction for the ignorant, became in the seventh or eighth century abused into objects of worship, and that though popular education and other circumstances are different now, yet human nature is still the same.

Should exception be taken to inscriptions, which, by the way, could be woven into infinitely greater beauty than they have ever yet been in England, by taking lessons from the Moors,—on account of their being a Pagan and Mahommedan decoration, I would remark that they were also an ancient Jewish one, the Israelites being enjoined by Moses to write the statutes and commandments of the law which he gave them, not only on their hearts but on the doorposts of their houses, and on their gates.

I do not advise that inscriptions should be the sole decoration of St. Paul's. Besides rich and beautiful materials, as marbles in linings and panellings, the glories of the inanimate creation, as they show forth the energy of Divine goodness, offer themselves as fit subjects for the adornment of His house.

With regard to the dome, the painter should be controlled and guided by architectural regard for its grand form, which, perhaps, when unadorned is adorned the most. Nay, a dome of the magnitude of St. Paul's, worthily connected, affects us chiefly by its unity and vastness, and expression of human power. Hung over the empty space, and hiding its limits in its greatness, it is necessarily sublime.

The dome of the Cathedral of Parma,—a good deal referred to,—is no guide in this matter; for Correggio, in pursuit of his favourite quality,—harmony,—would care little of what became of the architectural qualities of the dome. In fact, the "celestial hubbub" of his cupolas, though it shows from below with great exactness, annihilates the architecture.

A better guide will be found in the ceiling of the Sistine Chapel by Michelangelo, who, in all the subjects there painted, except the first (the Deluge), which, on finishing, he perceived to be on a wrong principle, introduced no backgrounds or figures on more than one plane. Michelangelo was architect as well as sculptor and painter. Correggio was painter only.

SAMUEL HUGGINS.

The India Office having advertised for tenders for the supplying of fifty-two weighing-machines, amongst others tendering was the firm of Messrs. Bartlett & Son, of Bristol, who were successful.

ARCHITECTURE OF THE HIMALAYAS.

ROYAL INSTITUTE OF BRITISH ARCHITECTS.

At the ordinary general meeting of this Institute on Monday evening last, Mr. Horace Jones, President, in the chair, a paper by Mr. William Simpson, Honorary Associate, was read by the secretary, in the unavoidable absence of the author. The paper, which was illustrated with a selection of original sketches, commenced by remarking on the large geographical extent of the Himalayan regions, but the author said he proposed to deal mainly with the architecture of the Sutlej Valley. The time he spent in the hills was limited to two summers, those of 1860 and 1861, so that it was now over a score of years since he visited it, a lapse of time which had brought with it many regretable gaps in his memory. In 1862 he returned to England by Cashmere, on the architecture of which country, as he reminded the Institute, he read a paper before it in that year, and but a few years ago he had given them an account of the Buddhist architecture of the Valley of the Jellalabad. He thought the Himalaya buildings were originally wholly of wood, in view of the vast forests of *Cedrus deodarus* to be found there still, and of the analogous instance of the primæval wooden architecture in the Indian plains. In the parts of the Himalayas which he visited, stone, of which there was, of course, no lack in a hilly country,—was used in combination with timber, but the structures he saw were of no antiquity, and were undated. From the Sutlej to the Ganges both materials were used for most of the better class of houses, and even for very poor ones, reminding one of the old English combination of wood and brick, as at Chester. But in the Himalayas the wood was always laid horizontally, and never perpendicularly or diagonally, as in the English examples. In the well-built houses the wood was very carefully arranged, the beams being a foot or so in depth, extending the whole length of the wall,—a beam on the outside and another on the inside, the space between being filled up with stone,—the wall at right angles having its beams laid on the two just mentioned, on which again rested the next set of beams of the first-mentioned wall, and thus they went on alternately. In one house which he saw building the ends of these beams were slightly let into each other, so as to hold them in their places, and, in addition, small pieces of wood were dove-tailed in between each pair of beams to prevent their bulging out through the pressure of the stones. From this description it would be understood that the mass of woodwork was capable of holding together of itself without the stones, which are filled in between, to make it a solid wall. On the top of this combination of wood and stone stood the real dwelling, which was altogether of wood. By means of beams it overhung the more solid structure beneath. The style was illustrated by a drawing of the Bussahir Rajah's palace at Serhan, of which a detailed account was given. A comparison was also drawn between this palace, still occupied in 1860, and buildings dating from the reign of Asoka, B.C. 250, which are figured on the gateway of the Sanchi Tope in Central India. In spite of differences in detail, the points of resemblance between the two Indian styles, parted by twenty-one centuries in time and by half the length of the vast peninsula in space, were found very striking. In both cases there was a lower story of considerable height, in both the windows were very small in size and very few in number. The lower part of these houses dating from Asoka might, Mr. Simpson owned, have been of stone, but he was inclined to think it was generally of *cucha* or sun-dried brick. There was nothing to show it to have been of wood. Above this story came the part of the house in which it was plain from the sculptures Asoka's people lived. It overhung the lower part, and was wholly of wood. In general this upper story was very like the Himalayan examples. But when they compared the details there was considerable difference in the forms, the most marked being the circular roof, instead of the pointed, as at Serhan and elsewhere in the Himalayas. Still, while recognising these dissimilarities, we had in these Himalayan houses the nearest approach among the present styles of Indian building to that practised in Asoka's time. In the Dravidian architecture of Southern India most of the details could be traced back to the same old Buddhist period, but not only had the style been changed but the construc-

tion was altogether different, so that the general result had no resemblance. There was every reason to believe that from Cape Comorin to the Indus, and most likely beyond that river, the houses 2,000 years ago were all built much as represented in the sculptures at Sanchi and elsewhere. This mode of erection had long ceased to be practised, and the houses now to be seen in the plains bore no likeness to those of the past. The Himalayas had not been so liable to the effects of conquest, and that was why so many things there were left unchanged, the architecture amongst them. Mr. Simpson discussed next, at considerable length, the question as to what led to the geographical separation of the two forms of roof, comparing forms found in Cashmere, Nepaul, and even in China, but confessedly without arriving at any tangible result. For himself, he could easily accept the antiquity of the types peculiar to the Himalayan villages. He was impressed with the marked primitiveness of almost all he saw there. Their religious rites bore a stronger likeness to those of Palestine in David's time, than to anything found in India. Every village had its *khuda* or god, which was carried about on men's shoulders with staves, exactly like the Ark of the Covenant. On festival days, the villagers danced round these objects of worship, as the Hebrew King did round the Ark. He saw some temples which were away from the villages, in sacred groves of the Deodar, these trees never being cut down save to repair the temples, reminding us of the cedars of Lebanon, which to this hour were held holy from their having been used in the building of Solomon's Temple, the link of association being all the more noteworthy owing to the fact that the *Cedrus Libanus* and the *Cedrus deodarus* belong to the same botanical genus. Some account was given of the temple at Chini and of those at Chergaon and Jacko. In front of the first-named stood a picturesque structure called a Dharamsalah, a word meaning rest-house. Each village had one, and they were placed in front of the temples. Travellers used them for resting in, as they were the only hotels in those parts of the world, but they were also used for ceremonies; for the Devi or god was sometimes brought out and placed there. The Dharamsalah stood on a rudely-paved circular space, resembling one of the village threshing-floors. At one of the Chini festivals the Devi was brought out and carried round the Dharamsalah. A rude kind of music was kept up with long horns and drums, the men and women holding each other by the arms entwined behind their backs and singing all the time, swayed backwards and forwards, as if salaaming the Devi. Thus they went round in a ceremonial dance, followed by the Devi borne on the shoulders of two men, with others near it as attendants. Between the dances the Devi was placed in the Dharamsalah. At the temple in the woods near Chini, there was a Dharamsalah in which the Devi was placed when the blood, fruit, and other offerings were presented to it. Mr. Simpson said he had been silent as to the many forms of Himalayan architecture copied from the plains, his object having been to describe those features peculiar to the hills. But he must make one exception as to temples with Sikras, *i.e.*, the curvilinear towers or steeples peculiar to Hindoo temples, of the Himalayan types of which he accordingly gave some account. He spoke also of the temple at Gangootree, sacred to Gunga-jee in the respectful manner of referring to the Ganges, represented there by a female and a crocodile. An appendix was devoted to the Himalayan bridges, which were very graphically described. Their construction in each case was the result of the materials to be found in the different localities. In the Darjeeling part of the Himalaya, where the bamboo was plentiful, that was the material employed; in Thibet, where wood was scarce, bushes twisted into ropes were used. In the Sutlej valley a favourite kind of bridge was a single rope made of the hair of the Yak or wild cow of the Himalayas. In those regions, as elsewhere, streams varied in size and bridges also in every detail. He had himself passed over some very simple structures of the most rudimentary types, and many of them were in such a shattered condition for want of repairs that a respectably brought up barn-door fowl might have thought twice before venturing to proceed. Mr. Simpson pointed to a slight sketch of a bridge over the Sutlej at Wangtoo. As that place was on the Hindostan and Thibet road it might have been taken for granted that British engineers had something to do with it, but it was constructed in all its details on the native plan, and he was under the impression of having somewhere read that its span is 70 ft. The object evidently was to give weight to support the large deodar trees built into it. The accompanying illustration represented a bridge over the Tonse River. It had once been a substantial erection, but was now somewhat the worse for wear. Its details might be easily followed. Some years ago he had seen a picture of a Norwegian or Swedish bridge, so like these Himalayan bridges that it might have passed for one of them. After describing some of the bridges in Cashmere, Mr. Simpson remarked that none of them have railings, the absence of which was wont to strike the eye of the European at first sight of them. One of the bridges at Srinuggur, built in this style, had a row of wooden shops on each side, as if in quaint parody of old London Bridge. Mr. Simpson added some notes on Thibetan architecture. They were for the most part illustrations, covering a wide Buddhist area, of an inference drawn by him in his paper read three years ago, from one or two small fragments of a Buddhist monastery, that the walls of such buildings were wont to slope inwards.

In the discussion which followed,

Lord Stanley of Alderley observed that although several of the drawings exhibited by Mr. Simpson showed resemblances to exist between the buildings of the Himalayas and those of China, still, he believed that those resemblances were solely due to the nature of the materials used. People using fir logs for building in mountainous regions would necessarily build in the same way. Many of the *châlets* of Switzerland had roofs very similar to those described by Mr. Simpson as existing in the Himalayas, and such roofs were common in the Basque country. Therefore, he did not think too much stress should be laid on the inference drawn by Mr. Simpson from the sculptures which depicted the houses of King Asoka's time.

Mr. Kidner concurred with the last speaker. As to Mr. Simpson's theory regarding the batter given to the walls of Buddhist temples, he (Mr. Kidner) had been in China, but as far as he had seen, whenever a batter was given to a wall, it was only as the outcome of necessity, as, for instance, in retaining walls.

Colonel Yule, C.B., pointed out that there were two possible origins of the resemblance of buildings to each other, one of which undoubtedly was, as had been pointed out, that with similar materials similar results would be produced; but there was presumptive evidence that the resemblances noted by Mr. Simpson were the result of other influences. Some of the bridges of the Himalayas were constructed exactly on the principle of what was sometimes called "the false arch," which was one of the most ancient methods of construction in the world, the stones on either side of the opening to be spanned being corbelled out one above another, until, when the two halves nearly met, the intervening space could be spanned by a single stone. This method of construction was seen in the Treasury of Atreus, at Mycenæ. In one of Mr. Layard's books would be found a plate showing a bridge of similar construction. He had seen a drawing of a bridge in the Andes very similar to one of the bridges sketched by Mr. Simpson in the Himalayas. These were all, of course, illustrations of the results of natural contingencies, or, in other words, of the outcome of necessity in dealing with like materials under somewhat similar conditions. But he did not think that the roofs described by Mr. Simpson as existing in the Himalayas, and found in China, Burmah, and Siam, owed their similarity over so large an area entirely to structural necessities. He could not help thinking that there must have been some direct communication of the style that went with the Buddhist religion in the early times. There was one peculiarity to be found in all the palaces of China, Java, and Burmah, viz., a kind of central hall, similar to that to be seen in all pictures of the Palace of Pekin. Upon a great central mass of masonry was raised a large pillared hall of timber, roofed with wood. The same feature, or the consequence of it, existed in India,—for example, in the great Palace of Delhi, where the great central mass of masonry was surmounted by a colonnade of masonry. He believed that this was a peculiarity originating in India. Mr. Simpson had alluded to the resemblance of the architecture of the Himalayas to that of the houses shown on the bas-reliefs of ancient Buddhist structures. The resemblance was very striking. In each case there was a stone substructure, over which projected the upper or habitable part of the house, built for the most part of timber. The difference shown in the roofs was, however, very remarkable. In what way the semicircular or horseshoe form of roof (shown in the sculptures on the Sanchi tope of houses existing in the time of King Asoka) originated, it was not easy to conjecture. It might possibly have originated from the use of bamboo bent over a building to form supports for the roof-covering. The shape of this, which was, perhaps, the most ready form of roof available, might afterwards have been imitated in carpentry. That the horseshoe form of timber roof did not arise out of structural necessities seemed to be established by the fact that such roofs were actually introduced within the solid rock-cut temples.

General Maclagan, R.E., said he had been over very nearly the whole of the ground traversed by Mr. Simpson, and it occurred to him whether it might not be that one object sought to be attained by the use of the roofs with verandah-like openings which had been described was to afford a space for promenade under them, which should be free from snow in winter time, and available for what would be equivalent to out-door exercise. With regard to the bridge mentioned by Mr. Simpson as existing over the Sutlej at Wangtoo, the actual span is 120 ft. At the time when Mr. Simpson visited it it was a native structure, but it had since been re-constructed by British engineers on exactly the same principles, although it had been more solidly built. The same method of construction was used because the materials required were found actually on the spot, and because the only available labour was that of men who were familiar with the construction of such bridges. This particular kind of bridge was of some interest at the present time, for it embodied the principle which had been adopted by Mr. Fowler for the bridge which would have the largest span of any in the world,—that over the Forth at Queensferry. From the piers and abutments arms would stretch outwards and upwards until the span is capable of being covered by a single girder. The principle of construction would be virtually the same as that in the Himalayan bridge, but the material being so different, viz., steel instead of wood, the details would vary to some extent.

Mr. H. G. Keene said that the roofs described by Mr. Simpson as existing in the Himalayas, and those to be seen on the *châlets* of Switzerland, were, of course, very similar, but their similarity was suggestive of nothing beyond their suitability to throw off the snow which fell upon them. Mr. Fergusson maintained that the Hindoos were not ignorant of the arch, for the rock-cut temples afforded evidence of their acquaintance with it. But, said Mr. Fergusson, they refused to use the arch, because they believed that an arch never slept. With regard to the vaulting of the Taj, it was, in his opinion, built without centreing, in the same way as a domed mausoleum which he saw being erected at Agra. The workmen built circles of stones one above another, gradually converging to the centre, the rings or courses being clamped back to each other. Thus there was no true vault, and not even an arch.

Mr. Purdon Clarke said the peculiar roofs described by Mr. Simpson occurred in parts of India most remote from the Himalayas, and where there was no fir timber. For instance, on the Travancore coast such roofs were very common. He believed that Mr. Fergusson had called attention to this circumstance, but was unable to offer any explanation of it. With all deference to the opinions of some of the gentlemen who had spoken, he did not think that the roofs in question could be accounted for on the ground of climatic necessities.

Mr. Kidner observed that large projecting roofs of the kind referred to were suitable to either cold or hot climates. In the one case they would throw off the snow, but in the other they would keep off the heat.

Mr. Lilley, of the Royal Asiatic Society, said that his researches led him to conclude that the earliest architecture of India was of the pagoda or Chinese type.

Mr. Phené Spiers said he had been struck

with the extraordinary resemblance which was to be seen between Mr. Simpson's drawings of Himalayan buildings, and drawings of Japanese temples. It had been suggested that the fringe-like ornament which was a feature of the exterior of the temples was suggested by pendent icicles, but in his opinion it was the outcome of the custom of hanging up on the occasion of certain festivals and ceremonials fringes of wool or paper.

The Chairman, in closing the discussion, said that Mr. Simpson's paper was a very interesting one, and raised some curious questions which were well worthy of further consideration. There was no doubt that, as had been suggested by some of the speakers, the use of like materials under like circumstances would produce somewhat similar results, and to this was to be attributed the fact that Mr. Simpson's drawings of buildings in the Himalayas were somewhat reminiscent of corners of Nuremberg and of buildings in Norway. With regard to the vaulted tombs of India to which reference had been made, Gwilt, in one of his early works, narrated the circumstance that a rajah, wishing to build a fine mausoleum for himself and his family, sent out an intimation that any one who would undertake to build the structure should receive a very handsome reward. One man, who was well known for his skill, ingenuity, and resource, offered his services, which were accepted, and he began the work. When he had built the walls a few feet above the ground level,—to the height, in fact, at which he proposed to spring his dome, he suddenly disappeared, and no reward that could be offered could induce him to return until a year had elapsed, when, at an audience of the prince, he again made his appearance, when he was recognised and seized. When asked what excuse he had to offer for his absence, he replied, "Great Prince, I have come back, and am now ready to complete your tomb. If I had not left the walls for a year to settle, you would have induced me to go on building the dome within a very few months, and it would have fallen in, and then, hopeless would have been my fate! Now that the walls have consolidated, I shall be happy to finish your tomb, and it will stand!" In conclusion, the Chairman put to the meeting a vote of thanks to Mr. Simpson, which was carried with applause, and the meeting terminated.

"ANTONY AND CLEOPATRA."

MR. TADEMA, in an appreciative note in reference to our remarks on his picture under the above title, says, "I regret that you mistake the scene of action. It is not in Tarsus, but in the harbour of Alexandria, the arrival of Mark Antony in Egypt; hence the Roman Fleet." We, of course, supposed that the picture was intended to represent Antony's first sight of Cleopatra, when she produced such an effect by appearing in her barge as Venus, as described in the picturesque passage in Plutarch which Shakspeare has closely imitated in his drama. Now, Plutarch expressly says that Mark Antony summoned Cleopatra "to make her personal appearance in Cilicia to answer an accusation that she had given great assistance in that war to Cassius." (We quote from the latest and best English translation, that edited by Clough.) After receiving several such mandates, "as if in mockery of them, she came sailing *up the river Cydnus*, in a barge with gilded stern and outspread sails of purple, while oars of silver kept time to the music of flutes and fifes and harps." Of course, if Mr. Tadema does not mean to represent the *first* meeting of the famous pair, but only one of their subsequent re-unions, it may have been in the harbour of Alexandria; but the supposition would take away a great deal of the point of the picture, as far as the expression of the two principal figures is concerned. If it is intended to represent their first meeting, that meeting unquestionably did *not* take place in the harbour of Alexandria, but at Tarsus, the principal city on the Cydnus, where Antony apparently had at the time his headquarters. The question does not at all affect the real value of Mr. Tadema's fine painting; but the attitude and expression of Antony, conveying the idea of mingled surprise and curiosity, certainly suggest that he sees Cleopatra for the first time, and in that case the mistake about locality is Mr. Tadema's, and not ours. The presence of the triremes would be equally probable in either case. Tarsus, though a few miles up the Cydnus, was a port, and Antony would, no doubt, have had part of his fleet with him there.

ROYAL ARCHITECTURAL MUSEUM.

THE annual meeting for the distribution of prizes gained by the students of the School of Art established a few years ago in connexion with the Royal Architectural Museum, was held in the Museum, Tufton-street, Westminster, on Monday evening last, the Right Hon. A. J. B. Beresford-Hope, M.P., President of the Museum, in the chair.

From the statement read by Mr. Randall Druce, the curator, it appears that during the school session extending over a period from September, 1881, to July, 1882, ninety-six students attended the evening classes, twenty-five the Saturday afternoon Life Class, and nine the Saturday afternoon Ladies' Class. The Plasterers' Company's second prize was gained by Mr. Treleaven. This is the fifth year that either the first or second prize offered by that Company for modelling has been gained by students of this school. In all, 80*l.* 14*s.* 6*d.* was earned as a Government grant.

The following are the names of some of the principal prize-gainers, viz., Thomas Treleaven, Silver Medal, and the sum of 4*l.* given by the Plasterers' Company for design for a bracket; Robert Stephen Ayling, Bronze Medal, for design for iron gates; and James Thomas, Bronze Medal, for studies of mosaics. Queen's Prizes were gained by Thomas Treleaven, R. S. Ayling, James Thomas, Joseph Holgate (for Design), and Alfred Johnson (for Painting from the Life).

Mr. Beresford-Hope made an excellent and characteristic speech, and Mr. J. P. Seddon spoke as to the efficiency of the teaching given in the school, especially by Mr. Brown, the head-master.

A vote of thanks was accorded by acclamation to the chairman, and the meeting terminated.

PETERBOROUGH CATHEDRAL.

ACCORDING to promise, we now give a view of the central tower of Peterborough Cathedral, which shows also the fine clearstory and other parts of the building.

It is stated that in consequence of additional work undertaken in connexion with the restoration of the Cathedral, involving the complete removal of the present choir-screen, it is anticipated that preparations for pulling down the dangerous central tower will not be completed for at least a month. The Dean and Chapter have intimated their intention to extend the choir to its original dimensions; with this object the fine screen, erected fifty years since, is undergoing demolition. The portions of this costly screen are being deposited with the late Dr. Jeune's memorial pulpit in the eastern chapel of the cathedral. The stalls of the Dean and Canons are also being removed. A thorough restoration of the cathedral having been decided on, it is expected that the work will extend over about five years.

The Dean and Chapter do not propose to publish a list of the subscriptions received until they are prepared to state generally their intentions as to the nature and extent of the works proposed to be undertaken.

ROYAL COURTS OF JUSTICE CHAMBERS, STRAND.

THIS building, which is now rapidly approaching completion, is erected on a plot of land of some 10,000 ft. area, exactly opposite to the Strand entrance of the great quadrangle of the New Courts of Justice. It enjoys the further advantage of having at its southern extremity an entrance direct from the Middle Temple, from which a broad covered footway will lead up into the Strand, and down into a subway to the Law Courts, which is proposed to be formed under that thoroughfare.

The building consists of two basements, ground, mezzanine, and five upper floors, and is divided into three sections:—1, a legal business club, occupying the whole first floor of the front building; 2, offices, consultation and arbitration rooms, for lettiug, occupying the remainder of the upper floors; 3, a restaurant which will take up the ground-floor and both basements, the mezzanine, and kitchens on the top of the west wing.

The Strand front, a view of which we give in our present number, is for the most part in red sandstone, from Aspatria, and is treated in the style of the French Renaissance, but with rather bolder detail and very slight proportion of carving. The whole of the ground-floor façade is, however, in polished red Peterhead granite, supplied by Messrs. Manuelle, and is somewhat more severe in treatment.

In the restaurant a novel feature will be the crypt or upper basement, which covers the whole site, and is some 135 ft. long and 79 ft. wide. It has been carried out with Norman piers and groining, and will be artificially lighted and ventilated. On the ground-floor, which is 21 ft. 6 in. high in the clear, there is a dining-room, 32 ft. wide by 48 ft. long, and a luncheon-room, 36 ft. wide by 79 ft. long, with smaller bars in the front and on the mezzanine.

The internal fittings are in American walnut, relieved by sequoia and oak.

The whole of the front vestibule, one side of which is open to the street, is lined with Doulton ware, from the well-known Lambeth Art Potteries, which also have supplied the numerous hand-painted tiles on which the decoration of the interior chiefly depends.

The offices will be served by rapid passenger and deed-box lifts, which together with the service-lifts of the restaurant, will be worked by high-pressure hydraulic power, and are being made by Messrs. Archibald Smith & Stevens, of Battersea.

The building will be supplied with water from an artesian well, which is being sunk by Mr Thos. Tilley, well engineer, and will be lighted by about seven arc and 200 incandescent electric lamps. Telephonic communication will be laid on not only to the general system, but into each of the Courts of Law.

Mr. William Wimble, of 9, Queen Victoria-street, and Mr. Goymour Cuthbert, A.R.I.B.A., of 15, Walbrook, are joint architects. Messrs. Ashby & Horner, of 8, Aldgate, are the contractors, and Mr. Brady is clerk of works.

ADDITIONS TO A FACTORY AT NORTHAMPTON.

THE plan shows a portion of the additions and alterations now being carried out for Messrs. Birdsall & Son, bookbinders, Northampton.

The principal object in arranging the plan has been to facilitate intercommunication between several departments, and to economise the supervision. These are necessarily great in a trade full of minute details and with much subdivision of labour; therefore every available bit of ground has been utilised up to the boundaries of the property, so as to get as large an area as possible on this floor, and to admit of several branches of the work being in close communication with each other. This, of course, necessitated top lighting, and the roofs are arranged to run as nearly as possible east and west, securing a clear north light throughout this part of the factory. The south sides of the roofs, which are covered in with slates, have an air space between the match-boarded ceiling and the rough boarding, with the object of checking the extremes of heat and cold.

The ironwork in roofs has been carefully calculated, so that whilst each part is fully strong enough to do its work, there is no waste of metal. The principals are constructed entirely of T and L iron fixed together with plates, rivets, and bolts, as shown on the details, and the valley gutters are iron troughs running the whole length of the building, and large enough for a man to get along.

Louvre ventilators, with inside shutters to check down-draught, are provided in each of the hips, and also in the brick gables. The floor is boarded throughout, with the exception of the glue-room, which is paved with York slabs.

It is intended to heat the whole of the buildings with hot water.

The general contract has been taken by Mr. G. J. Fisher, of Northampton, for 871*l.*; the ironwork in columns, girders, principals, &c., by Mr. H. Mobbs, of Northampton, for 335*l.*; and the patent glazing by Mr. T. W. Helliwell, for 138*l.*

The architect is Mr. Thos. Garratt, 19, Queen Anne's-gate, Westminster, S.W.



CHRIST CHURCH CATHEDRAL, DUBLIN: VIEW OF NAVE, LOOKING EAST.



PETERBOROUGH CATHEDRAL: TOWER AND CLEARSTORY.





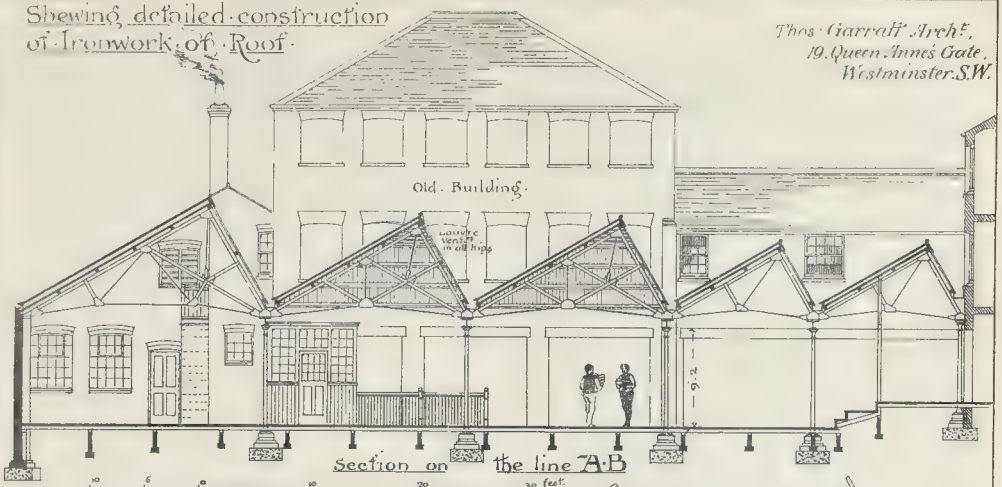
C. F. Kell, Photo-Lithe Castle St

ROYAL COURTS OF JUSTICE CHAMBERS, STRAND.——Mr. William Wimble and Mr. Goymour Cuthbert, Architects.

Additions to a Factory at Northampton for Messrs Birdsall & Son.

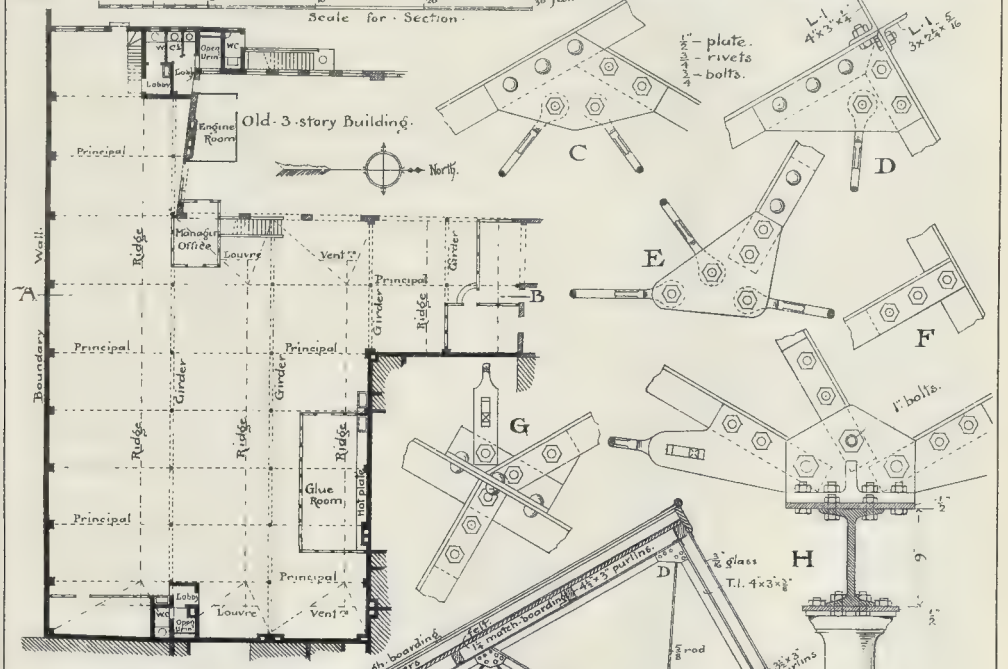
Shewing detailed construction of Ironwork of Roof.

Thos. Garratt Archt.,
19, Queen Anne's Gate,
Westminster. S.W.



Section on the line A.B

Scale for Section.



Ground Plan.

New Buildings black.
Old ditto hatched

Section of Wide-span Roof.

Scale for Plan. feet

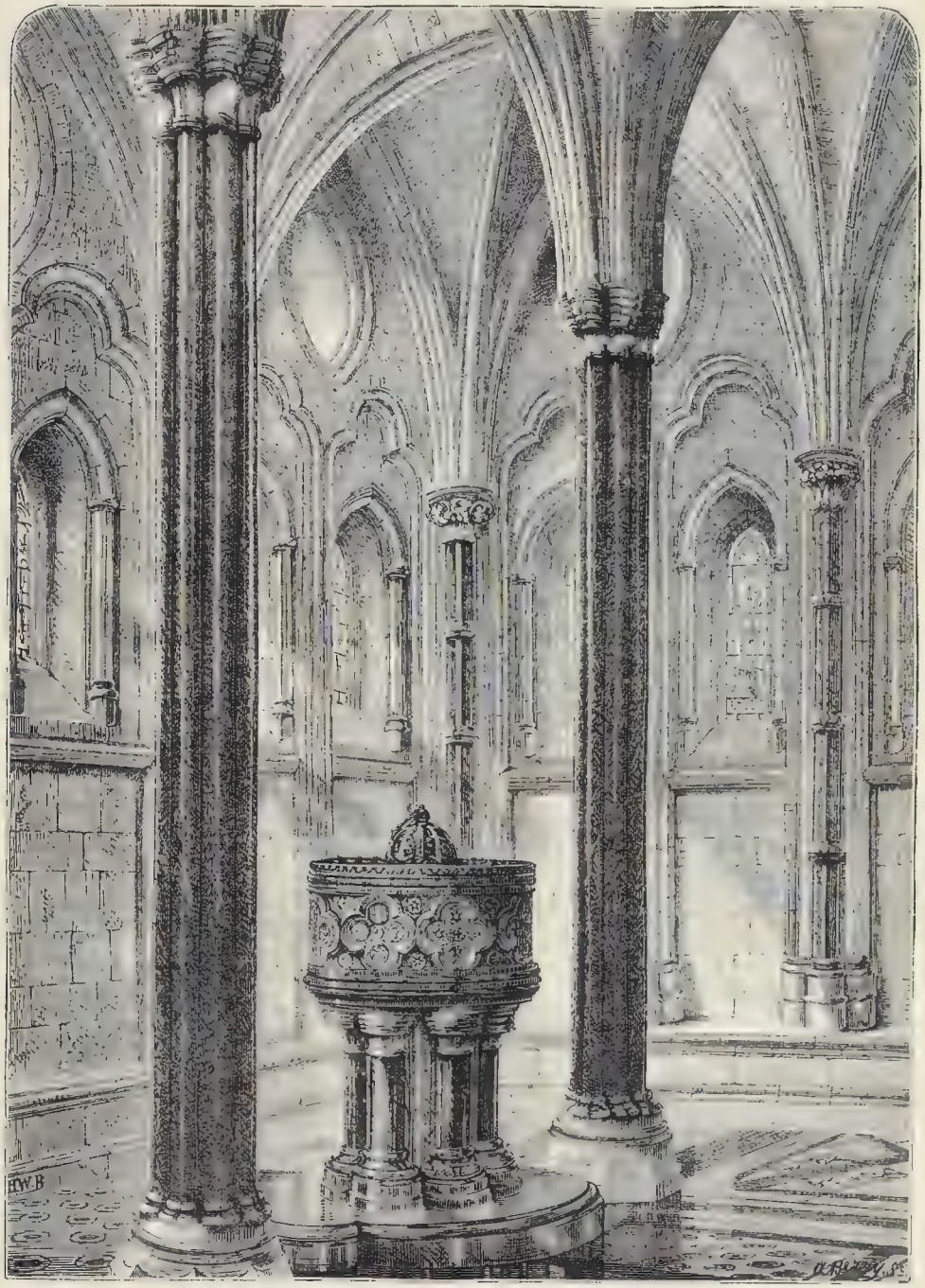
Scale for Section of wide span. feet

Scale for Details. inches

T.G. delt. Nov. 1882.

Whiteman & Bass Photo Litho 236 High Holborn

Wyman & Sons Printers 74 Queen St.



CHRIST CHURCH CATHEDRAL, DUBLIN: INTERIOR OF BAPTISTERY.

THE ORNAMENT OF THE PERIOD.*

SOME objection may fairly be taken to the title which I have chosen for the subject of this evening's talk,—the Ornament of the Period! What is it? Well, sometimes it is Greek, sometimes Roman, sometimes Mediæval, more or less ingeniously done anew. It may be of the sixteenth century, or the seventeenth, even of the eighteenth,—in fact, of any century but the nineteenth, of any period but that in which we live. So emphatically is this so, that we might fairly say that the one thing certain about the ornament of the period is its non-existence. But that is only half the truth. Equally true is it that something of us and of our time must be embodied in the work we do; and even if there were no other quality about it appertaining to us, it would betray to the "coming races" its nineteenth-century date by the very simulation of earlier periods which belongs distinctly to our age.

It is rather a remarkable circumstance that all this repetition in which we indulge is done in the avowed honour of old work, in which there was scarce ever a trace of any such thing as the attempt to reproduce the past. The men who did the real, good, old work were men wise enough in their generation to let by-gones be by-gones, and yet we think to do them honour by doing just the opposite to what they did, and what they themselves would heartily have abhorred. Whenever we repeat the forms invented by them there is all the difference between our work and theirs that there is between invention and mimicry, between reality and affectation, between life and galvanism. I said that the ornament of the period had some character of its own; but it is a character more honoured, to my thinking, in the breach than in the observance: what distinguishes nineteenth-century ornament from all other is its insincerity, its unreality. I have no wish to dogmatise, and no intention of decrying those who may feel differently from myself. It is quite possible for a man to be so deeply imbued with the art of a past period that it comes naturally to him to express himself in its language. And we could ill spare the utterances of some of these men. Indeed, the very affectation of a sentiment argues the existence of the sentiment affected, as surely as smoke betrays the presence of fire. But the men who live in the past are not, and in the nature of things cannot be, the majority; nor yet are they the true exponents of this age of ours. Perhaps we may even be permitted to bear them some slight grudge, inasmuch as they are in a degree responsible for the affectation of the feeling which really inspired them. Anyhow, that affectation has grown apace in recent years, and it would scarcely be too much to say that it has choked the growth of genuine design among us. Surely that is a serious cause for quarrel with it. The student is taught from the beginning to lisp in a tongue that is foreign to him. Some liberty of selection is, indeed, allowed; he may choose the dead language in which to express himself; but it must be dead,—that is the one restriction. The sin unpardonable is to indulge in a natural ejaculation. It is time to rebel against such bigotry! What right or reason is there in it?

> "Why should I say I see the things I see not?
> Why be and be not?
> Show love for what I love not, and fear for what I fear not,
> And dance about to music that I hear not?"

If, indeed, the music of the past charm your ear and incite you, frisk away, by all means, to the tune of "Auld lang Syne"; but the mischief is that we are expected to dance about to music that is mute to us, and a sorry figure we cut. There is something infinitely ludicrous in the notion of the members of a serious and sedate profession moving in steps stately or grotesque, as the case may be, to a music so far off that not even the echo of sound reaches our ears. We might forgive them that, and even enjoy the fun of it, if only we believed that they themselves moved spontaneously to a measure audible to their more delicate nerves alone; and if they say that they hear it, we are bound, even though their movements be not rhythmical, to believe them, however inconceivable it may be to our grosser senses. But when they would compel us to join hands and mingle in the fantastic dance, then it is high time to speak our minds; and even if we protest somewhat strongly, there is some excuse for strong language. No one will be at the pains to deny that the essays in style, which constitute the greater part of modern architecture and ornament, do to a certain extent exercise the faculties of the student; but it does not follow that education of a different sort would not have developed them to a much further degree. We may acknowledge that the Latin verses which absorbed so much of our time at school were not without influence on us for culture, without denying that our time might have been very much better spent than in writing doggrel in a dead language; and whatever may be thought of the study as a sort of intellectual gymnastics, calculated to develope and strengthen the fibre of the brain, no one contends for the verses themselves that they are anything but exercises; neither have our ingenious experiments in Classic, Gothic, or Renaissance style any just claim to be more than exercises. They stand to art much in the same relation as did our boyish Latin verse to poetry. Now and again, a poet, like Gray in the last century, or Landor in this, chooses to express himself in a tongue that can appeal only to the learned few; now and again a painter sees fit to express himself, so to speak, in the language of learning rather than of art. Such men may be poets, indeed; but if they decline to use the vulgar tongue, they have no right to look for the appreciation of those who know no other. And if an artist choose to masquerade in the guise of an antiquary, he has none but himself to blame if he be mistaken for something less than an artist. There is some satisfaction, to my mind, in the certainty that the artist, of whatever class, who poses as an antiquary, does, by so doing, shut himself out from the sympathy of his contemporaries. The number of the public who really care two straws about style is infinitesimal. They are certainly not enough to keep a profession going. And, since it is ultimately upon them that the bread of the artist depends, the prospect is not quite so hopeless as at first sight it would seem. The artist may be starved into sympathy with his age. Not to speak of the public at large, I cannot bring myself to believe that the main body of architectural students really feel that the expression natural to them is that of the thirteenth, sixteenth, or any other century than our own. Such a state of things could be explained only on the supposition that those alone who had archæological tendencies were attracted to the architectural profession. The student soon comes to appreciate the value and beauty of style in old work, but the one idea associated in the mind of the general public with styles and periods is that any one of them in itself is monotonous and wants the "relief" of some other style to "set it off." An example of this popular notion, familiar to all, is afforded by the type printer. He is a flagrant instance in point. Give him a simple title-page or prospectus to print, and he will set it up in types of as many different periods as he can possibly manage to introduce,—"displaying it," I think he calls it,—and a pretty display he makes of his ignorance. Between such ignorance and the pedantry of the purists, surely there must be some course open to a man who acknowledges to himself that he belongs, not to some generations after his time, but to his own day. It is curious how the public have allowed the style of this period or that to be fastened upon them, caring in their hearts about neither one nor the other. Had they cared, they would not have submitted so easily,—certainly they would have hesitated before allowing the deposition of the reigning sovereign in favour of the ghost of Queen Anne. They had always just a suspicion of their own deep ignorance of the subject, and dared not, therefore, follow any fancy they may have had for this or that. Their most potent impulse (if that may be called an impulse which is only a fear) was and is the dread of singularity. Safety there is, of course, in holding on always to the skirts of the past; but it is to be hoped that there is more of the spirit of art militant in us than that we should rest content with the laurels (dried ones) other men have gained in other days. It was by no such timidity that they won their wreaths. And if cowardice is to be considered as a characteristic of modern art, the sooner we throw up the sponge the better.

Of course we owe our possibilities in a great measure to the labours of the archæologist and antiquary. It is they who bridged over for us the gaps between the periods of art and our own day; but we have already paid a heavy price for the accommodation, and artists can scarce help feeling that the time has come when the toll should be abolished. The high road to excellence should be open to all men. The sad and serious side of the question is that so much of the modern work which does not affect any fashion of past art shows a hopeless ignorance of style altogether,—an ignorance, indeed, of what style is. There are such abundant instances of ignominious failure to which the adverse critic could point and say,—"Is *that* the kind of thing you advocate?"

We will not speak of architecture proper, for that might be difficult and delicate ground to go over. But think for a moment of the productions of the uneducated draughtsmen who boldly rush in where architects fear to tread, and furnish nondescript designs for all the miscellaneous wares which fill the fashionable, fashion-fostering shops, and flood the world with rubbish. The thought is enough to make us tolerant even of the intolerable vice of pedantry. There is a class of workmen who think that to put a fret border round a panel will make it Greek, that you have only to flatten out a sprig of foliage to make it Gothic, and that if you start from one corner, and only partially occupy the space, it is, without more ado, in the manner of the Japanese. They have a notion that originality may best be displayed by piecing together scraps of all styles under the sun. They think that the forms are the style, and have no conception of the spirit underlying old work. This is not exaggeration. The confusion of ideas in the public mind as to what constitutes style is a tangle as dense as one can imagine. And this applies to those who ought to make it their business to know better, and who are, in fact, purveyors of bad taste to the public. I have before now been asked to design a stained-glass window in which the central subject was to be a group of flowers, as naturally treated as might be, surrounded by a border in imitation of a Persian carpet. The question may seem to you to be beneath the consideration of the architect, but indeed it is not a matter of slight importance to any one who believes at all in the use of art. Recollect the enormous power in the hands of a single ignorant or interested person of propagating what is, artistically-speaking, monstrous. I was asked not long ago to furnish a new design for the binding of a popular periodical, and I took some interest in doing it. Imagine my disgust when I found it had been produced in the crudest conceivable shade of a colour which it would be cruel to call violet. I am afraid to say how many tens or hundreds of thousands of these abominations it was proposed to distribute over the country. Happily, the bookbinder for whom I was working was a man of taste, and the publisher was not altogether unamenable to persuasion, so that eventually only a portion of the volumes, I believe, were issued in the objectionable colour, but every one that was so issued "made," as Mr. Matthew Arnold would express it, for the demoralisation of popular taste.

Now the fact (which I have admitted) that most of our attempts to run alone end in disaster is no argument for resting content to cling for ever to the apron-strings of our nurse. We are none the worse for the bumps and bruises that followed on our first childish attempts to walk alone. And neither will art in the end be the sufferer, but very greatly the gainer, by some venturesomeness on our part. What a delight it is always, in old work, to see where the artist has dared something, and how interesting all transition work is, from the very circumstance that you never quite know what will be the outcome of the meeting of old and new influences. Think of any one of the great cathedrals that have grown to what they are,—where Norman pillars support Gothic arches, and Decorated chapels cluster round an Early Gothic apse; whilst the nave is lighted by windows of Perpendicular or Flamboyant type; and maybe the portal shows traces of Renaissance influence. How deadly dull it would all have been if the successive generations of artists, through four or five centuries, had felt themselves called upon to play at "follow my leader." How dull it *is* where now and again the old men did hark back to a past period,—as in the case of the cathedral at Orleans, reconstructed after 1600, in a style that may best be described as galvanised Gothic. Happily, in-

* A paper by Mr. Lewis Foreman Day, read before the Architectural Association on the 19th inst.

stances of the kind are not numerous; for the most part, the men of former centuries knew how to graft their own living style on to the old stock in a way that is more than satisfactory. Many of you are, no doubt, familiar with the west front of the cathedral of Bourges. The arcading of the lower wall suffered some dilapidation, and it was necessary, early in the sixteenth century, to repair the mischief. The question was, How? The original arcading was of the thirteenth century, with trefoiled arches, the capitals (and spandrels, too, if I remember), enriched with the usual Early French foliated ornament. It would have been absurd to pull down the old work and build it all anew,—equally absurd, as they thought, and as modern architects do not appear to think, to copy in the new work what remained of the old. And yet unity of effect was bound to be preserved somehow. Their solution of the problem was characteristic, and as simple as Columbus's egg. They just accepted the old lines of the arcading, and filled them in after the manner of the days in which they lived, and in which they were accustomed to work. We have thus an arcade of Gothic arches, with carved enrichment of Renaissance design. The general effect is perfectly harmonious and undisturbed. Only when you come to look into the ornament do you become aware that it has individuality of its own, instead of being a cold copy of the earlier work. It is a bit of history, in fact, and the more interesting accordingly. Its occurrence in this stately front is as welcome as one of those traits in the life of a great man which show us a glimpse of his personality, and reveal his relation to ourselves.

You may say that we have now no style in which we are accustomed to work, and in which it would come natural to us to repair or add to an earlier structure, and that is true enough (and the more we rely upon copying the less likely are we to form a style); anything we do must naturally partake, more or less, of the character of old work; and, in the case of restoration, of the character of the particular work to be restored. The mistake, as it seems to me, lies in attempting always to make it as much as possible like old work, imitating wherever it is practicable existing details, and seeking before all things for a precedent. Let us leave precedent to the lawyers and not attempt to measure art with red tape. We know what a mess the lawyers make of it when they meddle with art. The first thought of the artist should be rather to make his work in harmony with the surrounding old work than absolutely like it; and, that much secured, the more of himself he can put into it the more interest it will have for his brother artists. Except for the evidence of the artist's personality in it, none but the most perfect of perfect work would be tolerable. Is not that an argument in favour of work that, poor as it may be, is our own? The old workmen showed that it is possible to be oneself in any craft of which one is master, and if we cannot do so much the more shame for us. Let me not be misunderstood to mean that the artist should ever consciously strain after originality. The evidence of such an attempt on his part is a symptom almost more unpromising than the inertia that is content to let things be, be what they may. Once in the past such an attempt was made, and on a considerable scale, when the Jesuits had the notion of inventing an ecclesiastical style of their own, and a fearful and wonderful order, or disorder, of architecture, it was that they devised. There is at least one advantage about its uniform tastelessness, namely, that the student knows, almost for certainty, that the church of the Jesuits will have no attractions for him; and he can safely save himself the trouble, therefore, of turning aside in search of it, or even of crossing its threshold if it chance to lie in his way. The only case I know of in which he would miss anything is in the Church of the Jesuits at Venice.

Originality and individuality will surely come out in a man's work, if only he be free to do what he thinks befitting the occasion, instead of being bound to do as was done on some former occasions. It may well be that the solutions other men may have found for their difficulties, may go far towards the solution of the difficulties that confront us. But the world goes on and not backwards, and to restrict ourselves to the repetition of what has been done is deliberately to put the drag upon progress. There may be no great harm in that sometimes; for the progress of civilisation is uphill and downhill, and there are many chances of disaster on the road to improvement. Still the drag is only for occasional use: it is not a means of progress. And if we want to get on, we must rely, not so much upon the old vehicle, as upon the use we put it to, and the faculties to which we harness it. To drop the simile, it seems to me that we have, indeed, to possess ourselves of the accumulated experience of the past masters of our craft, and to *use* it. To stand helpless before it in the attitude of admiration, or to pile it up across our path, so that it shuts us in from doing, is equally futile. It should influence us in all our efforts as live religion influences our every act. We should refer to it in every emergency, almost unconsciously, as to our conscience. If, in designing, we were determined to give up our minds to the best possible solution of the problem (and every design *is* the solution of a problem), we could not solve it without reference to the knowledge which we had acquired from the study of old work. That, therefore, may well be left to take care of itself. Were we to dismiss, on the one hand, all thought of style (which is impossible),, and on the other, all thought of self (which is perhaps no less impossible), we might, having, on the one hand, some knowledge of style, and, on the other, some individuality of our own, arrive at a result worth reaching. What we have to think about is neither style nor originality, neither as to which was the oldest, nor which will be the newest way of doing the thing, but how we best can do it! Of course, we must study old work, and study it with all the earnestness of enthusiasm. And, equally, of course, we cannot forget in what we do the styles which went to teach us how to do it. In fact, what we have to do is to digest our learning. Art may be, and architectural art and all that pertains to it must be, nourished to a great extent upon antiquarian research; but undigested archæology is, nevertheless, not art; and whenever the archæology asserts itself in our work it is a dangerous sign. If you can pick out bits in a design, and say this was inspired by the nave of such a church, that by the choir of such another, that by the west front of a third, and so on, it is clear that the artist who is responsible for it has not digested his knowledge. There is less danger of this want of homogeneousness where some one fixed style is adopted and adhered to rigidly. Inasmuch as there is a certain unity in the original style, there will be a certain similarity in the bits put together; and that may be reason sufficient to the prudent man why he should restrict himself to a style that is stiff and stark. But his work will not be really *one* unless he has assimilated what he has learned. It must have passed into his blood and into his brain before he can claim it for his own. Once it *is* his, he can do pretty much as he will with it. He can combine then, only then, what he may have gathered from the most various sources. I believe it is quite possible for him to produce work, in which, indeed, you may detect the influence of different styles of art (as you may trace in a man the instincts he has inherited from various ancestors), but you cannot say where the one influence ends and the other begins; you cannot pick out this bit for Greek, that for Gothic, that for Japanese; you are driven to describe it at length, or to coin a word for it. The subtlety of the art may be tested by the difficulty in labelling it, just as a subtle tint of colour cannot be exactly expressed in a word.

When a style is no longer elastic it is proof that it is dead. No style, while it lived, was ever the cut-and-dried thing we begin by imagining it to have been. There was always change, development, growth going on,—and when we confine ourselves, therefore, to the letter of a past style we inevitably lose its spirit. The more you study old work the more you see the wonderful variety in it. The types of the text-books are among the best, no doubt, but they are only instances of types that exist in infinite variety in the old work itself. The freedom, for example, with which the Greeks carved natural foliage is a characteristic of their work which we are left by our teachers to find out for ourselves. There are in the Louvre examples of Greek foliage that seemed to me to have more affinity to Japanese treatment than to anything I was ever taught to accept as Classic. Is not this fact, by the way, suggestive as to the possible infusion of Japanese energy into Greek detail, the possible refinement of Japanese forms to something like Greek perfection? How readily the artists of the Renaissance accepted the Eastern types of ornament into their own style, and assimilated it! You see it in the bulb-shaped domes of Padua, all the more beautiful for this foreign flavour about them,—and in certain of the arts, such as damascening, inlaying, book-binding, and others, the Eastern character of the detail is quite a marked feature of sixteenth-century ornament. That type of Italian scroll-work which Holbein afterwards developed in a manner more of his own, is little more than a characteristically European rendering of details borrowed frankly from the East. This readiness of the men whom we acknowledge to be our masters to embrace within their art whatever was beautiful, is something far more deserving of emulation than the actual forms of art which resulted from that broad catholic spirit of theirs, a spirit which we only mock with little sectarianism!

I have sometimes amused myself by imagining what might have been the effect upon the artists of the Renaissance of a familiarity, such as we enjoy, with Japanese art. It would have been a sort of revelation to them, as it was to us. What use would they have made of it? They would certainly not have been content, as we have been, to import it and to copy it. They would surely have learned something from it, and as surely they would have turned the lesson to account. They would have learned, perhaps, to doubt the necessity for elaboration in ornament, and for that absolute symmetry to which they were inclined.

There is a fund of interest in observing how different nations interpreted a style differently, and the study of their different interpretations cannot but throw some light upon the course we should pursue under circumstances not altogether different. The Renaissance was a trying back, as we are trying back in the present day; but there was not much in common between their free departure from Classic art and our servile acceptance of forms that have not the slightest claim to Classic perfection. And, if the Italian Renaissance was not just a repetition of Classic details, neither was the Renaissance in France a literal version of the Italian, but a rendering essentially French, and allied (not remotely) to Late Flamboyant-Gothic. How the Spaniards enriched the style with a glow of Oriental sumptuousness! There is nothing more gorgeous belonging to the period than is to be found in Spanish and Portuguese art. In the hands of the Germans the forms hardened and assumed a grotesquerie foreign to the South. Even the English of the reigns of Queen Elizabeth and James anglicised it almost out of knowledge, and worked out a style, such as it is, which is unmistakably their own. And, again, in Norway and Sweden (not to follow it further) the characteristic strap-work blossomed, under the new influence, into floriation of a Renaissance, yet none the less Scandinavian, character.

In Italy, to return to the fountain-head, the Saracenic influence goes, in some directions, so far that it was not uncommon in the sixteenth century to introduce mock Arabic inscriptions into the design of textile fabrics. There was no great display of genius in that. It would certainly have been better if they had merely taken the hint given by the admirable ornamental use the Moors made of inscriptions, and put their own mottos into their own language in a form as ornamental as might be. But their work as it is has at least more interest for us now than if they had merely reproduced in silk or velvet some altogether Eastern stuff.

The style that is really worth striving after is the style that comes of characteristic and craftsmanlike treatment. It is infinitely more important that our building shall be like brick or masonry than that it suggest Gothic or Classic examples. It matters more that it should be constructed on principles of common sense than on the lines of old work; that it should be comfortable than that it should be "correct," whatever that may be; and that it should be beautiful than that it should be such as might have been built in the reign of any king or queen defunct. And so with all the lesser arts. The style that comes of workmanlike handling is worth far more than anything that can come of imitation. Why there should be any limit to our scope other than our own powers of expression and the fitness of the occasion, it is difficult to conceive. Say we accept thirteenth-century design as our starting-point, and propose to speak on that text, are we to borrow our sermon also? What we have to say on that subject will, if we are artists, naturally

take artistic shape in our hands, and it will shape itself in harmony with the subject. We may say what is in us to say, and quote what we please. If the quotation comes amiss it is the fault of its clumsy introduction,—whatever is apt is admirable. If something from Japan or Timbuctoo suggest itself to us as being in harmony with our design, what is to hinder us from adopting it? If we see an opportunity of infusing into it something of Renaissance grace, why not? If we feel that we can accommodate it to modern requirements in a way that was undreamed of by the Mediæval artist, why not? Any faults we make, and many they are, lie in our inefficiency and not in the endeavour. And the only sense in which it is true that we ought not to attempt so much is that we should not try to run before we can walk, but we ought all to look forward to the time when we can march onward on our own account, and not fancy that all we have to do in life is to toddle through the world.

There are many and various definitions of what style is, but practically what is accepted among architects and others as style is always a distinct reflection, if not an actual repetition, of the features of some past phase of art. There is proof of that in the names by which we christen our modern work. It is always Classic, Gothic, Renaissance, or what not, and even the latest-born of mongrels we must needs baptise by the name of Queen Anne. If by style we really meant treatment according to the principles which experience has shown to govern this or that branch of art, we should express it in our nomenclature, and classify styles according to craftsmanship rather than according to date and country. Thus, for example, instead of Egyptian, Greek, and Gothic architecture, we should speak of construction in granite, marble, or stone, and, in like manner, brick, stucco, and even concrete, would be credited each with a style of its own. We should classify metal work, not according to an epoch, but according as it was cast and chased or wrought at the anvil. Constructive woodwork would divide itself into carpentry and cabinet-work; its ornamental treatment into carving, turning, inlaying, and the like. The study of style would then be identical with the study of an art or craft, whatever it might be, and the student's attention would be drawn rather to the steps by which it had advanced to its highest point, than to the comparatively accidental character of its footprints by the way. Such study would naturally include the knowledge of any marked impression made upon the art by the influence of the day, and the course of the student would lead him gradually through all the phases of fashion through which it had passed. His faculties would, moreover, be strengthened by this comparative study of all the many stages of his art. He would not compare the one with the others without forming some distinct notion of his own as to which of them was of most vital importance to himself. His thoughts would be concentrated upon the essential fitness of things instead of on the unessential forms that they from time to time assumed. If he did not thus acquire a style more or less of his own, he would, at least, fit himself to meet any and every emergency. The knowledge he had acquired would be neither sentimental nor pedantic, but practical and available, whereas half the learning of the present schools is altogether unavailable for any professional purpose. There is a use, no doubt, in the book-learning that makes a man something more than a craftsman; but, when all is said, the true study-place of the artist is in the workshop, and his best education is in working day by day to better purpose and to higher ends. There is a kind of culture, altogether apart from daily work, that throws a glow of refinement over all we do; but infinitely more ennobling is the cultivating influence of the work itself, and that cultivating influence is in proportion to the breadth of view, the freedom of action, and the possibilities of progress offered by that daily work. The natural growth of the artist is from craftsmanship to art, and many are the craftsmen who have risen in their day (not in ours) to the foremost rank in art. On the other hand, experience shows that the step from learning to accomplishment is not an easy one, and those who begin by knowing all about a craft seldom end in accomplishing anything in it. A man is much more likely to arrive at a knowledge of Gothic principles from the serious study of architectural sculpture than to reach any proficiency in carving *after* he has mastered the theory of Gothic art. To say that the two studies should progress side by side; is to beg the question. They cannot possibly keep pace for ever. One must gain upon the other. Then, which should have precedence? I contend for the growth upwards, from craftsmanship, and do not believe a bit in the growth downwards, from archæology. Culture is the climax of all art, an ideal towards which to strive; it is not a starting-point at all, and your young Crichton, equipped at the onset with all possible culture, never does anything in the world whatever. It seems to me that our education starts too much from the platform of knowledge and not enough from workmanship. The beginner is taught to know and not to do. He knows, for example, more about style than he can assimilate, long before he can do anything worth mentioning. The future architect can talk architectural jargon before he can so much as contrive a substantial pig-stye. The student of decoration can *talk* familiarly of epochs and of masters before ever he can draw a scroll, not to say design one. Would it not be more to the point to teach the architect first of all to construct, the decorator to draw, calling their attention to principles only as they affected what they were about? As for style, in the historic sense, that, too, might safely be left till, in the natural course of study, he came to known how the difficulties besetting his craft had been successfully solved in the past. In this way he would not grow up with an inordinate reverence for some one phase of past art. Nor yet do I believe that his work would be destitute of style, in the larger and truer sense of that much-abused word.

I started by saying that if a man be possessed by a passion for any one phase of art he must follow that phase,—he cannot help it,—and I do not see why he should. He will give us his best by pursuing it. And if a man find that he can work best in harness,—well, every artist must go his own way to work. Some prefer the beaten road, and some like to feel the turf spring under their feet. What I wish to protest against is the assumption that those who feel that the exigencies of style only trammel them, should allow it to do so, and hinder the free development of their powers. With the knowledge that we have, we must, for the most part, perhaps, start from the standpoint of some existing style (not that I think even that absolutely necessary), and I blame no man for restricting himself even to what has already been done in that style, if it comes natural to him to speak in other men's words, and all he has to say can be so expressed. My sympathy with him would be greater, however, if he proposed to himself to work rather in the spirit of that style; for then he would be a good half-way towards independence. In attempting to follow the spirit of a style, he allows himself to interpret what *is* the spirit, and in that interpretation any man may well find scope for all himself. Personally, I think that any given style is mainly useful as a point of departure, and I feel myself justified in going as far away from it as ever I please, so long as I come round in time to the point from which I set out. I consider nothing inadmissible which is in harmony with my purpose, and if the whole be in harmony I care not who may say that it is not Classic, that it is not Gothic, that it is not Renaissance, that there is no authority for this, no precedent for that. If only it be fit and beautiful, who but a pedant cares for precedent and authority? Those whose precedent we pretend to follow would have had no authority whatever over us if they had merely followed feebly in the steps of bigger men who went before them. No doubt, fitness and harmony, in defiance of precedent, are infinitely difficult of attainment; but the ideal is worth trying for, at the risk of all failure. And there is hope for all who try,—not, perhaps, that they will do anything better than what has been done already, but that they will help to make it possible to be done in the future. They have, at least, the consolation that they are trying to help things on a step (however short a one), instead of gently rolling them back. With all their efforts they may not do much good. They may do some harm; but by resigning themselves to the mere repetition of old forms they may still do some harm, and they cannot do much worth doing. The satisfaction of the purist is not the loftiest aim in art. It has been said of modern religious paintings that they never offend against good taste, for they never aim at anything higher; and in like manner it may be said of those artists, whether architects like you, or ornamentists and decorators like me, who set themselves to task to satisfy the purist in style, that they will do so only by abandoning all hope of individual expression. Any personal utterance would be sure to tempt them from the path of virtue, as the purist understands virtue.

In conclusion, let me repeat that the main cause of complaint against the ornament of the period is that it is as little of the period as it can possibly be. It betrays its date, indeed, but for the most part unconsciously, and in spite of its self. As far as it can it denies the generation to which it belongs. For my part I am not ashamed of the century in which I live; and, though perhaps there have been ages more favourable to the development of art, our only chance of doing anything is to go with the age, and to let ourselves go, looking forwards always, not backwards, and if that implies that we must burn our ships behind us, well, the men who mean to go on are not afraid of that on occasion. One word of postscript. It would have been hopeless in the short hour at my disposal to think of teaching you much, but one may suggest a good deal in a short space of time. With that idea I have simply let myself go to-night without considering too carefully whither my thoughts would lead me. I do not pretend to have given more than a partial statement of one side of my subject, and I know full well how much remains to be said on the other. I have spoken out in the hope of stirring some among you to think over the ornament of this period of ours (it is what we make it), and whether my words stir you to sympathy or to opposition, is of less consequence than that you should think, and think for yourselves.

ARCHITECTURAL ASSOCIATION.

AT the ordinary meeting of this Association, held on the 19th inst., Mr. E. G. Hayes, President, in the chair, the following gentlemen were elected members, viz., Messrs. E. J. Lines, E. G. Salter, A. J. Cooke, J. S. Thomson, C. H. Cooper, J. M. Geden, H. F. Tomalin, H. J. White, J. E. Inglis, S. E. Piper, A. Lines, H. P. B. Downing, and J. K. Harker.*

The President announced that the Sketch-book Committee had awarded the following prizes, as recommended by the Architectural Association Prize Sub-Committee Judges (Messrs. T. Patterbury, C. Henman, and A. White), viz.,—prize of 5*l.* 5s. for the best design for a title-page for vol. ii., to Mr. William Leck. Prize of 5*l.* 5s. for the best set of five transfers contributed by any member to vol. ii., to Mr. Leonard Stokes. Prize of 3*l.* 3s. for the best set of three transfers, to Mr. Thomas Garratt. The committee have offered similar prizes to contributors to volume iii.

Mr. Eales, one of the hon. secretaries, announced that the first visit of the session to new buildings and works in progress would be made this Saturday, the 27th, to a new house recently built for Dr. Hogg at Bedford Park, Chiswick, Mr. E. J. May, architect.

Mr. Lewis F. Day then read a paper on "The Ornament of the Period," which we print in preceding columns.

In the discussion which followed,

The Chairman observed that the meeting had been favoured with an interesting review by Mr. Day of a great part, if not the whole, of the situation as regarded decorative art, especially as it concerned the architect. The paper was one full of suggestion for thought. With regard to all questions of taste, it was almost impossible to lay down any definite law, but there were many guiding principles as to which Mr. Day might be expected to speak,—such principles, for instance, as had been laid down by Owen Jones and others, as to the decoration of floors, walls, and ceilings, and as to which he believed decorators and ornamentists were for the most part agreed. In regard to most other points, however, whatever one did in the

* At the previous meeting, held on the 5th inst., the following gentlemen were elected members, viz.:—Messrs. E. A. Jollye, H. E. Evans, A. E. Marshall, E. W. Wimperis, L. Fraser, S. Rivett, H. C. Smart, A. F. Collot, J. Watt, W. Ainslie, W. H. Town, A. G. Hall, G. H. Greatbach, G. W. Russell, H. B. Youngman, C. O. King, A. Nicholson, J. H. English, F. Davies, A. Steinthal, E. J. Hall, E. Mackay, H. Riches, W. H. Ferguson, C. J. S. Hall, A. M. Butler, C. Dickinson, A. H. R. Tenison, E. A. Young, S. A. Ell, F. C. Ryde, J. Curwen, and F. E. Faithfull.

way of decoration would fail to please everybody. He was inclined to think that Mr. Day took a somewhat gloomy view of the situation. He drew an analogy between the position of architecture and that of decorative art. Well, architects knew well enough that they had no genuine style of their own in this nineteenth century, but he was inclined to think that the case of the decorative arts was not quite so bad as that. Indeed, he was inclined to think that the decorative arts were in a position ahead of architecture, and that more progress had been made in the decorative arts than was possible in architecture.

Mr. Stannus, in proposing a vote of thanks to Mr. Day, said he was very glad to hear his condemnation of the practice of straining after originality, so common a fault of young students, and which, as everybody who had experience in dealing with young men would know, was a real curse to art. It was, as Mr. Day had said, absurd for students of art to try to run before they could walk. Mr. Day had spoken very strongly against adherence to precedent. Now the Association had its Elementary Class of Design, in which strict attention to details was a *sine quâ non*. He took it that although Mr. Day had spoken so strongly against following in the footsteps of the past, he would not go so far as to say that the study of the details of old work was an undesirable study for the younger men. He had been very much struck by Mr. Day's remark about style growing upwards out of the material and the tool, for that was the element of truth in all styles; indeed, it might be said to be the origin of all styles. It was the more important that that should be said now, when anything like technical treatment of any material seemed to be well-nigh lost. At the present time we had wood-engraving treated as if it were steel-engraving, and in which, although one could not help admiring the immense subtlety of the work, it would be felt that the men who did it would do better as steel-engravers. Style was not to be confounded with the workmanlike treatment of the material There had been much analysis of styles going on, but the question to be answered was, not what are the best styles, but what are the best treatments? Instead of trying to stem the current by becoming absolute purists, they should try to ascertain what were the best features of each style,—which were the fittest to survive? If they did that they would be gradually working towards a style which would not be any one style of the past, but which would be that rising sun to which Mr. Day looked forward, in common with so many other artists, whether in brick, stone, stained glass, or paint.

Mr. Cole A. Adams, in seconding the motion, said he had looked forward with a great deal of pleasure to the paper, because he had recently had the advantage of reading Mr. Day's book on "Everyday Art," than which he had never read a more practical work. Mr. Day possessed that faculty upon which "A. K. H. B." gave a chapter in his "Recreations of a Country Parson," viz., "The Art of Putting Things." Mr. Day was a master in that art. In his paper Mr. Day had given expression to a feeling which was very rife at the present time, viz., that the time had come for a departure from strict and unreasoning adherence to precedents. It was beginning to be recognised that any man who intended to do good work, either in architecture or in decoration, must think for himself. It was not to be denied, he thought, that the position of a young artist who lived in any great period of art was a comparatively easy one to that of a young artist at the present time. The young artist of a great period in art was brought up in the school in which he lived,—whether that of the thirteenth century or the Renaissance. He imbibed the spirit of art with his mother's milk, and worked as a craftsman. But the young architect of the present day was perfectly bewildered in considering what he was to do. If he took up one style, he found, perhaps, that it was not in fashion,—that it would not bring him bread and cheese. If Mr. Day could suggest any course of study that should lead up to original thinking on the part of the student, it would be a great advantage. He wished it were possible to have amongst architects something similar to what prevailed amongst painters, viz., that some one or two men of acknowledged pre-eminence could gather about them "schools" or followings of students. But there were many difficulties in the way of doing this, for at the present time young architects were spread all over the country, and they had no particular master to lead them in a good course of study. He hoped that in time some true principles of study would be evolved. With such principles to guide them, he thought they could not fail to attain to better results, for they would have many minds intent on reaching the same goal instead of struggling to get to the four corners of the world, so to say.

The motion having been put to the meeting, and carried,

Mr. Day, in reply, said that many of Owen Jones's so-called "principles" were not principles at all: they were simply receipts, or working "tips." One great evil of present-day demands upon the ornamentist was that so many people wanted something like somebody else. Only the other day he was asked to design "something Aitchisony." Well, if people wanted "something Aitchisony," why did they not go to Mr. Aitchison for it? With regard to Mr. Stannus's query, he did not mean to say that the younger men were not to learn style; on the contrary, they must master it before they could do anything. But the teachers of the young men must use style only as a means of explaining and illustrating principles. It was because this was, as Mr. Stannus had said, an exceedingly analytic age, that architects and ornamentists were what they were. It would be very comfortable if they could look at the work of the old men without troubling their heads unduly about it. The demands of clients might make it pay "commercially," for architects to follow in with the latest craze, but that was not the pursuit of art. The art of the future must embody the spirit of a wise eclecticism. He hesitated to use the last word, because it seemed to affect some people as much as a red rag affected a bull.

THE WELLINGTON STATUE ON ITS WAY DOWN.

ON Wednesday morning last (in lieu of Tuesday, as at first arranged, in order to meet the convenience of the First Commissioner of Works, who was present) the work of lowering the colossal equestrian statue of the Duke of Wellington at Hyde Park Corner was commenced. It will probably be a month or five weeks before the horse and its rider reach the ground-level, the brickwork and masonry constituting the interior portion of the Archway being gradually removed from under them.

Before describing the *modus operandi* adopted for the lowering of the statue, we may recall the method employed for raising it. The Wellington Statue was raised to the top of Mr. Decimus Burton's triumphal arch at Hyde Park Corner at the end of September, 1846, as recorded in our volume for that year (p. 477). The conveyance of the statue from the studio of its sculptor, Wyatt, and its elevation to the top of the arch which it has for more than thirty-six years disfigured, was the work of only two days, as against the month or five weeks which will be occupied in getting it down to the ground-level. The dimensions of the statue, as given by Mr. Decimus Burton, shortly before it was hauled up, are,—"About 30 ft. high, 22 ft. long, and 8 ft. wide at the centre," its "weight, exclusive of the plinth, being about 40 tons."* Mr. Decimus Burton, protesting, as we had done a year previously,† against the disfigurement of his arch by planting upon it a crowning feature for which it never was designed, pointed out (*Builder*, 1846, p. 361) that the relative proportions of the building and the statue were "entirely inharmonious." After quoting the dimensions of the statue, as already stated, he went on to say "The building proposed as its pedestal is 67 ft. high, 62 ft. long, and 50 ft. wide at the centre,"—dimensions which, he urged, constituted "a mass too heavy to combine, satisfactorily, with a surmount composed of a single equestrian statue." However, in spite of, but amply justifying, all protests, the statue was raised to its ill-chosen pedestal, never, we hope, to be so absurdly treated again, for in itself it is, as we have previously said, worthy of a better fate. The carriage on which the statue was conveyed to the *locus in quo* was 24 ft. in length, the axles being 13 ft. 4 in. long, with a circumference of 30 in. The wheels, four in number, were 10 ft. in diameter, or 31 ft. 6 in. in circumference, and weighed 2 tons 6 cwt. each, or about 9 tons altogether. Twenty-nine of the heavy draught horses belonging to Mr. Goding, the brewer, were employed to draw the lumbering vehicle and its ponderous load, which proceeded on its way "amid drums, trumpets, and the shouts of a vast multitude of persons." The group was raised by means of strong 6-in. cables "fastened round each thigh of the horse," and these cables were hooked on to the blocks used in the ascent. Through these blocks, four in number,—triple-sheaved and expressly made for the occasion,—ran six ropes, also quite new, and made of the strongest yarn, each rope being calculated to carry ten tons. Upon the traversing platform above were four powerful crabs, worked by eight men each. The scaffolding, erected for the purpose by Mr. W. Ellis, under the direction of Mr. Wyatt, was, of itself, a wonderful work, being 115 ft. in height, and having taken 200 loads of timber in its construction, besides scaffold-poles and planks.* The height to which it was necessary to raise the statue was 74 ft., and thence it had to traverse a distance of 60 ft. to arrive at the pedestal prepared for its reception upon the crown of the arch. This pedestal was about 22 ft. long, and 9 ft. wide. The top of the pedestal consisted of Bramley Fall stone, 1 ft. 9 in. thick. The core was composed of brickwork, set in Roman cement, and faced with 6 in. ashlar-work in Portland stone. The pedestal was built directly on the top of a brickwork arch, three rings of bricks in thickness, set in Roman cement. The arch of coffered or panelled masonry, visible to those who passed beneath the structure, is some distance below the brickwork arch just mentioned. This brick arch was expressly built to carry the statue, and its removal will be a work of some difficulty, as that of the core of the pedestal has been, owing to the almost adamantine hardness which the cement has acquired. Cast to each foot of the horse is a square "tag," so to speak, about 3 in. thick, and 12 in. or 15 in. square. Through each of these tags a gun-metal bolt, 2¼ in. diameter, and 20 ft. long, was passed, and carried downwards through the pedestal and brick arch, being ultimately secured in the masonry below.

Having said thus much about the raising and fixing of the statue, we will briefly describe the method being adopted to get it down. The pedestal has been removed, but before this was done, at each of the four angles, and resting upon the substructure of the masonry abutments of the arch, a temporary pier of brickwork, 6 ft. 6 in. by 3 ft. 6 in., set in Portland cement, and about the same height as the pedestal, was erected. Upon these piers a pair of wrought-iron girders, 24 ft. long, was placed, one on each side of and parallel with the horse. These longitudinal girders are connected at each end by a transverse girder, 20 ft. long, the whole being well bolted together. (The longitudinal or longer girders are the lowermost ones, the end or transverse girders being placed upon and across the ends of the longer ones.) At the points of crossing the girders are very rigidly bolted together and stayed with massive angle-iron brackets and braces, the bolts being 1 in. thick. This was the more necessary, inasmuch as when the statue is being lifted by the hydraulic jacks, the longer girders are really suspended to the shorter ones, for it is against the projecting ends of the latter, as hereafter stated, that the jacks exert their lifting power. The longer girders have a total depth of 16 in., with a web of ½ in. plate, the flanges consisting of 5 in. by 5 in. by ½ in. angle-irons. The transverse girders are 15 in. deep, having an ½ in. web, and 4 in. by 4 in. by ½ in. angle-irons. This rectangular framework of girders serves as a basis on which rest numerous balks of timber, 12 in. square, some placed transversely, and others longitudinally. Between these timbers and the belly of the horse is a massive trussing of timber, holding the group in position, assisted by shores raking downwards and outwards from the top of the cradle-like structure in which

* Mr. Burton in another place speaks of the statue as "about 27 ft. high." The dimensions given us by the contractors are: height, 26 ft. 6 in. from horse's feet to top of hat; length from nose to tail of horse, 25 ft. 3 in.; height from feet to underside of belly, 8 ft.

† See *Builder*, vol. iii. (1845), p. 326.

* Some further details of the conveyance and lifting of the statue, accompanied by illustrations, will be found in the *Illustrated London News* for October 3, 1846.

the animal seems to be standing to timber balks secured to the tops by the iron girders. The following are some of the dimensions of the timbers: tranverse and longitudinal balks resting on iron girders, 12 in. by 12 in.; timbers used in trussing, 8 in. by 8 in., well strapped and bolted together; curb surrounding body of horse at stirrup level, 12 in. by 12 in.; raking struts, 6 in. by 6 in. These timbers were all introduced and built up before the pedestal was removed, the whole weight of the group being carried by them and the iron girders, which, in turn, are supported by the temporary brick piers already mentioned. The ends of the transverse iron girders project some 2 ft. or 3 ft. beyond the ends of the longitudinal girders, and underneath each of the projecting ends is one of Tangye's hydraulic jacks, each, of course, having for its bearing the solid walls of the substructure of the archway, and each capable of sustaining a weight of 20 tons. It will readily be understood from what we have said that, first of all, the temporary brick piers, and then the masonry below them will be gradually removed, the statue gradually following in their wake,—the demolition of the interior portion of the archway and the lowering of the statue advancing, in fact, *pari passu*, so that when, as it is hoped, the statue reaches the ground in safety, the interior of the archway will have disappeared.

Since this account was written the contractors have favoured us with some additional particulars. The principle adopted by them is, they say, similar to that for lifting the Britannia tubes, except that the process is reversed, weight having to be lowered instead of raised, but the leading features of the apparatus are identical, viz., hydraulic rams for the motive power, and thin wood packings for every inch in the descent of the statue. The pedestal on which the statue stood having to be removed to allow the descent of the statue, it was necessary to have points of support outside. Brickwork in cement, the full height of the pedestal, has been built at each end of the framework on the old walls which carry the panelled or lower arch over the roadway, as well as the upper arch bearing the pedestal and statue. On this brickwork was laid a rectangular frame of wrought-iron riveted girders rigidly bolted together, the two end girders projecting beyond the frame, and resting on the top of a hydraulic ram, as well as on the top of a 1-in. hard wood packing on the half width of the brickwork, which was stepped down about 2 ft. to allow of the introduction of the ram. On the iron girders are fixed framed trusses, fitted with felt packings to the underside of the horse to take the weight. A timber frame or curb is fixed at the level of the stirrups, the whole being rigidly strutted and bolted to the frame of iron girders. The weight of the statue being then borne by the girders, the pedestal was cut away from beneath it by hammer and chisel, and this proved an extremely tedious job; the stones on which the horse's feet stood, weighing 12 tons, were removed, and the holding-down bolts, which went down 20 ft. into the brickwork, were cut off; and the statue, supported alone by the framing, resting on wood packing on the brickwork, was then ready for lowering. The half width of the brickwork on which there was no wood packing was then removed for 3 in. in depth, and three pieces of 1-in. hard wood packing inserted before commencing to work the pumps of the hydraulic rams. The rams at one end of the statue having been set to work, and that end of the statue raised clear of the packing, the remaining half of the 3-in. course of brickwork was then cleared off, and the word given to lower, and as the girders and statue descended gradually, the 1-in. wood packings were removed singly until in a few seconds the framework again rested on a single wood packing. The process was then repeated at the other end of the statue, and thus the horse and its rider are to descend to earth by a series of slow movements. The rams have all been tested to twenty tons each, and the girders and rams severely weighted before being fixed on the arch. The lowering operations will be continued as fast as the arches and middle walls can be cut away, until the statue is landed on the ground, leaving the outer or main walls of the building intact, which, with the masonry itself, will be taken down by two powerful steam cranes. The principle of the apparatus is very simple, though the woodwork and strutting looks somewhat massive and complicated, but the contractors wisely preferred to have a reserve of strength. The iron frame and details of the apparatus have been designed and superintended by Mr. F. T. Reade, A.-M.I.C.E.

The operations of Wednesday last resulted in the lowering of the statue about 6 ft. Before it can be lowered any more the upper arch has to be cut away. This will take some days. The operations are being directed by Mr. Reade, assisted by Mr. George Burt, of the firm of John Mowlem & Co., the contractors, by Mr. W. C. Morey, the foreman in charge of the work, and by Mr. Springthorpe, the foreman of masons. The iron girders used were supplied by Messrs. Rownson, Drew, & Co.

WORK IN BIRMINGHAM.

SIR,—The building trade here is only moderately busy this winter, and the prospect for the coming summer is not very rosy; still, there are several works in hand of considerable importance.

The new Gas Offices and Art-Gallery and Museum, completing the Council-house block, are well in hand. The masonry is up to the springing of the ground-floor windows; and as the whole building is covered by a steam travelling crane, its progress will, doubtless, be rapid.

The new parish offices in Newhall-street and Edmund-street are also well out of the ground, and masonry is being set all around. This building also is served by a steam traveller, covering the whole area.

The twenty-seventh new Board school, situated in Icknield-street, beyond the Mint, has just been opened by the vice-president of the Council. The site was formerly occupied by the Hockley Pool, which was filled up years ago, and put in the market as good building land. An area of about 3,507 square yards of this land having been acquired, at a cost of about 4,400*l.*, a school to accommodate 870 children has been erected, on the class-room system,—that is, one large hall for lectures, &c., to hold the whole of the scholars, and class-rooms surrounding the same, of an equal capacity in the aggregate. The cost of the building, with fittings, &c., has been 10,700*l.* Its principal feature is a tower, surmounted by a slated spire, square on plan, having small square spirelets rising at each angle of its base. The walls are of brick, with terra-cotta ornament, and the roofs, which are cut up into every variety of form, are covered with red tiles, topped by red ridges and finials. Generally this school resembles in style each of the twenty-six which has preceded it from the same hand, every part of it having a kaleidoscopic character, the same bricks, ridge-tiles, finials, roofing-tiles, cast-iron coping to walls, &c., only varied in position.

The same characteristics are seen in the new School Board offices in Edmund-street, now approaching completion. This, however, has a frontage entirely of stone, and is situated between two other public buildings. The details of this front are similar to those of the Midland Institute front, a kind of Victorian Gothic in style, with a projecting stone portico at entrance. A very funny thing about this portico is that its sides are carried up as crocketed buttresses against the building above, as if it required their support.

There is another attempt at a portico by the same hand in High-street, where two massive granite circular pillars support inverted carved brackets, between which springs a flat receding segmental arch. It looks as though they lacked stone enough to form a canopy, and is sure to provoke a smile. Two more Board Schools are progress, and the accommodation is said to be yet so insufficient, that three more still are projected. It is to be hoped the School Board will invite fresh architectural blood for these; the repetition has become monotonous.

The School Board rate for 1883 will amount to 54,000*l.*, or 8½d. in the pound; that for the last year being 48,000*l.*, or 7½d. in the pound.

The new Colonnade in New-street, on the site of the old Post-office, is completed, and the upper part has been opened as an hotel. The entrance is in New-street, having shops on either side, and gives access to the hotel above and the shops, some thirty in number, forming the Colonnade, which resembles very much those of Chester and other old places where there is a covered walk open on one side to the street, with shops on the other side. The building above is supported all round by square granite pillars and stone arches from which depend gaseliers, which, when alight, give a very pleasing effect. Altogether this building, which is Renaissance and faced all round with stone richly carved and surmounted with lofty Mansard roofs and turrets, is a very handsome structure. At the corner of Cannon-street and New-street, some old shops have been demolished, and a new stone-fronted block of the same design as the *Daily Post* block is being erected.

The new building in Corporation-street for the County Court has at last been completed and opened for business. It is in the Classical style, and looks a good and handsome building. It was opened just before that sharp nip of cold weather in December, and the arrangements for warming the building being nearly *nil*, and the draughts very cutting, the judge was obliged to hear the causes wrapped up in furs and rugs, and the barristers to plead in overcoats and shawls, with the result that one elderly barrister has since died from the cold thus taken. The barristers appealed to the judge, and his honour appealed to the Lord Chancellor, who, in his turn, appealed to the Board of Works, which has graciously sent down two small stoves. We must now await the next spell of frost, to test the efficiency of the new arrangements.

A large block of building is also going up next the new covered market at Smithfield, with frontages to Moat-lane, St. Martin's-lane, and Jamaica-row. This block is of brick, with red terra-cotta dressings, and lofty chimneys with Mansard roofs and gables, and is generally of the style of Queen Anne. The greater part of this building when complete is to be used as an hotel in place of the old Woolpack Hotel, now pulled down.

Nearly the whole of the ground to be occupied by the extended New-street Station is now cleared, and the excavations are well advanced. About seventy yards of the tunnel on the west is to be removed, and an open cutting substituted, and a similar opening out is to be made in the eastern tunnel. For that purpose the King's Arms Hotel and many other houses in Worcester-street are being demolished.

A remarkably rapid piece of building has lately been completed in the New Stork Hotel, Old-square. This has frontages to three streets, and the principal front of stone highly wrought, and is very lofty with Mansard roofs. This was built from beginning to end in about four months. Two other hotels are also built in Corporation-street, near the County Court, and a large block of offices is going up on land adjoining, which are intended to be occupied by lawyers, and to be called Lincoln's Inn. A new theatre is also projected to be built on land near Old-square, having frontages in Corporation-street and London 'Prentice-street, and is to be finished and opened next Christmas. From Old-square the new tramway to Aston starts. The cars began running on Boxing-day, and are drawn by steam locomotives. Much difference of opinion is being expressed as to the utility of using steam, but all seem to agree that the ride is cheap, quick, and comfortable. The fares are about one-half the amount formerly paid, and as a great many working people live at Aston, and the line terminates near the Aston Lower Grounds, which is a place of holiday resort for many, it is likely to be well used.

The Dawson Memorial Committee have accepted a model of a new statue to cost 800*l.*, and have authorised Mr. Williamson, of Esher, to proceed with the work. It is a standing figure, as the present one is, and is to be of marble. Whether this one, when in position, will not also suffer from the canopy remains to be seen.

That this committee, or any other requiring first-class sculpture, should go out of Birmingham for their figure, is felt by many to be a damaging reflection upon the School of Art and the Society of Artists. These institutions have now been in existence many years, and yet no sculpture worth the name is ever produced or exhibited. Acres of canvas are covered with paintings, good, bad, and indifferent, and yet no encouragement is given to modelling, with the result that when sculptors are wanted to model for the numerous art works in the town, they have to be sought elsewhere. The only room devoted to modelling at the School of Art is a small one in the cellar, and one seldom sees even a plaque in the exhibitions of the Society of Artists. In the new front of the Midland

Institute there are three empty niches for full-sized figures; in the new front to the Central Free Libraries there are three similar empty niches; and in the new Shakspeare Library there are two niches for busts also empty, and no effort seems likely to be made in the near future to fill them adequately. E. G.

SANITARY INSPECTION OF HOUSES.

AFTER the reading of the paper on this subject at the Society of Arts, to which we alluded in our last,

Mr. Robert Rawlinson, C.B., said he quite agreed with Mr. Burton that houses required careful examination, and if this had not been done recently, the chances are that they were in a bad condition. He spoke from experience of houses of all classes, from Windsor Castle down to common lodging-houses; and though what had been said was not new to him, there was abundant necessity for its being repeated incessantly. He often found that persons, though they acknowledged that their houses were defective in sanitary matters, yet shrank from the expense necessary to put them right. Such persons were, in his opinion, most foolish, for nothing was of any value compared to human life and health. If a man could only, by the greatest possible shifts, spare what was requisite to put his dwelling-house into proper order, he would, if he were wise, make the effort, because it was the foundation of the health of himself and his family. He was very sorry that, in many cases, the process was a very expensive one, though, when houses were properly built from the beginning, it would be very cheap. One principle which should never be departed from in the construction, whether of a palace or a cottage, was that no drain should be laid under any portion of the building. In London, where houses were built in streets, with the kitchen, scullery, and closet at the back, and the main sewer in front, it became necessary to drain under the houses; but, in such cases, cast-iron pipes with lead joints should be employed, with ventilation back and front, and thus any chance of sewer-gas entering the house might be avoided. Even the best stoneware pipes were liable to crack and leak at the joints. Another prevalent evil was, that the main sewers in some of the London parishes had not proper and safe junctions provided for the entrance of the house-drains, so that the sewer had to be broken into for the purpose, and very often a fine was also levied for entering the sewer, which was practically a premium to the builder not to connect the drains. This was the case with many houses in the west of London; and even when the connexion was made, it was not done properly, so as to prevent the inlet of air from the sewer into the house-drain.

Mr. Rogers Field said he found, from an experience of eight or ten years in these matters, that the majority of houses were very defective, and out of about a thousand he had examined, he had only found three which were sound. It was impossible to tell whether a stoneware drain was sound, without thoroughly testing it with water, and very few indeed would stand the test. In New York, the difficulty had now been so recognised of making good joints in such pipes, that a regulation was passed that all drains under houses should be of cast-iron, jointed in the same way as water or gas pipes. The sink-traps, which had been referred to, were a constant source of danger. Though defects in them were not always discovered without a careful examination, he was sorry to find they were still being constantly used, even in large houses.

Mr. E. P. Bailey-Denton said all sanitarians were agreed as to the mode of remedying the evils which had been described, and it only remained with the public to have the remedies carried out. One or two points he thought had been omitted; for instance, the danger from the waste-pipes of safes under water-closets and baths, and the great importance of disconnecting the house-drain from the sewer, had hardly been dwelt upon sufficiently; nor was the best method of ventilation sufficiently explained to make the public see the necessity for it. The flushing of drains was another point of importance. He agreed with Mr. Burton that the theories of sanitarians must not be pushed too far, and he would ask him whether there was not a possibility of falling into this danger, by insisting rigidly on an entire separation between the drinking-water cistern and the one for supplying the water-closet in cases where improved closets were used, the pipe supplying them being always full of water.

Mr. E. C. Robins said he could confirm everything said by Mr. Rogers Field as to the difficulty of laying stoneware drains perfectly; for he had never found one which would stand the test of water being put into it. He had used iron pipes, and had formed a subway under the house, in which all pipes were carried. With iron pipes properly leaded, both for drainage and ventilation, he had been able to dispense with traps altogether. Earthenware pipes required the very greatest care in laying, and yet, as a rule, builders employed common labourers for this work. Some employed bricklayers, and where great care was used, the result might be satisfactory. He agreed with Mr. Bailey-Denton as to the importance of flushing, and had been very much pleased with Mr. Rogers Field's syphon-apparatus for this purpose; it could be so arranged that, according to the rate at which the water was allowed to flow into it, the drains could be flushed twice or three times a day or oftener. The paper, though it contained nothing new, was very valuable, and the percentages given would be very useful.

Dr. Bartlett said there were other means besides those which had been mentioned by Mr. Burton for detecting the escape or presence of what was often called sewer-gas, but which he preferred to call sewer-air. Musk, for instance was not a gaseous body, and made its presence apparent by the diffusion of very minute particles; but there were other substances the detection of whose presence did not depend on the olfactory nerves, and about which there could not possibly be a mistake. If acetate of lithium were passed down a drain, its presence could be detected in the spectroscope by its characteristic line; tellurium, again, gave another definite indication. He had tried these two substances, putting them into the water supply, and detecting their presence in the sewers twenty minutes afterwards; and, on one occasion, on putting them into the sewers he detected their presence in the water supply in an hour and a quarter. He endorsed everything which had been said as to the importance of not admitting sewer-air into houses. He had seen a large building of the best description, in which there was the entire accumulation of six years, not one particle having passed into the sewer. The importance of disconnexion was not, he held, as new as some people supposed, the old fashioned method of a privy at the end of the garden being an exemplification of it. In many cases, the sewer was an elongated cesspool, and by the process of fermentation not only gaseous matters, but solid matters which were contagious as well as infectious, were carried into the house, and if they did not cause specific disease, caused that condition of lowered vitality which predisposed to every kind of disease.

Mr. William Botly said he had known, within a short period, two cases of typhoid fever arising from defective drainage, in houses of a rental of about 200*l.* per annum; and in a recent case, the stoppage in the pipes was occasioned by an accumulation of fat. There was nothing in the paper about compulsory inspection, but he considered that most important. Not long since, he saw a row of large houses, within the four-mile radius from Charing-cross, some of which had been occupied several times, although they were unconnected with the sewer. It ought to be compulsory on architects and builders to see that the connexion was properly made. In his native city, Salisbury, where great attention was paid to sanitation, the death-rate had been reduced from 27 to 17 per 1,000.

Mr. Collins said reflections were often made on architects with regard to these matters; but there were probably not more than 5 per cent. of the houses built which had the advantage, or disadvantage, of an architect's superintendence at all. He agreed that there was a difficulty in laying down stoneware drains satisfactorily, but it could be done; the greatest difficulty was to get the work properly carried out, and it could only be ensured by having some one to inspect its progress throughout. He had frequently found a most admirable system fail from defects in carrying out the work, and it was, therefore, very important to have a simple system which would admit of easy re-inspection. He had used Mr. Field's syphons very largely, but they were so powerful in action that they sometimes emptied the traps. This could easily be obviated by a practical man, and did not detract from the value of the syphon, but it required to be borne in mind. It had been said that there ought to be compulsory examination of every house, but it was already provided, by the Metropolis Local Management Act, that no house should be even inhabited until it had been certified by the surveyor of the parish. Being a Vestryman of Paddington, he had often tried to get this carried out, but the answer always was, that it would require too many clerks to carry it into execution. Another important matter was the financial question. A man would willingly spend 40*l.* or 50*l.* to put his house in order, but was deterred by the very large expense some specialists would put him to. He knew an instance of a public institution, where a difficulty occurred owing to the expense, which was estimated at 550*l.*, but he had all that was necessary done for 220*l.*

Mr. C. N. Cresswell said the technical part of the subject had been amply discussed; but there was a larger and important aspect of the question to be considered. How were the terrible mischiefs to be remedied? He was glad to see so many ladies present, for they were even more interested in this question than men. The evil was most rampant in the suburbs of London, where houses were increasing at the rate of tens of thousands a year. It had been said in that room, by men not given to exaggeration, that of these houses not 20 per cent. were fit for habitation. How was this great evil to be dealt with? Mr. Burton represented a most excellent institution, and there were most eminent men connected with it, but how could any society deal with so vast an evil? Whilst it was dealing with about 200 houses in a given area, houses were increased by thousands around them. It was perfectly clear to him that neither philanthropic nor commercial enterprise could deal with this matter properly; it was an affair of the State. The State had taught them, by the Act of 1875, and by the model by-laws issued from the Local Government Board, how to deal with the difficulty, and there was no necessity for further legislation. If the by-laws were only put into operation, and men were found able and willing to do it, and the ratepayers would find the money, there would be no difficulty; but there was the real pinch of the matter, the apathy of the public, and that love of buttoning up his breeches pocket which distinguished the British subject. The dictates of science could only be enforced by the arm of the law, compelling the ratepayer to do that which would conduce to his own good and that of his neighbour. It could only be carried out by the principle of local self-government; but there were two sides of the question, dealing respectively with houses already built, and with those about to be erected. They were informed, on high authority, that while it would cost perhaps 150*l.* to put an existing house of 200*l.* a year, full of defects, into a proper state, 50*l.* would cover the expense if it were done in the building. The only way of approaching the British subject was by showing him that it was worth his while to do what they all agreed was his duty, and as to the manner of doing which all competent authorities were also agreed. He believed this would be accomplished if an official certificate, sealed with the seal of the local authority, were given him, testifying to the healthworthy character of his house, as that would immediately increase the letting or saleable value of his house by the amount he had expended. This certificate should state what had been done, and contain on the back of it a plan of the drains, and, issuing from an independent local authority, would be regarded as an increment of value to the tenement in the hands of the owner.

Mr. Liggins said they were all much indebted to Mr. Burton, but the weak point in the paper was that it did not say where the requisite scientific knowledge was to be obtained, which would enable them to get defects in drains detected with certainty. When some of the finest buildings in London belonging to the Government were recently amongst the most defective, how could private individuals expect to get their work done properly? The Vestry of Kensington took up this subject very warmly some four years ago, but they found there were no clauses in the Act of Parliament sufficiently strong to enable their surveyors to carry out the rules which they made. If they could get such certificates as Mr. Cresswell had spoken of, no doubt these would be very valuable, but

under the present law it could not be done. Again, when they found experts differing on certain technical points, how could the public decide between them? He believed the evil was much exaggerated by sanitary engineers, and that water-closets and drains did not generally communicate with the drinking-water.

Mr. G. E. Mineard wished to say a few words from the builders' point of view. He had a copy of a report on a house which had been arranged on the system described by Mr. Burton, in which an expert suggested that the manhole should be closed, and the iron ventilating-pipe removed, and replaced by a common zinc ventilator. How, then, was it possible for a builder desirous of carrying out the best system, to do so? His own experience was, that the sewer-gas would come out at the place where Mr. Burton said the fresh air would go in; in fact, he tried that plan years ago, and found it a failure. The air going up through the soil-pipe must be met by the volume of water and sewage coming down, of 800 times its specific gravity, and any sane man must see that the current being reversed, it must blow out into the area. Every one who had written on this subject admitted that he could not tell at all times which way the air would be going. As for sanitary defects, there could be no doubt that there was room for improvement on every hand. He had seen drains taken up at Sandringham House in which he could lay his hand, and at Eastwell Park he had taken up one which was 18 in. thick with solid sewage, and yet that was supposed to have been put into proper sanitary condition within eight years, under the supervision of a first-rate sanitary expert. How, then, could the public know whom to apply to? He believed if any good were to be done they must have an Act of Parliament. First settle what was the best thing to be done, and then make everybody do it. At present all was confusion, and many of the sanitary engineers were grinding their own axes by frightening the public. He had had a bell-trap, with all its imperfections, prescribed by a surveyor, and had had within the last three months to connect safes with waste-pipes, by order of a surveyor. If the Board of Trade or any responsible body would undertake, for a certain fee, to indemnify him against others coming to upset what had been done under their supervision, he would willingly go in for it. At present a builder, however conscientious, had no safe guide, and consequently the public did not appreciate sanitary appliances. If the gentlemen who preached this doctrine would only build some sanitary houses, and invite builders to see what could be done, something might be learned; but at present, the whole thing was in a state of chaos.

The Chairman, in proposing a vote of thanks to Mr. Burton, said the result of the whole discussion was to show the great importance of thoroughly educating the public in the matter. He could not agree with the last speaker in wishing that a hard-and-fast rule should be laid down by Act of Parliament, for if that had been done eight or ten years ago they would have been much less advanced in sanitary matters than they were at present; and he did not think they had yet reached absolute perfection in sanitary science. He hoped they would still go on striving and educating themselves, perhaps by occasional failures, until they had obtained a higher degree of excellence.

The vote of thanks having been passed unanimously,

Mr. Burton briefly replied.

THE MODEL BY-LAWS.

MESSRS. KNIGHT & Co., of Fleet-street, have just brought out an annotated edition of the Model By-laws of the Local Government Board relating to the cleansing of privies, ash-pits, &c., to nuisances, and to new streets and buildings. The book, which has numerous diagrams illustrative of the several requirements, seems a most useful one. The model clauses, owing to their legal phraseology, are admittedly somewhat cumbersome, and, in many respects, not so readily intelligible to the non-technical reader as could be desired. Any reliable work, therefore, explanatory of each clause can scarcely fail to prove of valuable assistance, not only to those members of local sanitary authorities who have to consider the subject of new by-laws for their district, but to all who are in any way interested in the healthfulness of the dwellings in a locality. The work is obviously one which will be of special value to the numerous officers of sanitary authorities, and likewise to architects and builders. For, not only are the various model clauses explained, but many points wherein difficulty is often experienced are dealt with. Thus the reason for not making regulations as to the height of habitable rooms is given, with the opinion of Sir Henry James and Sir Farrer Herschell on the subject; the question of depositing plans of new buildings permanently with Local Boards is discussed, though unfortunately there are as yet no means of definitely settling this vexed question; the popularly supposed need for waiting for the approval of the Local Board before commencing a building is explained away, and a variety of other points affecting all who have local interests are dwelt upon in a way that will be of advantage alike to the public and to the officers of Local Boards.

Another point which deserves special mention is that under the by-laws of most sanitary districts, the walls of new buildings are required to be built solid and entirely of incombustible materials, thus prohibiting the construction of hollow walls and of walls formed of half-timber work. In the book before us, these kinds of construction are each proposed to be regulated in a way that includes due regard both to stability and to danger of fire. Again, the question of the necessity for carrying party walls through and above the roofs of new buildings has been considered, and we are told that in the case of certain small houses, this requirement can be dispensed with. In the same way the usual requirements respecting parapets to the external side walls of detached buildings can be dispensed with under particular circumstances. Modified forms of the model by-laws upon these and other matters, all of which are said to have been authorised by the Local Government Board, are given at length for the use and consideration of the public.

The illustrations include, besides the prescribed thicknesses for the walls of new buildings and many useful diagrams about traps, drains, and water-closets, a number of capital lithographs of drawings by Mr. Rogers Field, M.I.C.E., explanatory of the drainage and drain ventilation of houses under various conditions.

The book altogether must be regarded as a valuable addition to the means of instructing the public upon the general principles of sanitary and sound house construction, and we hope they, as well as the various Sanitary Authorities, together with their surveyors and medical officers of health, will benefit from the information it affords.

NEW WEST ST. GILES'S CHURCH, EDINBURGH.

THIS church was opened for service on Sunday last. It has been built by public subscription, to enable Dr. Chalmers to carry out the restoration of the old Church of St. Giles. The edifice is a large one, accommodating 1,000 sitters, and built from plans by Messrs. Hardy & Wight, architects, Edinburgh, which were selected in competition by the Hon. Sec. of the Royal Institute of British Architects, Mr. J. Macvicar Anderson. The works, begun in February last, have latterly been hurriedly completed, leaving still some work unfinished.

The church is built with nave, aisles, and transepts in Decorated Gothic, of earlier period than that of the mother church. The architects, however, have made an adaptation of the details forming the stone crown, both in the exterior, at the junction of the tower and spire, and in the pulpit and its accessories within. The church has a good but rather low position, and the spire, which is about 170 ft. high, looks well over the Meadow's trees. The arrangements for the service are designed to suit the congregational convenience, and departure from the ordinary proportions of the parts gives the pulpit full command of the interior, so far as sittings are concerned; with the exception of about a dozen behind two aisle pillars, worshippers all face the pulpit.

The pulpit is of ornate design, and, with the screen of the organ-chamber behind, is executed in oak, with the mouldings, carving, crocketed ribs, pinnacles, and finials of Decorated Gothic; the whole having a well-posed figure of the Angel of the Resurrection as its crowning finial. The pulpit stands on a platform of its own, slightly raised over another in front, provided for the font and Communion-table. These platforms are paved with Belgian cement tiles, and approached by marble steps, and are inclosed with a low parapet of stone, with small returns in front and circular foliage panels, symbolic of the Tree of Life. Throughout the exterior and interior a fair amount of sculpture is employed. The masonry of the edifice is of a superior description, the external rubble being chisel-bedded random coursing of Hailes stone, with dressings from Dalmeny. The internal arching is put together in the fine Oberwood stone, the pale grey of which contrasts finely with the red granite supports.

The church is heated with over 2,800 ft. of high-pressure hot-water pipe. Ventilation is secured by air-inlets below, and two wood exhaust ventilators in the roof, which is open-timbered, with hammer-beams resting on stone moulded corbel pillars,—the principal timbers being darkly stained. Fresh air (in winter) is admitted over a Shorland air-warming grate, which heats the vestibule of the tower.

The sum available after payment of site is 7,500*l.*, and the estimates accepted for the work fell considerably below that sum. Slight alterations have been, however, made in the original plan,—the session-house having been enlarged, to form a hall and Sunday school, holding about 250.

A very sweet-toned bell, 11 cwt., has been hung in the tower by Messrs. Warner, of London.

OBITUARY.

Mr. Richard Cockle Lucas, sculptor, died at his residence at Chilworth, near Southampton, on the 18th inst., in the eighty-third year of his age. At various periods of his career Mr. Lucas was intrusted with commissions to execute the statue of Dr. Isaac Watts, erected in the West-park of the poet's native town of Southampton; the statue of Sir Richard Hoare, in Salisbury Cathedral; the monument of the Countess de Salis, at Harlington; the Johnson statue, at Lichfield, &c., besides many minor works in Winchester Cathedral and other places.

M. Gustave Doré died in Paris on Tuesday last, from the effects of a chill on leaving a party on Friday night. He was only fifty years of age, and was building a house at the corner of the Parc Monceau. His works, or at least the later ones, are as well, if not better, known in London than in Paris.

M. Guillaume Geefs, the eminent Belgian sculptor, has just died in Brussels, aged 77. Among his principal works are the monument in the Place des Martyrs; the statues of General Belliard and Leopold I. at Brussels; the tomb of Malibran, and the statue of Leopold I. at Laeken; the statues of Rubens at Antwerp, of Grétry at Liège, &c.

PONTEFRACT NEW TOWN-HALL.

THE erection of a new town-hall for Pontefract is a marked improvement in this old Yorkshire town, of gabled houses, old inns, and narrow crooked streets. The style adopted is that of Queen Anne. The building is of brick, with Ancaster stone dressings. The principal entrance is surmounted by some fine carving with scrolls, bearing the words "Peace," "Plenty," "Honour," and "Virtue." The entrance-hall is laid in mosaic. To the right is a spacious stone staircase, leading to the assembly-hall, and to the left the offices of the chief constable, borough surveyor, &c. On the same floor is the council-chamber. At one end of the chamber is a mantelpiece, a good specimen of ancient wood-carving, which was removed from the old vicarage. The town clerk and his staff are accommodated next to the council-chamber, and a strong room for the borough records adjoins. The assembly-room is 81 ft. long, and 37 ft. wide. A balcony runs along the sides, and opposite the platform is a small gallery. The platform can be used for dramatic purposes and choir singing, the necessary retiring-rooms being situated in the rear. The room is lighted by two sunlights, each of 126 jets, and will seat about 750 persons. The cost of the site, building, and fittings will amount to nearly 10,000*l.* Messrs. Perkin & Bulmer, Leeds and Harrogate, are the architects; the building has been done by several contractors. The hall was recently opened by Earl Fitzwilliam with considerable ceremony.

THE BRADFORD CHIMNEY DISASTER.

THE Bradford Borough Coroner, Mr. J. G. Hutchinson, resumed the inquest* at the Bradford Town-hall on the 20th inst., on the bodies of the fifty-four persons who lost their lives by the fall of a chimney at Newlands Mill, Bradford, on the 28th of December.

Shepherd Lamb, the engineman at Messrs. Haley & Co.'s premises at Newlands Mill, and whose daughter worked as a ruler at the mills, said he had worked at the place more than ten years. For the past two or three years he had noticed cracks on the east and towards the south-east side of the stack, commencing about 6 yards from the base and extending to a height of 14 or 15 yards. About a week before Christmas he noticed a bulging in the outer case on one of the angles on the east side. When he returned to his work on the Wednesday morning after Christmas, he noticed that a portion of the outer case had come away. In the evening he saw that more of the outer case had gone. The chimney was leaning a little towards the east. He did not notice that there was a strong wind that night, and he did not see the chimney rocking. Shortly before eight o'clock on the following morning he saw another portion of the outer case fall. About 6 yards seemed to have fallen. He went into the engine-house, and five minutes after he had stopped the engine for the breakfast half-hour he heard a great noise. On rushing into the yard he saw a great cloud of dust and smoke, and when this had cleared away he saw that the chimney had fallen.

The Coroner: Who has had the control of the chimney?—There has been the steward, Mr. Francis Haley, whom I have seen there. I have seen him there whilst repairs have been executed to the chimney, and I suppose he would be giving orders respecting the chimney.

For the last ten years, to your knowledge, has there been any examination of the inner part of the chimney?—Not to my knowledge.

Have you seen to the cleaning of the flues?—Yes.

Did not you go into the flues?—It is ten years since I have been in them. My man cleaned them out. The main flues we cleaned out about every six years. It is about eighteen months since our flue was cleaned. Witness added that on the Wednesday night or Thursday morning he did not see any smoke coming out. When a portion of the mill fell, about twenty minutes before the chimney gave way, he did not feel any alarm, or he would have told his daughter. The cracks which he had noticed in the chimney were sufficiently wide to allow him to get his hand in edgeways when they were at their worst. The cracks had gradually become wider. He noticed that they got worse about a week or a fortnight before Christmas.

The inquiry was again adjourned.

INSPECTION OF NUISANCES.

IN order to carry out these duties efficiently inspectors will require to exercise great forbearance, tact, and good temper; sometimes technical objections will be raised to your proceedings; sometimes vexatious delays and evasions will occur in the fulfilment of your notices; nuisances which you were anxious to suppress may have eluded your authority, or advantages which you were desirous to realise have stood beyond your attainment. When you would force one person to refrain from tainting the general atmosphere with results of an offensive occupation,—where you would oblige another to see that his tenants are better housed than cattle, and that while he takes rent for lodging he shall not give fever as the equivalent, you will be often reminded of the rights of property, and of an Englishman's inviolable claim to do as he will with his own. With private affairs you interfere only when they become of public import, with private liberty only when it becomes a public encroachment. The manufacturer's chimney that eclipses the light with unbroken clouds of smoke, the melting-house that nauseates a neighbourhood, the slaughter-house that forms round itself a circle of dangerous diseases,—these surely are not private, but public affairs, and how much more justly may the neighbour appeal to you against each such nuisance as an interference with his privacy; against the smoke, the stink, the fever that bursts through each inlet of his dwelling, intrudes on him at every hour, disturbs the enjoyment, and shortens the duration of his life?

It might be an infraction of personal liberty to interfere with a proprietor's right to make offensive smells within the limits of his own tenement, and for his own separate inhalation, but surely it is still a greater infraction of personal liberty when the proprietor assumes what is equivalent to a sole possession of the atmosphere, and claims the right of diffusing through it some nauseous effluvium which others equally with himself are thus obliged to inhale.*

* From an Address to Inspectors of Nuisances, by Frederic Booker, C.S.I., Coventry.

† See *Builder*, vol. xlii., p. 819.

* See pp. 60, 90, *ante*.

LONDON WATER.

MR. CROOKES, F.R.S., Prof. Odling, and Dr. Meymott Tidy, in a report dated January 1, 1883, and just submitted to the president of the Local Government Board, say,—"We submit herewith the results of our analyses of the 161 samples of water collected by us during the month of December, on the days and at the times indicated, from the mains of the seven London water companies taking their supply from the Thames and the Lea. Of these 161 samples, the whole, without a single exception, were found to be bright, clear, and efficiently filtered. . . . . It will be seen that in respect of the aëration, colour, and freedom from turbidity, the condition of the water during the past month has been unexceptionable; while the proportion of organic matter has fallen somewhat below that usually met with at this period of the year."

It can scarcely be regarded as anything short of remarkable that experts, as a rule, find the results of examination precisely what are desired by their employers. Dr. Frankland reporting to the Registrar-General often gives a very different account of the waters reported on at the same time by the eminent analysts above named.

A NEW SYSTEM OF CHIMNEY CLEANING.

ACCORDING to a German technical journal a patent has been taken out by a Leipsic firm for a small steam-engine of 4-horse-power, by means of which a body of about 3,500 cubic feet of air is introduced into the chimney from beneath with such a pressure that the soot is driven upwards, and is received at the top of the chimney in a specially constructed appliance so that the inmates of the house are far less incommoded than is the case by the ordinary system. It is said that in twenty seconds the complete cleaning of a chimney can be effected. The cost of the machine is said to be about 275*l.*, and three men are required to work it, so that it is a question whether any gain could result, from an economical point of view, from its introduction, as the charge for its use must be to some extent in proportion to its price.

HERTFORD CASTLE.

SIR,—"G. T. C." in his excellent paper on "Hertford Castle," which appeared in your pages,† has, probably from want of local knowledge, fallen into error. He says, "The Danes overran this part of England more than once, and the camp at Danesbury is probably their work."

I know Danesbury well, and I can positively assert that there is nothing whatever there which indicates it having been fortified. "G. T. C." has evidently allowed himself to be carried away by the name of the place. The estate formerly belonged to the Cuyler family, and on the death of General Sir Cornelius Cuyler, bart., in 1819, it was sold to Mr. William Blake. At that time it was known as St. John Lodge; but when Mr. Blake bought the estate he changed its name to Danesbury; not that the Danes ever had a bury there, but that it sounded better. This account I had from Mr. Blake's son, the late Mr. William John Blake, who died at Danesbury in 1875.

Seven miles north of Hertford is a place which for centuries has been known as Dane End. It was here, according to tradition, that the Danes were checked. No such thing. It is simply *Dene End*=the End of the Valley. Dane End is in the parish of Munden, which name itself signifies the safe or peaceful valley.

J. E. CUSSANS.

ENLARGING THE SCHOOL BOARD OFFICES.

SIR,—I have just heard that the School Board offices are to be enlarged, and that the original architect is not to be entrusted with the work.

Is it known why? Surely he is the proper person. A paragraph in the *Builder* might lead to some explanation. AN ARCHITECT.

HARDENING FLOORS.

I NOTICE in your last issue that a subscriber writes for information with respect to hardening floors, and may mention for his guidance that I have found Griffith's Floor Enamel to be the most successful paint, standing severe weather and rendering the floor perfectly impermeable in several hospitals I have been connected with. F. W. B.

SETTING A CHIMNEY UPRIGHT.

SIR,—I read in the *Builder*, some years since, an account of what, at the time, was considered a remarkable and clever feat, *viz.*, setting a high chimney upright by means of chasing and wedging, &c., at the base. I could not help feeling forcibly struck by the crude and unsafe method, as I thought it, of dealing with such a difficulty. Since then, with increasing experience in construction (especially in masonry), my misgivings have increased likewise, and I cannot help asking myself the question, "How is it that such a serious task as setting a leaning chimney upright is left to 'Steeple Jacks'"? There are several reasons why a structure of the kind should lean over, *viz.*, insufficient or improper foundations, inferior mortar for bedding the material, insufficient bond or through stones, and carrying up the work unevenly or without giving the work sufficient time to settle as the building progresses. If, from these or similar causes, the erection commences to lean, "does it appear reasonable that a remedy should be attempted by such means as those usually adopted by the class of men referred to? It does not seem to me feasible that a chimney-shaft of such enormous weight can retain its bond, while subjected to such a process as chasing and wedging from the base. If there is any one particular kind of work requiring more especially the thought, care, and attention of an experienced architect, surely this must be it. W. J. M.

FRAUDULENT GIFTS.

SIR, —We have read with very much pleasure the article, "Fraudulent Gifts and Commissions," in your issue of the 6th of January, to which our attention was called this day.

About two years ago we decided to abolish all commissions, presents, &c., and even subscriptions to bean-feasts and Christmas boxes. To make the decision definite and final, we had circulars printed, and sent them to all our customers, announcing our resolve, and requesting that no presents might be offered to any of our people. We certainly anticipated worse results in loss of business, &c., than we have found, though there is no doubt that we have lost a great deal that would otherwise have come to us, and we are quite sure that we are still suffering in many quarters; but, on the whole, we do not regret the action we have taken, and are quite resolved to carry it out, whatever the results may be. We should be delighted to assist in the formation of such a society as is suggested in your article. EWART & SON.

Miscellanea.

Leeds Church, near Maidstone. — A polished brass eagle lectern has lately been presented to the above church, by Mr. Wykeham Martin, of Leeds Castle. The style is fourteenth-century Gothic. It has a massive central shaft, with smaller ones acting as buttresses, filled in between with foliage. It was made by Messrs. Jones & Willis.

The Institute of Painters in Water Colours announce that on the completion of their new galleries in Piccadilly, they will establish a school for the instruction of students in water-colour painting. No elementary teaching will be given, however, and admission to the school will be by examination. The work of the school will be supervised by members of the Institute, in much the same way as the work of the Royal Academy students is directed by the Academicians.

The Chateau Scott, at Cannes, now occupied by Mr. Gladstone, was fully described in the *Builder* for April 17, 1880 (vol. xxxviii., pp. 472, 474), when we published a view and plan of the building.

The Old Law Courts.—The materials of this interesting structure were disposed of on Monday and Tuesday, and consisted of the internal fittings of the main buildings fronting St. Margaret's Church, including the Admiralty Court. The first day's sale realised 850*l.* On Tuesday the fittings of the Old Court of Queen's Bench, the Exchequer Court, the Exchequer Chamber, Common Pleas, Second Court Common Pleas, and the Probate Court, were disposed of. The last lot in the catalogue, which may be regarded as the most interesting and historical lot of the structure, consisting of the building itself, was withdrawn, having, it is stated, been disposed of by private contract, to be re-erected on a public recreation-ground on the south side of the Thames. The entire proceeds of the two days' sale was about 2,450*l.* The Court of Exchequer was used as the sale-room, and the auctioneer made the witness-box serve as his rostrum. A very unwonted and lively appearance the place presented on Tuesday, when there was some spirited bidding for the first lot of lead put up. Commencing at 70*l.*, it was ultimately knocked down at 174*l.*

Cork Exhibition of Manufactures, Arts, Products, and Industries, 1883.—The project for holding this exhibition has now been fairly launched. It is intended to hold the exhibition on the present site of the Corn Exchange, in the city of Cork, and to open it in the first week of July. It will remain open for two months, or such longer time as may be deemed advisable by the executive committee. The primary objects sought by the promoters are: 1. The exhibition of articles manufactured in Ireland, and of raw materials,—mineral, vegetable, and animal,—produced in Ireland; 2. The exhibition of articles manufactured, and raw materials produced in other countries, which, in the opinion of the executive committee, may tend to the improvement of existing, or the development of new, industries in Ireland; 3. The exhibition of machinery suited to Irish industries, the machinery manufactured in Ireland being distinguished from that of other countries.

Mid-London Market Bill.—The promoters of this Bill have, through their solicitors, Messrs. Higginson & Vigers, written to the Clerk of the Metropolitan Board of Works to say that, having regard to the suggestion of the Duke of Bedford as to the enlargement of Covent-garden Market, they intend to withdraw their Bill for the forthcoming Session. The Duke's proposals appear, they say, meagre and unsatisfactory, but they ought to receive due consideration, that there may be an end to the present congested and discreditable state of the market. Should the present negotiations, opened by the Duke, come to no satisfactory result, the promoters of the Bill will be prepared to submit the plans of their project to the further consideration of the Board.

Explosion of a Gasometer in Glasgow.—On Saturday night last, about ten o'clock, one of the large gasometers belonging to the Corporation, situated in the Lilybank-road, exploded, injuring nine persons. The Royal Princess Theatre was plunged into darkness in the midst of a performance, but through the presence of mind of the manager, no panic ensued. The damage is estimated at 15,000*l.* Foul play is suspected. Mr. M'Roberts, the manager of Nobel's Explosives Company, Glasgow, has made an examination of the scene of the explosion on behalf of the City authorities, and has given it as his opinion that from the appearance of the "pitting" on the plates of the holder the explosion could not have been caused by any other explosive than dynamite.

Two Persons Suffocated through a Defective Flue.—Mr. Meggison, deputy-coroner for North Derbyshire, has concluded the inquest on the bodies of Caroline Smith and Hannah Bailey, domestic servants in the employment of the Rev. George Sadler, an Independent minister at Glossop, who were found dead in bed on Sunday morning, 7th inst., in strange circumstances. They went to bed on the Saturday evening in their usual health, but in the morning Mrs. Sadler found them both dead, and for many days the cause of death could not at all be accounted for. Medical evidence having been given, the jury found that death was caused by asphyxia, which was produced by the inhalation of the carbonic acid gas generated in the heating apparatus of the chapel, and admitted into the sleeping apartment through defective joinings in the chimney.

Fireproof Houses.—Messrs. Dennett & Ingle are not content to let pass an assertion in the *Observer* that it is hopeless to expect to find a building that is really fireproof. They write, "For more than twenty years we have been constructing fireproof floors, and they are to be found in the principal public and private buildings in the United Kingdom. Yet during that long period there is not an instance where one of the floors has succumbed to fire. This fact is well known to architects, but as some of your readers may not be acquainted with what has been done to insure the safety of buildings, it is possible that many doubts might arise, followed by serious consequences. Thus, for example, no less than eight acres of our work are to be found in St. Thomas's Hospital, and if the notion got abroad that it was not what it was represented to be, much anxiety must be endured by the patients. Then it is suggested in the article that the corridors of the New Courts of Justice may become a source of danger. All the vaultings of the corridors in the building have been constructed by us in our concrete (they are not of stone, as is stated, although they may appear so), and we are confident that if a fire arose in one of them, it could not pass upwards or downwards through the material. We are no less confident about the safety of the floors of the courts and offices, which are also on our system."

Lectures: Institution of Civil Engineers. The Council have arranged for the delivery, at the Institution, of a series of six lectures, on "The Applications of Electricity," on the under-mentioned Thursday evenings, at eight o'clock:—

Feb. 15th, "The Progress of Telegraphy," by Mr. W. H. Preece, F.R.S.; March 1st, "Telephones," by Sir Frederick Bramwell, F.R.S.; March 15th, "The Electrical Transmission and Storage of Power," by Dr. C. William Siemens, F.R.S.; April 5th, "Some Points in Electric Lighting," by Dr. J. Hopkinson, F.R.S.; April 19th, "Electricity Applied to Explosive Purposes," by Professor F. A. Abel, C.B.; May 3rd, "Electrical Units of Measurement," by Sir W. Thomson, F.R.S.

Dynes Hall, Essex.—This old Queen Anne mansion is having considerable alterations and additions made to it under the direction of Mr. John Birch, of John-street, Adelphi. The original mansion was built in 1575, during the reign of Queen Elizabeth, and the greater portion of it was pulled down and rebuilt by the Enyons during the reign of Queen Anne. The works have been entrusted to Mr. Harcourt Runnacles.

Monumental.—The trustees of the late Mr. R. H. Allan have entered into a contract with Mr. Harry Hems, sculptor, of Exeter, for a monument, from the design of Mr. Pritchett, architect, of Darlington. It is to be erected against the blank wall in the south transept of St. Cuthbert's Church, Darlington, which was built in 1375, to support the cracking tower. The monument will be of fine statuary marble, with a profusion of fourteenth-century detail and carving.

Iron.—Mr. E. W. Marfleet, who has recently removed from Coleman-street to Metropolitan-buildings, 63, Queen Victoria-street, has been appointed London agent for Messrs. De Leeuw & Philippsen, of Antwerp, for the sale of Belgian joists, riveted girders, flitch plates, and so on. Their new section-book contains over 800 sections of iron, &c., with the sizes and weights in English and French, and a separate table giving the safe distributed loads for rolled iron joists.

Furniture.—Messrs. Howard & Sons, of Berners-street, have issued a capital trade book, showing much variety in designs of bedroom and other furniture, with useful information as to the cost of furnishing. Parquet flooring also is well illustrated, and several specially designed interiors are given, a few of which are somewhat overdone. The book will be found useful.

Stained Glass.—The east window of Langham Church, near Colchester, has just been filled with Munich stained glass, representing Faith, Love, and Hope, the subject being taken from 1 Cor. xiii. 13, "The greatest of these is love." The artists are Messrs. Mayer & Co.

TENDERS

For reinstating and re-decorating after fire, the Cheshire Cheese public-house, corner of Addle-street and Philip-street, City, for Mr. Frederick Garner. Mr. Joseph G. Needham, architect, 1, Princes-street, Spitalfields:—

S. W. Hawkings (works to be measured and valued.)

For school-buildings, caretaker's house, outbuildings, and fences, at Croyland-road, Edmonton, for the Edmonton School Board. Mr. A. R. Barker, architect. Quantities by Messrs. J. S. Lee & Son:—

Dove Brothers	£11,500	0	0
Foster & Dickson	11,319	0	0
Shaw	10,644	0	0
Patman Brothers	10,544	0	0
Johnston	10,324	14	2
Goddard & Sons	10,224	0	0
Adamson & Sons	10,072	0	0
Kilby	9,863	0	0
Uff	9,540	0	0
Wall	9,524	0	0
Horlock	9,500	0	0
Gardener	9,301	0	0
Tongue (accepted)	9,087	0	0

For alterations and additions to London and South-Western Bank (Poplar branch). Mr. Charles Bell, architect. Quantities by Mr. H. Lovegrove:—

C. Everard	£1,339	0	0
R. Abraham	1,295	0	0
J. H. Cocks	1,270	0	0
G. Sharpe	1,270	0	0
W. Bangs & Co.	1,234	0	0
Atherton & Latta (accepted)	1,150	0	0

For erection of chimney-shaft in Skin Market-place, Southwark, for the Bower-Barff Rustless Iron Company (Limited):—

Thomas Watson, Dulwich	£245	0	0

For roads and sewers on the United Land Company's Bruce Grove Estate, Tottenham:—

J. Cardus	£4,480	0	0
Beadle Bros.	4,110	0	0
J. G. B. Marshall	4,078	0	0
M. J. Botterill	4,069	0	0
J. Jackson	3,783	0	0
Nowell & Robson	3,693	0	0
J. Jackson	3,556	0	0
T. Spurgeon	3,415	0	0
J. Ball	3,269	0	0
W. G. Harris	3,251	0	0
Strachan & Co.	3,200	0	0
J. Pizzey	3,150	0	0
J. E. Bloomfield	3,149	0	0
W. Nicholls	2,899	0	0
S. Saunders	2,853	0	0
E. & W. Iles (accepted)	2,825	0	0

For the conversion of Stamford House, Stoke Newington, into a Female Penitentiary. Messrs. R. H. Carpenter & B. Ingelow, architects. Mr. W. H. Barber, quantity-surveyor.—

		Old Materials.
Shillitoe	£11,300	£35
Booth & Sons	10,425	75
Dabbs	10,250	150
Bentley	10,134	50
Roberts	10,017	120
Ashby Bros.	9,695	10
Boyce	9,450	36
Grover	9,472	37

For the erection of two detached villa residences at Honor Oak, for Mr. E. P. Trenchard. Contract No. 3. Mr. W. Jervis, architect:—

M. Redman (accepted)	£2,075	0	0

For alterations and additions to the Nun's Head, Nunhead, for Mr. Frederick Johnson. Mr. W. H. Jervis, architect:—

Weaks (accepted)	£700	0	0

For building new Board Schools at Kenmont Gardens, Harrow-road. Mr. E. R. Robson, architect. Quantities by Mr. Charles W. Brooks:—

J. T. Chappell	£10,980	0	0
Stimpson & Co.	10,239	0	0
W. Downs	10,137	0	0
C. W. Reading	10,100	0	0
W. Oldrey	9,993	0	0
J. Grover	9,979	0	0
C. Cox	9,878	0	0
Atherton & Latta	9,600	0	0
C. Wall	9,390	0	0

For erection of new, and enlargement of present school buildings at Calvert-road. Mr. E. R. Robson, architect. Quantities by Mr. J. Thornton Green:—

J. R. Hunt	£7,678	0	0
W. Tongue	7,262	0	0
Atherton & Latta	7,259	0	0
Kirk & Randall	7,147	0	0
S. J. Jerrard	7,033	0	0
W. Oldrey	7,000	0	0
F. Johnson	6,913	0	0
C. Wall	6,695	0	0

For the erection of a house in the Albert Park, Abingdon, for Miss Evans. Mr. Edwin Dolby, architect:—

Walter, Oxford	£950	0	0
Clarke, Parkstone, Dorset	863	14	0
Davis, Banbury	815	0	0
Barret & Drew, Abingdon	805	0	0
Selby, Oxford	776	0	0
Dover, Oxford	750	0	0
Martin, Maidenhead	740	0	0
Sharman, Kingsland	728	0	0
Wheeler, Wantage	707	10	0
Williams, Abingdon	689	17	0
Buckle & Wheeler, Abingdon (accepted)	599	0	0

For the erection of stables, coachhouse, and other offices, at Hackbridge, Surrey, for Mr. A. H. Smee. Mr. Richard Creed, architect:—

Humphris, Sutton	£950	0	0
Stewart, Wallington	879	0	0

For the erection of boundary walls, Beechholme, Hull, for Mr. E. Leetham. Mr. R. Coulson, architect. Quantities by the architect.—

Excavator and Bricklayer.

M. Harper	£199	0	0
J. Fewster	195	0	0
J. Drury	193	0	0
A. J. Kelsey (accepted)	185	18	8

Mason.

Quibell & Peers	£45	15	0
F. Sweeting (accepted)	37	2	0

For the erection of additional buildings, and alterations at the present buildings at the headquarters of the Fire Brigade, Southwark Bridge-road, for the Metropolitan Board of Works. Quantities supplied by Messrs. Nixon & Raven:—

Webster	£28,893	0	0
Dixon	23,520	0	0
Patrick & Son	22,882	0	0
Martin, Wells, & Co.	22,860	0	0
Shurmur	22,754	0	0
H. Hart	22,370	0	0
Crockett	22,000	0	0
Dickenson	21,900	0	0
Greenwood	21,679	0	0
Kellett & Bentley	21,643	0	0
Mowlem & Co.	21,600	0	0
Laing & Son	21,100	0	0
Bentley	20,775	0	0
Hook	20,730	0	0
Stimpson & Co.	20,370	0	0

Accepted for Llandudno Pier Extension and Swimming Baths. B. Nelson, Llandudno, Architect and C.E. Quantities by the architect. Amended on second tendering:—

No. 1.—Smith & Co.	£2,486	0	0
No. 2.—Woodall	1,947	0	0
No. 2a.—Messrs. S. Woodall	2,316	0	0
No. 3.—Pritchard & Co.	1,650	0	0
No. 4.—Gradwell	2,655	0	0
No. 5.—Tanson & Co.	1,580	0	0
No. 6.—Shelley & Co.	2,100	0	0
Pritchard & Co., for completion of No. 1	2,246	15	0

For the sewering, paving, flagging, &c., of a number of streets for the South Stockton Local Board. Mr. S. E. Thorrold, C.E., surveyor:—

J. Tomlinson, South Stockton	£1,703	13	3
G. Robson, Newcastle-on-Tyne	1,600	8	11
W. Robinson, Stockton	1,444	9	6
T. Heatley, Stockton	1,418	2	10
T. Hunt, Thornaby (accepted)	1,409	7	8

For the erection of a depôt for Messrs. Carter, Paterson, & Co., at Camberwell. Mr. William Eve, 10, Union-court, Old Broad-street, architect:—

Brown	£5,100	0	0
Adamson & Son	4,925	0	0
Higgs	4,696	0	0
Lawrence	4,634	0	0
Hall, Beddall, & Co.	4,594	0	0
Hubble & Trott	4,560	0	0
Harris & Wardrop	4,544	0	0
Colls & Sons	4,500	0	0
Downs, Hampton-street, Walworth-road (accepted)	4,477	0	0

For the erection of a depôt for Messrs. Carter, Paterson, & Co., Norbiton. Mr. William Eve, 10, Union-court, Old Broad-street, architect:—

Phillips (too late)	£3,621	0	0
Lawrence	3,125	0	0
Rowe	3,032	0	0
Brown	2,991	0	0
Hubble & Trott	2,945	0	0
Down	2,945	0	0
Colls & Sons	2,850	0	0
Harris & Wardrop	2,774	0	0
Higgs,* Loughborough Junction	2,696	0	0

* Accepted.

For the erection of a lecture-room, Stoke Newington. Mr. William Eve, 10, Union-court, Old Broad-street, architect:—

Devereux (too late)	£387	0	0
Hayworth	365	0	0
Whincop (too late)	348	0	0
Brown	335	0	0
Eary	330	0	0
Harris & Wardrop	318	0	0
Hubble & Trott,* Creek-rd., Deptford	307	10	0

* Accepted.

For the erection of additional stabling, Fulham, for Messrs. Carter, Paterson, & Co. Mr. William Eve, 10, Union-court, Old Broad-street, architect:—

Hall, Beddall, & Co.	£376	0	0
Harris & Wardrop	344	0	0
Eary	340	0	0
Bangs	339	0	0
Mears (too late)	335	0	0
Hubble & Trott	325	0	0
Brown	316	10	0
Phillips,* Disraeli-road, Putney	300	0	0

* Accepted.

For completing twenty-four houses, Caistor Park-road, West Ham, for Mr. T. A. Hickley. Messrs. Muggeridge & Powell, architects:—

Castle	£2,650	0	0!
Robey	2,013	0	0
Riddell	1,947	0	0
Burman	1,500	0	0
Fisher (accepted)	1,397	0	0
Curtis & Woodcraft	1,355	0	0
Richmond & Derrick	1,263	0	0!

For pulling down old buildings, and erecting on site five dwelling-houses and shops, at Lyndhurst, in the New Forest, Hants, for Mr. John Maxwell. T. A. Shelton, architect:—

Crook, Southampton (accepted).

For alterations and additions to the Pilot public-house, High-street, Deptford, including walnut shop front, corridor, and bar partitions, counter, ornamental glazing, tiles, mosaic paving, &c., for Mr. E. J. Rose. Messrs. Wilson, Son, & Aldwinckle, architects. Quantities supplied:—

W. Shurmur (accepted).

For completing two villas at Boxmoor, Herts, erecting boundary fences, &c. Mr. W. A. Fisher, architect, Hemel Hempstead:—

C. Monk, Two Waters (accepted) £350 0 0

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The Builder.

VOL. XLIV. No. 2087. SATURDAY, FEBRUARY 3, 1883.

ILLUSTRATIONS.

Eversholt, Cricklewood.—Mr. Edward A. Hefler, Architect 142
Oxford and Cambridge Mansions, Marylebone (Plan, 149).—Messrs. C. Eales & Son, Architects 144
Pisa: Baptistery, Cathedral, and Leaning Tower (Double-page Engraving) 146, 147
London Street Architecture: Houses in Oxford-street.—Mr. F. Boreham, Architect 151

CONTENTS.

The Architectural Influence of Conquest 129
The Risks and Responsibilities of Revived or Remodelled Style in Architecture 131
Earthen Monoliths: New Light on the most Ancient Architecture 133
Three German Industrial Museums 134
Flats at Home and Abroad 135
The Burlington Fine Arts Club 136
The Memorial Church at Constantinople 136
Hull and Barnsley Railway and Dock 136
Tall Chimney Construction 136
Report on Arts in Rome 137
Trades Confusion and Ceramic Schools at Limoges 137
Pozzolanic Deposits in Italy 138
The Imperial Palace at Strasburg 138
Law Courts Round the Royal Courts of Justice 138
A Doctor's House, Bedford Park, Chiswick: Visit of the Architectural Association 139
Travellers to Brighton 139
Monumental 140
Pisa 140
"Eversholt," Cricklewood 142
Oxford and Cambridge Mansions 143
London Street Architecture: Premises in Oxford-street 149
Llanbedr Church, Merionethshire 151
Windsor Forest 151
The Dome of St. Paul's 154
Building Notes from Bristol 154
The Use of Tin Plates in Building 154
The Bradford Chimney Disaster 155
Ancient Water Organizations 155
The Vote for Fine Arts in France 157
The Stones of Cologne Cathedral 157
A New Feature in House Building 157
Royal Berks Hospital, Reading 157
Affectation in Art 157
The Excavations at the Pantheon at Rome 157
Liverpool Engineering Society 158
Competitions 158
New Board School, Sheffield 158
Bills in Parliament 158
Surveyorship 158
Valuable West-end Properties in the Auction Mart. The Members' Mansions.—Crawley's Hotel 158
Value of Property in Eastcheap 158
German Asylum, Cricklewood 158
Nottingham Municipal Offices Competition 158
Bristol Master-Builders' Association: Annual Meeting and Dinner 159
Building Patent Record 159
The South Kensington Museum 159
Action against Messrs. Lucas & Aird: A Claim for Waiting 159
Case under Employers' Liability Act: Bevan v. Trow 159
Damp and Porous Walls 160
Stone-cutting Machines 160
Sub-contracting in the Building Trade 160
The Water Companies 160
Payment for Measuring 160
Provincial News 160
Miscellanea 161



The Architectural Influence of Conquest.

THE influence, upon the indigenous architecture of any country, of the forcible or unavoidable intrusion on the scene of another and stronger people, is a subject of considerable interest, whether in regard to past, present, or future. The phenomenon in one way or another will always be recurring, though in modern times it is likely for the most part to present itself in a different aspect and under different conditions from those under which it took place in former periods of history.

The simplest manner in which conquest makes its influence felt upon architecture, is that in which a strong country subdues a weak one, assumes the government of it, occupies the public offices with men chosen from the ranks of the conquering nation, and more or less establishes a society of the conquering race within the confines of the conquered country. In this crudest and most violent and unmistakable form of conquest, the natural result is the erection by the conquerors of buildings in the style to which they have been accustomed. This was the form which the architectural element took in the case of the people who were pre-eminently the great conquerors of the world's history, the Romans. During a great part of their career their business was conquest, and the mental recreation of a powerful Roman ruler or general was probably that which Shakspeare has ascribed as a habit to Antony,

"Oft, when he mused of taking kingdoms in,"

as if "taking kingdoms in" were a kind of habitual indulgence of his spare time. In the case of the Romans the architecture followed suit with everything else. A subjugated country or province was brought formally under Roman rule, Roman governors were appointed, Roman laws imposed, and Roman architecture was introduced as a natural portion of the whole *régime* of conquest. The reciprocal effect which in other places seems to have taken place between the art of the conquerors, each gaining some part of the character of the other, does not seem to have had much place in connexion with Roman occupation of other countries, except in the one notable case of Greece, which stands apart and comes under a different category, and which must be looked at separately. The Roman remains in various parts of England indicate plainly enough that the buildings erected after conquest and occupation were as purely Roman as if they had been built in Rome. This country, however, was then a barbarian one, and probably had no sort of structures which the Romans could have thought it worth while to take hints from. The temples at Baalbek and elsewhere, however, show the same phenomena of the entire ignoring of everything that was not Roman; the transplanting of Roman art and architecture in its entirety into the newly-acquired country.

The same kind of result attended the Norman conquest of England. The conquerors immediately began to fill the country with those massive structures, built with no stint of material and labour, many of which have out-lasted the Mediæval work of two or three centuries later. In this, as in the Roman conquests, it was the dominion of sheer armed force which gave the ascendancy to the conquering race, and the vanquished people were not probably supposed to have any tastes or predilections worth consulting or studying in any sense. It was their business simply to accept the social and artistic *régime* of the conquerors. The conquest of Greece by Rome was, as we have already suggested, an exceptional case, in which a people of great intellectual culture succumbed to a more powerful nation with a much more complete military organisation. Here the ordinary architectural result of conquest was nearly reversed, for the Romans undoubtedly derived most of their best architectural and artistic development from the nation which they conquered. Even here, however, there was a certain degree of architectural assertion of the dominant race, for the temple of Jupiter Olympius, which was commenced on such a great scale, was not only Roman work, but, in what is now regarded as the complete and typical form of "Corinthian" capital, there first found, we probably see Roman rather than Greek taste; possibly a Roman idea carried out by Greek workmen. One or two very inferior forms of Doric capital to be found in Greece may probably also be traced to the influence of Roman taste working from and deteriorating a model too refined for them to properly appreciate. But in the main the architectural and artistic relation of Greece and Rome is nearly the reverse of that which is commonly found between conquered and conquerors; a result, of course, attributable to the exceptionally high artistic culture of the conquered country in this instance. Pope tried to draw a parallel between this case and that of France and England, in one of his imitations of Horace,—

"We conquer'd France, but felt our captive's charms."*

* Horace, "Græcia capta ferum victorem cepit"; *i.e.*, captured Greece took captive her rough conqueror,—"captivated" him, in fact, to make a play upon words out of it.

but with hardly sufficient truth in the facts to give point to the imitation. Both Horace and Pope, it may be said, probably referred more to the literary influence of the conquered country than to the artistic, about which they knew and cared much less; though the point would be stronger, in regard to Greece and Rome, if referred to the artistic influence chiefly.

The most energetic architectural influence, next to that exercised by Rome, was probably that in which Mahommedanism was concerned. The followers of the Prophet were, to the extent of their power, as ingrained invaders as the Romans, though on perhaps somewhat different motives; and their architectural style was pushed, to a great extent, hand in hand with their religious conquests. The *plan* of the mosque they carried everywhere, of course, for that was a *sine quâ non*; and the main and leading qualities of Arabian art permeated the countries into which the Mahommedan conquests had pushed. But the architectural invasion was not so complete as in the case of the Romans. The Mahommedan architecture on new soil had to take as well as give. This was partly, perhaps, that the original style was more pliant and romantic, less logical and unbending, than that of the Romans; also that it came into contact with higher native civilisations in some cases. The penetration of Mahommedanism into the Indian peninsula, for instance, led to the formation of an Indian Saracenic style having decisive qualities of its own, though we do not ourselves feel quite clear that the Saracenic style in India was so much nearer to purely Indian types than to Arabic as to lead necessarily to its being classified with Indian architecture, as our chief historian of architecture has classified it. To our thinking, the Saracenic element is still much stronger than the Indian, in the finest Indo-Saracenic examples of architecture.

India presents us with instances of another phase of the influence of dominant races on architecture, in a less direct and less generally noticeable form. This is to be found in the traces of Greek detail which appear, sometimes in surprisingly literal form, amid the ornamental work of Hindoo and Buddhist architecture. This seems to be the influence of a great style practised by a leading people, spreading itself, in occasional hints and small details, beyond the circle of the immediate influence of the dominant or invading race. On the actual and permanent occupation of a country the conquerors introduce their own architecture; but beyond that range recollections and details are carried further by travellers or wandering artists, and re-appear in the manner in which the Greek detail appears amid Hindoo work. This partial intrusion of the Classic style into the Indian is the more curious because the examples in which it is found, though very ancient, are probably well on this side of the Christian era; some are known to be not earlier than the ninth or tenth centuries, so that we

have here the last touches of Classic detail lingering in a style quite at variance with the general characteristics of Classic architecture, and after the practice of the parent style on its own ground had quite died out. This process of gradual filtration of style, taking place so slowly, and showing its effects so long after, is very curious; not, of course, without other examples in architectural history.

The other and more recent conquest of India has been followed to a considerable extent by the old result, the introduction of the architecture of the conquerors, in this case, however, not an original style, but one at second hand, or rather two at second hand,—Italian and revived Gothic. Even these, however, have been introduced in very poor form for the most part, inferior even to that in which they were practised in this country; though there seem to have been recent isolated instances of attempts at something superior, in Gothic and Classic both, to the ordinary run of Anglo-Indian architecture. It does not appear, however, that our intrusion with our revived styles has operated entirely to crush out the practice of native architecture, though it is probably tending to do so; just as it appears that the influence of our taste in regard to artistic design generally is intruding itself on the domain of what used to be purely Indian art. There seems, indeed, to be a curious tendency, in these modern times of increased intercommunication, towards a kind of give-and-take process, a tendency to equalisation, like that which occurs between bodies of different temperatures when brought into contact. The case of Japan is the most notable. Our recent increased intercourse with that nation has led to an almost absurd reciprocation of this kind; an admiration on our part of everything Japanese, and an endeavour to get as many Japanese things as possible, and to decorate our dwellings in the same way, accompanied by an endeavour on the part of the Japanese to be as European as possible, to imitate our dress, and, to some extent, our artistic and architectural tastes. The fact is that what is new and unhackneyed to any people will constantly have an attraction for them, sometimes quite out of proportion to its real value. The men who weave the Indian stuffs, and carve the Indian sandal-wood boxes which we admire, do not regard these as triumphs of art, in the sense that we do. It is the way they have always done it, and it would not occur to them to do it otherwise.

To return from what is a slight digression, it may be said that, after all, our appearance in the character of conquerors in India has been marked and commemorated much more by our engineering than our architectural doings, and that it is in these that there would be found the nearest parallel to the Roman influence on the structures in conquered countries which has been before referred to. But there is another kind of conquest in which our race has been very largely concerned, that silent and gradual conquest which consists in the pushing out of a weak people by a commercially and socially stronger one. The colonisation of America is the instance of this permeation of the Anglo-Saxon race on the greatest scale; but here there was no existing civilisation to contend with, nothing but empty country and scattered barbarian inhabitants, so that it does not quite fall under the head we are considering. Even under these circumstances, however, the spread of the usual forms of modern Classic architecture over the new cities of America is a curious fact to contemplate. It might have been thought and hoped that the establishment of representatives of the old race upon new soil, in a country different in climatic conditions from the mother country, and with no existing indigenous architecture for them to copy, might have led to the evolution of a new form of building, or a new treatment of the old forms. But nothing of the sort seems to have been thought of, and when the towns in the States grew in wealth and in scale, the illustrations of their public buildings which were to be met with occasionally might just as well have been new buildings in London or Paris. And so with Australia. The not very strongly-marked types of Renaissance architecture which have been long practised in great part of Europe as the most generally suitable for town buildings, seems to have established a hold on the European mind, and perhaps on the Anglo-Saxon mind more than on any other, and wherever that mind dominates, there it seems, by force of habit, quite apart from much architectural thought, to take its own habitual fashion of building.

This, as we have said, is disappointing in cases where there seems every inducement to originality, offered by new scenes and new climatic conditions. But in the cases of America and Australia there was at least nothing indigenous to turn out or interfere with. There was virgin soil there; no old architecture, no *genius loci*, no associations of any kind. This is different in what may be regarded as one of the latest European intrusions on new ground, the late joint influence in Egypt of France and England, and our recent more paramount influence there. It is difficult to know exactly how to describe our situation there, but as far as the present subject is concerned, it is much the same as a conquest. Partly by a slow train of circumstances, social, political, and commercial,—terminating in a military movement,—we have become the dominant power there, and the effect in relation to architecture is beginning to follow its usual course. But here the case is different from that of America and Australia. The intrusion is made on ground in which, in the cities at least, there is a highly picturesque indigenous architecture, which has been the admiration of European artists for a long time back. This is said to be threatened with gradual abolition, the first stages of which have already been traversed. A letter to a daily paper last week expressed the views of the Society for the Protection of Ancient Buildings on the subject of the projected improvements in Cairo,—projects which, "only arrested by the late political events in Egypt, involved the destruction of entire streets and quarters of the town, which have been laid waste preparatory to the erection of modern buildings debased in style and totally unadapted to the climate of Egypt and to the want of the inhabitants." We are not too much in sympathy with the Society in question, and have learned by experience not to take without reservation statements which are made on the authority of such very excitable people. The Europeanising of Cairo, more or less, is, however, an undeniable possibility, if not probability, and the regret with which many would see the disappearance of the old picturesque city, to be replaced by streets in the fashion of Paris and London, is a feeling with which we should sympathise. The same process is going on in other Oriental towns. We heard the other day from a recent traveller in the East of the modernisation which Damascus is undergoing, and how a considerable part of "the street called Straight" had been rebuilt in European style, and of the great change in the aspect of this and other Eastern cities which five or six years have brought about. It is certainly a vexatious and a melancholy thing that forms of the picturesque, which we had long loved and delighted in, should be getting gradually "improved" away, and the local character of some of the most characteristic of cities should be disappearing. The question is, however, whether in the first instance some portions of the said cities, such as Cairo, do not greatly require demolition, on sanitary grounds; and after that comes the more difficult question, how is it best to rebuild them, and what is the right course to take to guard against the destruction of the architectural beauty of the city? In regard to the first point, we feel no doubt whatever that an impartial examination of such cities as Cairo and Damascus would lead to the conclusion that on sanitary grounds the sooner a considerable portion of them was pulled down and rebuilt the better. It is possible that the necessity for this might not be so much felt by the native inhabitants, who have been long inured to unsanitary conditions of life; but when once a city of this type comes to be largely inhabited by Europeans, its unhealthiness will be felt and recognised, for it seems unquestionable that the sensitiveness of people to unsanitary conditions of life is increased with each generation, when notice has once been systematically directed to it, and people have become accustomed to improved conditions. How are we to meet this state of things, so as to combine due regard to the practical and the picturesque as far as possible? The propositions of the Society aforesaid seem very visionary. They suggest that "the Khedive should be invited to enforce the abandonment of all schemes for the removement [*sic*] of native buildings except in cases that involved danger to the inhabitants, and this should be decided by competent judges." If the competent judges were to be provided by the Society, we presume we should soon see the spectacle of a number of houses only held from actual falling by props "reverently" placed against them; at least, if the Society applied the same principle as they proposed to apply to English cathedrals and churches. Putting aside that, however, and supposing that the decision be made under really competent and impartial judgment, what can be thought, in the present day, of such a proposition for the exercise of "paternal government"? However well-meant, the supposition that this could or would be carried out is literally absurd. The further proposition is that in the case of streets that have been pulled down, but not restored, "native architects" should be employed to rebuild them, under the supervision of "competent Europeans" who had made Arab art their special study, and who would yet "keep in view the requirements of modern civilisation." Now, this might be a feasible solution if there were any people existing such as are implied in the term "native architects," who would work under European supervision in the manner implied; who would supply indigenous art, and take their construction and planning from their European supervisors. Does any such class of men exist in Cairo, for instance? We doubt it very much. But suppose there to be such, and suppose the new buildings carried out under the superintendence of the competent men who had studied Arab art, would not the result be very much of a sham, after all? an attempt to make the new city look like the old? Part of the charm of Oriental street architecture surely is that it is in one sense not built as "architecture" at all; it is piled together in an unconscious and unpremeditated manner which results in that spontaneous picturesqueness which we all admire, and the loss of which we should all regret. But that is a kind of result which cannot be obtained by a deliberate working up of the thing under the guidance of "eminent men who have studied Arab art." Such a process would only lead to a kind of mock-antique street, which would not have the charm of the old, and would have the practical disadvantage of retaining the methods of construction which are certain to prove so favourable to the prevalence of decay, dirt, disease, and fire. The result would satisfy no one; neither the lover of the picturesque nor the practical house-architect and sanitary engineer.

What, then, is to be done? In the first place, we are entirely with those who discountenance all wanton and unnecessary demolition; but we doubt whether any preventive measures can be directed against the process except that of public opinion. In reference to this, the letter of the Society, and their action otherwise in the matter, although involving a view of the situation which we think chimerical and unpractical, may nevertheless do good in drawing public attention to the subject, and assisting to create a public opinion in regard to it. When the rebuilding is necessary, either because of absolutely unsafe or unsanitary condition of the existing structures, or to meet the wants of an increasing number of European residents (who *will* have, and quite rightly, the comfort and cleanliness which European modes of life have accustomed them to), then the desideratum is that the new buildings should be beautiful and not ugly, and that they should be in a style at least suggesting associations with the locality, and not appearing like a Paris new street thrust bodily into the midst of the Eastern surroundings. This is what we suppose is meant by the complaint that new streets are to be built in a "debased style," an expression which would be quite excusable in that sense, though we rather doubt whether the Society for the Protection of Ancient Buildings do not mean to apply the phrase to any modern architecture whatsoever. But they should remember the proverb about those who live in glass houses, for it is certain that some very "debased" architecture has been built in London and elsewhere from the designs of active members of the Society itself.

Only a general improvement in the architectural ambition and architectural taste of the day can insure us against such merely prosaic treatment of the necessary modern alterations to ancient towns; and that is a matter slow to be developed. It is certainly a subject for congratulation that there are a certain number of persons who feel that the intrusion of ugly buildings, out of harmony with the situation,

into the midst of a picturesque ancient town, is a proceeding to be strongly protested against; and so far we are quite with the Society and their friends. But it is of no use whatever to protest mildly against the removal of old, worn-out, and dangerous streets, or against the gradual Europeanising of many places not originally European, as if the thing were a kind of crime. Old buildings are most interesting things, especially when picturesque into the bargain; but they will not last for ever; the time must come when they are too dilapidated or (if dwelling-houses) too unhealthy to be allowed to remain longer; and what is the use or the sense, in that case, of shrieking out lamentations about the matter, and crying out to have them propped up until the very last moment that they can be held together, we entirely fail to see. And as to the Europeanising of Oriental towns, it is, as we have endeavoured to indicate in our previous remarks on the history of the subject, simply an inevitable result wherever Europeans become the dominant race. It always has been so, it always will be so: the dominant race brings its architecture with it. The increased means of intercommunication is infallibly tending to assimilate, in their customs and tastes, people who were once very distinct in these respects. In the nature of things this tendency must increase rather than diminish; and the nation or race which is most powerful and most enterprising will assert its influence and its tastes more and more widely. If the Society for the Protection of Ancient Buildings can stop the present progress and extension of English political and social influence in Cairo, and persuade us to quit our position there; or, if they can stop the tendency of Oriental potentates and their courts to adopt European habits and costumes, they may then also stop the intrusion of European architecture into Oriental cities, but not till then. The point is to see that the Europeanised architecture be fine of its kind, not commonplace, and not destitute of any reference to the style of its surroundings, as is no doubt the case with some of the architectural intrusions complained of. That is what we have a right to expect, and any criticism or protest directed to that end would have our cordial support, and we may add that a new interest might, in competent hands, be evolved from the endeavours to give to forms of architecture essentially European an expression and colour which would blend them, not harshly, with their Oriental surroundings. But to expect to stop out modern European architecture, in the face of the spread of European influence, or to make ancient Oriental architecture everlasting, is to expect what is impossible.

THE RISKS AND RESPONSIBILITIES OF REVIVED OR REMODELLED STYLE IN ARCHITECTURE.

SOME well-pronounced indications will have been apparent for some time, to the observant of signs and seasons, that architectural taste is disposed to revert to Classical types, to the Greek and Roman forms and details, principles of design and style and treatment of ornament which have long been under eclipse,—partly, it may be, discredited by an unsatisfactory career, but assuredly no little in consequence of the usual fickleness of fashion, fashion which ever becomes impatient when development is tardy, and willingly favours competitive novelties until these also become novel no longer, and prove themselves as disappointing as any they superseded. If Classicism is, indeed, to have a renewed chance, it will be well that the lessons of what was in effect a previous failure should be scanned, and that in aiming at the revival of a style we should recognise what constitutes a healthy revival, a revival which, to be in harmony with nature's universal laws, must also be a development. The successive epochs of architectural development have much analogy to those which are the most interesting subjects of geological speculation. Even in the succession of the systems of rocks where the transition seems least violent, while the geologist loses numerous species, and even entire genera, he ever recognises a limited number of certain survivals, but, together with these, a far larger proportion of types which, specifically distinct as they may be, have all the appearance of being forward steps in development of superseded and obsolete species. The geologist has yet to discover and explain to us what were the changes in the conditions of life which inevitably initiated and promoted these transformations, and in what manner they operated. The architects have not quite so serious a difficulty. They are familiar with changes which do not depend on secular development, and they are witnesses day by day of the mode of working of influences which affect the metamorphoses in which they are interested. The geologist may have to fly to hypothetical modifications of the constituents of the atmosphere, to precession of the equinoxes and reduction or exaggeration of the obliquity of the ecliptic, to contributory impulses from volcanic agency within the earth, or meteoric collisions from without; but the most learned and most candid confesses frankly, if not in despondence, that he is groping in semi-darkness at last. The architect has clear knowledge, in a large number of instances, not only of what types are gone, but how they went, not only of what old types have been modified, but of what agencies effected the change, and even by what operation of like agencies types have originated from time to time, which, apart from the witness of general and monumental history, might pass for issues of spontaneous creation. The changing necessities of human society form one great class of such agencies,—competent these to originate entirely new types of structure, though, in fact, humanity almost invariably prefers to make a departure from the previously existing, and the previously existing seldom fails to make a record of its claim, by leaving some mark on the new type. Another influence, but which, strictly speaking, may be taken as but another direction of changing necessities, is the requirement by humanity of the stimulus of variety, of novelty. What gives a sense of deep satisfaction to one generation, largely in virtue of coming as a distinct relief from satiety with a certain antecedent excitement, has no such advantage when it addresses that generation's successor. It has become itself the same weariness to the flesh for which it was precisely adapted to administer a remedy before. So it is that between the expansion and variation of architectural requirements from one age to another as matter of simple convenience, and then of æsthetic stimulus and satisfaction, the development of architectural species can always be at least explained, and even sometimes foretold. A more precarious factor is the manifestation from time to time of originating inventive genius.

When revulsion of taste turns architecture back upon a style which has been in vogue aforetime, there are various mistakes which are certain to have some exemplifications,—certain pitfalls into which it must occasionally, and may, too frequently, be betrayed. It may err on the one hand by copying too literally and reproducing slavishly; and on the other no less unhappily by unfettered, but unintelligent adaptation. The beauty of ancient models is a besetting allurement to adopt what seems at once the loyal and the easy course of exact reproduction. Have we not heard the recommendation, "keep to your model,—only adhere to the proportions exhibited in the books, and the work must look well." But even with the best goodwill on the part of our predecessors, this counsel was not to be followed to the letter; as little modification as possible might be admitted, but from the very fact that under the restraint of authority it was not carried far enough, it often sufficed to vitiate all the relations on which the original beauty was dependent, and did not suffice for an effective and consistent substitution. It was under the domination of classical predilections after the first revelation of the perfection of Greek architecture by Stuart and Revett and the Dilettanti Society, that many a country mansion had a tetrastlye portico attached to its principal front, with more or less projection when not actually engaged, but often unrelieved and unsupported by any other classical characteristic of structure or distribution. In the north-west angle of St. James's-square we see such an application of a portico of the Erechtheum to what originally was a nobleman's house. If we consent to overlook the incongruity of a clear absence of organic connexion, we may still be sufficiently offended by a disagreeable *stalkiness* acquired by the columns, in consequence of their being mounted for convenience upon pedestals. The columns themselves are among the best reproductions of Greek columns in London, but forfeit all advantage by this unwary interference with a governing principle in their original distribution.

In an age of advanced culture, when learning is both esteemed and considerably diffused, an artist who shall venture on divergence from an admired and long-accepted model is liable to be denounced for presumptuousness or ignorance in neglecting purity of style; and invention and adaptation alike are, in consequence, inevitably hampered. In extreme cases, and whether Edwardian Gothic or Periclean Greek be in question, no modification either in respect of detail or proportion will be favourably received even if tolerated at all, though a correct taste might give it warranty. The apprehension is then by no means futile lest the most piteous plea of convenience may get no chance of a hearing, when by adherence to the classical model, a design can be secure to rebut all censure triumphantly and override all reclamations on the score of uneasy accommodation or inappropriateness.

The architects of the Roman Empire in its early days stood too much within the awe of the admirable architecture of the Greeks to give fair play to their own originality, and out of deference to the Greeks they faced their vaults and arches with columns bearing vertical strips of entablature, a homage which the Greeks would have ridiculed and despised. But when we get clear of Rome, the centre of culture, we find that a provincial architect, if we should not say builder, did not hold himself bound to such niceties, especially when not only convenience but economy was to be consulted. So it is that we come upon arcades at Pompeii where arches are sprung directly from the capitals of columns without any intermediate foolish segment of entablature intervening. This is the innovation which is so familiar to us in the courtyard of the Palace at Spalatro. It has been extravagantly vaunted here as due to the inspiration of some man of master-mind and original genius,—as a primary and epoch-making revelation of inventive design. It may well be that the distinction and conspicuousness of unusual though not novel arrangement to the architecture of a palace may have assisted its vogue. But in itself it only argues the unceremonious disregard for tradition and polite forms rather than intelligent protest against them, that was natural in the decadence of one system on its way to transformation into another. Associated as it is at Spalatro with coarse and clumsy forms, it belongs to architectural jargon as absolutely as the solecisms of uneducated dialect through which Ciceronian Latin passed into refined and choice Italian. But this process, both for architecture and language, however the world may be congratulated on its results, was but a slow one; and we would fain be spared a tedious endurance of a sequence of barbarisms as the condition of evolving novel refinement from forms which under different circumstances of society it becomes pedantry, if we may not say bigotry, to regard as otherwise than obsolete antiquities.

Progress, therefore, makes demand for no slight exercise of resolution; there is demand also for versatility and gracefulness of invention, if daring innovation is to justify itself. It cannot be said that these elements of success are to be denied in considerable measure to the Italian and French architects of the Renaissance. Still it must be admitted that a large proportion of their works are remarkable for their balanced combination of success and failure, uniting often in the same example timidity and happy boldness in almost equal proportions. When Palladio taxes his ingenuity to reconcile a Classical columnar ordinance with adherence to the general lines of the façade of churches which had been designed harmoniously in a different style, or when the French architect took the unaltered framework of a Gothic church of noble proportions like that of St. Eustache, and redraped it, so to speak, within and without in a costume of Classic details, the result can scarcely escape from again affecting us as a jargon.

It may be that what the well-maintained employment of no inconsiderable endowments and energies has hitherto achieved towards the adaptation of Gothic architecture to modern habits in their secular application, may yield some warnings worth taking to heart by the age, if, indeed, it is bethinking itself as to what restrictions and extensions it will compound for before consenting to redon the proffered robes of Classicism. From the Greeks themselves it will be in the way of gathering rather instruction than warning. The Greek architect was as alert as Shakspeare to accept a sugges-

tion, and took motives of ornament or construction from Assyria or Egypt as freely as Shaksepeare took a plot from an Italian novel or transposed into verse a long speech of a Roman from North's "Plutarch." But the transmutation and assimilation was as complete in one case as in the other. No question can be entertained as to the obligation of the columnar systems of the Greeks to the Egyptian colonnades; yet does this imply nothing less than a union of suggestions from a purely stone architecture with others which declare themselves as palpably derived from wooden construction. Even if we leave Egypt out of the question, we trace in the details and members of the Doric entablature a reminiscence of timber construction continued over to a style in which the intervals of columns and breadths of porticos are strictly limited by the ultimate strength of marble beams as compared with those of timber. The same interchange is glaringly manifest in the Lycian tombs, and Fergusson remarks upon it, as in other instances, so in that of the elaborate tester of the tomb of Edward III. How is it that in respect of the Greek instance at least we have no protesting outcry against inconsistency? Why are the denouncers of graining and painting in imitation of wood, or of painting wood at all, not clamorous against what might seem as gross a falsification? The explanation may suffice that while the Greek adaptation had doubtless originally some of the interest of reminiscence, the artists subdued and got rid of this to such on extent that nothing was retained which declared inconsistency with construction in marble, and minor details of mortises and trenails were developed in a purely ornamental sense as mutules and dentils, and the imitative motive was lost in the purely and appropriately decorative.

The difference in question is the same that we are made aware of when we compare such a rug or carpet, as to our grief we are in this century not secure from having to look upon, —flaunting with wreaths and bouquets, nay, with waving ribbons, upon which ingenuity has been exhausted to confer lively relief,—and a carpet from Smyrna or Ispahan, or regions still further remote eastwards from the centres of progressive civilisation. It is not difficult to discern that the decorative forms which enliven the Oriental carpet, may, almost without exception, be traced back to leaves and flowers, nay, even to animals, but the forms are subdued to the proprieties of their employment upon a surface which is required to be flat, and to express flatness above all things; and where their derivation is recognisable at all, it is but as a vague reminiscence.

To those who are willing to take advantage of the principle which is here illustrated, it may be conceded that the design of a modern dining-room may possibly be under fair obligations to a Gothic chapel, but then only under the further obligation, if that be possible, that it shall not look more like a Gothic chapel than a dining-room; that, indeed, it shall not look like a chapel at all. It does not appear how such a countersense is more venial than building a chapel in such a style, and with such details as to suggest infallibly, that it was intended to be, and actually had once been, habitually occupied as a dining-room. The time has happily been left behind when the construction of artificial picturesque ruins was in vogue. An example remains no further off than the vicinity of Virginia Water; and such mock Classic ruins are to be found in gardens which command a not very remote view of the imposing realities of Ancient Rome. The mock Gothic ruins that we occasionally come upon in England, are not of recent date,—at least within our experience. Still it is but one step removed from such absurdity (and is not that step indeed taken in the direction of still deeper absurdity?) to build up modern structures which bear so little impress of their actual date,—of the special characteristics of their proper epoch,—as to have still more that is mock about them than the much-derided mock ruins; to be only able to evade imputations of forgery and falsifications by appeal to the notoriety which precludes imposture, by admission that they pretend to no more than to stimulate archæological interest by presenting modernism in masquerade.

And even masquerade is only endurable when sufficient tact and cleverness are concerned to maintain deportment in keeping with the assumed character and costume. It can be but with pain and reluctance that we find a sumptuous structure remind us of the satirist of the Roscad,—make us feel that when dignity of one class, however lofty, is confounded with the dignity, however in itself venerable, of another, the result at last is no more dignified than is achieved at the other extremity of the gamut by the low comedian in genteel comedy—

> "When blindly thwarting nature's stubborn plan,
> He treads the stage, by way of gentleman,
> The clown, who to one touch of breeding knows,
> Looks like Tim. Errand dress'd in Cincher's clothes.
> Fond of his dress, fond of his person grown,
> Laugh'd at by all, and to himself unknown,
> From side to side he struts, he smiles, he prates,
> And seems to wonder what's become of Yates."

The incongruity which is laughable when the clown attempts the airs of the man of fashion is likely to be offensive when a sacred or even a purely ecclesiastical style has force put upon it to adapt it for a disguise for simple and secular purposes; or when the gravest and most deliberate functions of a city at peace are housed behind a screen which betokens defiance of an expected assault by main force or contemptuous disregard for civil rights, or any arguments but those conveyed by the hardest hitter. The difficulty of adaptation on the side of Greek models may not unnaturally seem to lie in the fact that the types of which we are in possession are all but exclusively temples; and neither private houses nor public institutions and palatial courts ought to look like temples of heathen gods any more than like Mediæval or modern monasteries, churches, and cathedrals. The adoption of even a modified form of Greek architecture is no doubt likely to go astray through the same misconceptions which beset the fair enthusiasts who believe they see a way to doing better justice to their charms by reverting to Greek costume. The conditions of success, it may be hinted,—(that the beauty of the moderns as unadorned is at no disadvantage, we conscientiously believe),—seem to require the Greek climate, the ancient Greek climate, for the experiment, and the adoption of Greek habits of domestic life. But, in fact, the models of Greek dress that they rely on are as insufficient if not illusory as those of Greek architecture. Spartan girlhood was, no doubt, arrayed with a simplicity that was prescribed by the legislation of the semi-mythical Lycurgus, and was persevered in to be carped at, not merely by Attic comedians, but in tragedy by Euripides. But even the agitators for the "divided skirt" do not talk or dream of adopting it on the uncompromising lines of the fashion-book of Lycurgus. Something more available is seen in the graceful costume of the girls of the Panathenaic procession, who doubtless represent the daughters of the best Athenian families; but their costumes are no more to be taken as to what Athenian fashion accepted for the height of elegance than that of the typical *ingénue* of French comedy for the exhaustion of the resources of Mr. Worth. Homer, it is true, has no weakness to charge against the matrons of Troy beyond a fondness for a trailing peplus; but Hesiod, speaking as amidst a far simpler social state, bestows a plain-spoken contemptuously descriptive epithet upon the adopters of the dress-improver or crinolette of his day. In fact, the Greek female dress from vase paintings and bas-reliefs no more vouches for every-day realities than the scanty equipment of the horsemen of Phidias is proof that Xenophon as a cavalry officer was heroically independent of equivalents of corduroys or pig's-skin. The richness of the Greek vocabulary lets out the secret. Less than the learning and ingenuity of Porson,—the translator into Greek verse of "There lived a Man in Thessaly,"—would reproduce in authentic Hellenism most of the items in a modern fine lady's Christmas account for dressmaking, and hairdressing also.

It is probable that if we had plan, elevation, and sections of that house of Alcibiades which the son of Clinias audaciously compelled the leading painter of the day to decorate, we should have reason to admire the versatility of resource of the Greek architect, and be able to rebut by example that imputation of inflexibleness as compared with Gothic, which, even as matters stand, is by no means justified.

Bilateral symmetry declares itself predominant in a Gothic abbey or cathedral as absolutely as in a Greek temple. Westminster Abbey and the Parthenon cleft through their roof ridges from end to end divide alike into as accurately answering halves as any of the superior vertebrates. One remarkable and most important unsymmetrical Greek building we have, the Erechtheum, which is doubtless on the site and probably retains some lines of a primæval prototype. Homer speaks of the goddess Athene retiring to Athens and "entering the well-closed house of Erechtheus," and curiously we have in this building the variety of ground-plan which is usual and natural for a moderate house, floors upon different levels, internal stairs, free omission of a member of entablature, and windows disposed for a liberal admission of light. From all antiquity we have received nothing so modern in character and in suitability for modern requirements as the windows of the western front of the Erechtheum. As compared with these, the Gothic window in all its modifications is vexatiously unmanageable; even when one of its forms is adopted which admits of a rectangular head, both outlook and inlet of light have to renounce claims to consideration in deference to blocking mullions and obstructive tracery precisely where such features can be most undesirably obstructive. If an earlier style has the fortune of preferment, it must submit to the humiliation of being crowned by a falsified arch and standing forward as a vain pretence with a mocking sash-window behind it. When extensive buildings are required for the transaction of secular business daily and from day's end to day's end, business involving, as all business now does, continued reading, writing, reference, by men deeply engrossed and sedentary, the spirit of Gothic architecture in the interest of its own dignity may protest against being employed inappropriately and invidiously. What else is the case when it can only indulge its predilection for window spaces so exaggerated that they seem to enclose a lantern, at the cost of provoking protests from the occupants that they are starved with cold; while if ecclesiastical style is renounced for that of the Mediæval fortress, and wall space is made predominant, and light is admitted through the openings which sufficed the beleaguered baron for observation and annoyance of his enemies, an outcry as loud is raised against condemnation to darkness.

If a Classic revival is to hold its own it must lay its account, when it seeks for reception in the heart of great cities, with the necessity for regard to economy both of space and resources. If the growing wealth of the world gives marvellous extension to resources of money and material, the requirements demanded from them seem likely to keep step; while the pressure of business around certain centres tends ever to restrict available area. When breadth is limited there is no excuse for wasting opportunities in the directions of height and depth. Classic and Gothic are both bound,—one not more than the other,—to make the most of the very lowest stories by roominess, access, and, above all, by that full security for ventilation and light which will entail the renunciation,—whatever the pang it may cost,—of some cumbrous as well as costly architectural elaboration. As regards economy of height, the Classic style, with horizontal ceilings, is so far adapted for allowing the very utmost available cubic contents of air for an apartment; the Gothic style, it is true, does not forfeit the same opportunity, and even a stately hall may, especially in England, consistently with the style, be covered by a framed wooden roof. But against the open opportunity for the practice of a virtue is to be set the exposure to temptation to neglect it. Who is there who, even against his better judgment, is not conscious of tenderness for the practitioner of Gothic architecture who does not fail to seize a chance when he gets it to indulge, whether in keeping with an occasion or out of keeping, in a revel of high-pitched arches and a stone vault? The Classic architect has his temptations also, but when he yields to them let us hope that it will not be to the effect of a parallel to enhanced expenditure on foundations and abutments to the tune of tens of thousands of pounds for the sake of what at last it is only from a tenderness that will be well understood, as well as from the value that critics set on their own good humour when all the world is anxious to be pleased, that they abstain from denouncing more pointedly as too neglectful of the responsibilities which are incumbent on revivers of an ancient style.

The Longfellow Memorial.—Mr. Brock, A.R.A., has been selected to execute the bust of the poet Longfellow intended to be placed in Westminster Abbey.

EARTHEN MONOLITHS.

NEW LIGHT ON THE MOST ANCIENT ARCHITECTURE.

In an interesting, though brief, letter printed in a morning journal, Dr. Schliemann administers a vigorous rebuff to the ill-natured assertions, made behind his back, in depreciation of his recent explorative work. He promises to the world shortly, through the publishing machinery of Mr. Murray, a full account of further and important discoveries.

It cannot be too strongly insisted on that, although the wish to discover and identify the remains of the very Troy of the "Iliad" has been the mainspring of Dr. Schliemann's energetic toil, the value of his discoveries is entirely independent of theory. The city sung by Homer may have been as much an imaginative scene as the Pandemonium of Milton, and yet the seven cities (or whatever may finally be determined to be the correct number) successively raised on the hill of Hissarlik were past realities, of which the great German explorer has been the first to unveil the scorched and buried relics. In matters of science it frequently, perhaps most frequently, is the case, that the most brilliant discoveries are made during the pursuit of something quite different, and probably of minor importance. It is as if a man started in chase of a hare and brought home a buck of the first order. In Dr. Schliemann's letter mention is made of a discovery which (if sustained on investigation) may throw more light on the unwritten history of mankind than the identification of any individual site, be it that of the Temple of Olympia or the Pergamos of Troy; and we the less hesitate to call attention to this first whisper from the indefatigable explorer, for the reason that it instantly awoke in our own memory certain faint and subdued echoes of similar tidings from other regions. By promptly directing the attention of those more familiar than other people with the localities to which we have to advert, we may at once stimulate Dr. Schliemann himself to devote a more critical attention to a new subject of quest, and hasten the accumulation of such evidence as may be already accessible in support of his new hypothesis.

In prosecuting his researches on the site of the buried cities, Dr. Schliemann has come to the conclusion that the antæ of the Greek orders are, so to speak, survivals of an ancient form of buttress, of primary structural importance. How closely the Doctor connects this hypothesis with a still more striking statement, is not quite clear to our mind. But however this may be, there can be no doubt that the second discovery to which we advert is of the highest interest. It is to the effect that the walls of at least one of the buried cities were built of unburned bricks, and that on the completion of the wall its face was baked, or vitrified, by the means of enormous fires kindled at the foot. It may thus turn out that features which have been hitherto regarded as evidence of destructive siege or storm, have been due to the special defensive industry of the early builders.

We mention this with the less hesitation, on the ground that the theory may account for some hitherto unexplained facts in other parts of the world. In the first place, we refer to the western coasts of Scotland. We do so with some hesitation, because, although our information is derived from a man whose name ranks very high among living archæological discoverers, we have neither seen one of the objects of which he has told us, nor can refer to any work in which any of them are described. We turned in vain to Mr. Anderson's valuable work entitled "Scotland in Early Christian Times," with the hope of finding in it, or in its quotations from Dr. Petrie's "Essay on the Origin and Uses of the Round Towers of Holland," any distinct reference to brick or earthen towers. We hope that some of our archæological readers may be able to give the information we seek. The account given to us is, that in various points on the western coast of Scotland, exist towers of some sort of earthen construction, which appear to have been vitrified *in situ*. They are attributed to the Picts.

In the cradle of early empire, again, we have a trace of the same class of phenomena, in a building, in one peculiarity of which this discovery of Dr. Schliemann is the first thing that has thrown any single ray of light. The vast pile called the Birs Nimrud is one of the most imposing ruins in the world. It unites the mystery of legend or poetry to the hard facts of archæological relic even more remarkably than do the excavations at Hissarlik. For the Birs Nimrud is locally held by common tradition to be the Tower of Babel of the Book of Genesis. It is situated within the limits of Borsippa,—which city had about the same relation to Babylon that Buda bears to Pesth. It is described by Sir Henry Rawlinson, as quoted in "Assyrian Discoveries, by George Smith" (p. 59), as the remains of a ziggurrat or tower, built in seven stages. Of these, the lowest is 272 ft. square, and 26 ft. high, the second 230 ft. square, the third 188 ft. square, each of the same height of 26 ft., while the fourth stage was 146 ft. square, and 15 ft. high. Inscribed cylinders were found in receptacles in the corner of one of these stages, stating that the building was the Temple of the Seven Planets, built by an early king of Babylon and restored by Nebuchadnezzar. The point where this ruin illustrates the question before us is this,—at the top of the rude pyramid or cone to which this staged edifice is now reduced, stands a solid mass of vitrified brick. Now we know well that in the time of Nebuchadnezzar, and for a long antecedent period, it was the custom of the Mesopotamian builders to employ, at all events in their exterior work, moulded and burned bricks, laid in bitumen. This is the structure of the Tower of Babel, according to the Pentateuch, "And they said one to another, Go to, let us make brick, and burn them throughly. And they had brick for stone, and slime had they for morter" (Gen. xi. 3). The חֵמָר of the Hebrew text, translated "slime" is a cognate word to the הֹמֶר, translated "morter," and no doubt refers to the bitumen which was used as a cement in Babylonia as far back as the earliest stamped bricks, or to almost the date of the fifth dynasty of Egypt. The root of the word means "brown," and is thus applicable to bitumen. A wall thus built could not, we apprehend, by any means be subsequently vitrified as a mass. The bitumen would consume and escape, and ruin, not consolidation, would be the result of the application of intense heat.

It thus really looks as if, in the buried walls of Hissarlik, in the vitrified Pictish towns, and in the upper stories of the Temple of the Seven Planets at Babylon, the plan of torrifying or vitrifying a structure of previously unburned clay had been adopted with the view of giving an eternal durability to a building of that material which, in point of fact, has proved to be the best of all fitted to resist the tooth of time. The hypothesis may seem bold, but we can see no other that will account for the fact. At all events, regarded at present as pure hypothesis, and as linking in the statement of a single problem the prehistoric work of Scotland, of Asia Minor, and of Mesopotamia, it cannot be denied that the subject is one deserving the anxious study of the architect as well as of the archæologist.

It is with no idea of criticising a letter, written, perhaps, in haste, at Athens to a London journal, that we call attention to a hiatus in the statement of Dr. Schliemann, which he will no doubt be glad of this hint to fill up. We write rather with the view of calling the attention of that great discoverer to the fact that matters which may appear to him on the ground to be indubitable, have to be introduced with some sort of preface to the world. The doctor says, "Nothing could better prove the great antiquity of these buildings than the fact that they were built of unbaked bricks, and that the walls had been baked *in situ* by huge masses of wood, piled up on both sides of each wall, and kindled simultaneously. . . . . I lay stress upon the fact that a similar process of baking entire walls has never yet been discovered."

But as far as we can yet gather, what has been discovered is not a process, but a fact. Admitting, with every necessary reserve, that the appearance of the great wall of the ancient Acropolis of the second city reared on the hill of Hissarlik is such as to intimate that it was built of unbaked or sun-dried bricks, and afterwards subjected to intense heat, we should like to know on what ground Dr. Schliemann has come to the conclusion that this was effected by means of masses of wood piled upon both sides of each wall, and "kindled simultaneously." Not that such is by any means improbable. On the contrary, it is a proceedure very natural to imagine; the only doubt being whether the heat thus given by enormous bonfires would have been enough to produce the effect, or whether we may not rather inquire into the probability of the use of some bituminous fuel, as giving a more intense heat. As to this, however, we do not see how any direct evidence is to be obtained. And the point which we are desirous to bring before the attention of the learned explorer is, that in his forthcoming work he, in the first place, should give us such a clear description of the actual state of these whole-burned walls as shall leave no doubt as to the facts; and that then any opinion that he may form as to the character of the process adopted be stated as opinion, accompanied by the reasons for the same. Dr. Schliemann owes it to his own distinguished reputation to avoid the fatal error into which so many of his precursors have fallen,—that of omitting to distinguish between the important facts which they may have been the first to bring to light, and their own explanation of, or deduction from, these facts. We freely admit that the opinion of the discoverer is entitled, *primâ facie*, to the highest respect. We are but too keenly aware of the annoyance which is experienced by a man, who has given years of study to a subject, when he finds his statements pertly questioned, or still more pertly "completed," by critics who have not advanced beyond the alphabet of the research of which the explorer is writing the grammar. But all the more does the discoverer need to put that check on his natural eagerness which shall first leave his discoveries clear and undisputable, visible in their own light, and then enable the inferences drawn to start from a definite and incontrovertible basis.

We are not sure that we altogether follow the line of thought indicated by the remarks as to the *antæ* or *parastedes* of the ancient Trojan temples. "Each of the front faces of the lateral walls," says the explorer, "is provided with six vertical quadrangular beams, which stood on well-polished bases, the lower part of which was preserved, though, of course, in a calcined state." Here, again, it is difficult to follow the argument without some aid from the draughtsman. We want to be told something about the "well-polished bases." Of what were they made? and what is the evidence of the polish? But what seems to us here to be of most importance in order to appreciate the full value of these curious discoveries, is a section of the ground. Dr. Schliemann says that the *antæ*, "which in later Hellenic temples fulfilled only a technical purpose, served here as an important element of construction, for they were intended to protect the wall ends, and to render them capable of supporting the ponderous weight of the superincumbent cross beams and the terrace." Here it is that the question of level comes in. If there be indicated the former existence of these four-roofed areas or terraces in front of the main temple walls, it would seem to us as if the structure must have somewhat resembled that of the Royal Palace at Naples, where the sea elevation rises from the back of a terraced garden. It is hardly to be supposed that four flat-roofed chambers stood open to view on the four sides of the temple. On the other hand, the introduction of such an arrangement, whether partially subterranean, as we suggest, or forming a part of the visible elevation, as Dr. Schliemann appears to consider, seems to show a very decided degree of architectural art and skill among the builders of the edifice in question. And the very early date which, on the theory of the successive cities, must be attributed to the building, adds to the great interest of the inquiry.

Dr. Schliemann is of opinion that "the *antæ* in the Hellenic temples are nothing else than reminiscences of the wooden *antæ* of old, which were of important constructive use." We take it that there is little doubt that the general forms of Greek architecture are taken from early wooden structures, and that pilasters, when retained merely as ornaments, are the survivals and representatives of wooden uprights, between which, as building advanced, partitions of walls of less strength and solidity were introduced. But we do not see that the connexion with these projecting chambers or terraces is quite so obvious.

It may be observed that the transition from the megalithic work which reaches back to prehistoric times, and which comes down to the date of the Idumean dynasty in Palestine, and of the Roman rule in Baalbec, to the minute

mosaic of brickwork, is one of no slight character. It is one which cannot have been taken at a stride, although hitherto we have found no indications of the mode in which the gap was bridged. There is little doubt that the *ratio entis* of megalithic work was ignorance of the quality of cement. When it was discovered that one stone could be attached to another by other means than the mere pressure of its own weight, the use of smaller, more economical, and less costly blocks became common. And thus we come down from the Cyclopean walls of Mycenæ or Tiryns to the rubble work of our railway bridges. But where the first use of bricks may be interpolated in their long structural series, as yet we are not aware. Far more accordant would it be, we may conclude, with the architectural ideas of the megalithic and cementless builders, to preserve by one homogeneous vitrified glaze an earthen building, than to depend on piling together hard-burned bricks without cement. We can have little doubt that the Cyclopean work, and probably most of the other megalithic work of antiquity, was erected previously to the knowledge, or, at all events, to the common use of cement, although mortar is to be found in the Great Pyramid. But if cement were unknown for stone, it would also be unknown for bricks. We therefore doubt the use of burned bricks before the time (however remote) when the use of a cement of some kind first formed a part of the resources of the architect. As far as the authority of the ancient and venerable sentence that we have above cited goes, building in brick was an imitation of building in stone. How was it, then, when stone was used in enormous masses? We know that great use was made in Mesopotamia of bricks baked in the sun. How was this work faced? Our recent remarks on clay as a material for foundations are germane to the subject. That a mass of this dried brick may have been faced and lined, either with stone or with kiln-burned bricks, we think Eastern research has shown. How far these structures would be so homogeneous in their resistance to pressure as to be durable, we are unable to say. But we cannot doubt that, — with that disregard of expense which characterised the mighty builders of Egypt, of Assyria, and of Babylonia, a monocaust or whole-burned building, so to say, might have appeared even more likely to be durable than a structure articulated of stone. The subject is new,—the facts as yet collected are few. But Dr. Schliemann's letter has given indication of at least the possibility of the opening of an entirely new chapter in the history of ancient architecture.

We trust that these remarks, reaching the great explorer in his Athenian home, may at the same time assure him of the kindly and eager interest with which his further tidings are awaited amongst his English friends, and remind him how necessary it is, even in writing for a sympathetic and educated public, to take no leaps or bounds in his statements. In the description of wholly new discoveries, the motto, *Natura non facit saltum*, must be ever kept in view,—whether as a guide to theory, or as a maxim of literary composition. We are anxious that Dr. Schliemann should himself do justice to his own discoveries. And we say this all the more strongly from our own opinion that their magnitude and value are so great that it is difficult, within the limits of a fit literary reticence, to do justice to them all.

THREE GERMAN INDUSTRIAL MUSEUMS.

Shakspeare seems to have had either a presentiment of the present rage for decoration, or, perhaps, like many others, have been bored by its discussion, when he makes Bassanio remark on the facility with which "the world is still deceived by ornament;" and in the present day, when industrial museums are springing up not only in the great capitals of Europe, but in America, nearly all of which appear to devote their greatest exertion to the decorative part of industry, it appears that the future will be not a little overburdened with what just now, in the estimation of severe critics, is after all but very questionable ornament.

Judging by the extraordinary revival of what may be called the modern rococo art displayed this season, not alone at home, but abroad, in the many shop-windows devoted to articles useful or not, and all over and uselessly decorated, it seems to be the received opinion of manufacturers, and those who lead them, that too much ornamentation or useless elaboration of scrolls and would-be decorative motives, cannot be too freely displayed on every object produced. Whether our museums are to answer for this it is not easy to determine, but certain it is that when one visits, as so many of us now have the opportunity of doing, any of the recently-created "industrial art museums," such as South Kensington Museum, the Musée des Arts Décoratifs at Paris,—where a Government lottery is now on foot for the formation of a museum to rival our South Kensington,—the newly-opened Kunst-Gewerbe Museum at Berlin, those at Dresden, at Vienna, at Nuremberg, and elsewhere, when we come upon a modern piece of work we are disposed to give our admiration to little further than its skilful and mechanical, —though often manipulative construction,— while it is as rarely that we find in any of what are ancient works that there is anything to complain of either in construction or design. That the causes of all this have been explained, our columns bear ample evidence, but never have we depreciated the advantage to be obtained by the formation of decorative collections, and the immediate means of comparison afforded by the juxtaposition of the old and the new.

When but a few weeks ago the Crown Princess of Germany opened at Berlin the magnificent Museum of Industrial Arts which now adorns the capital of the German Empire, she was but following with very sincere reverence in the footsteps of her father, the Prince Consort, to whom the world owes, in the formation of the South Kensington Museum, the numerous collections and schools of art that have since 1851 sprung up in so many quarters. Amongst these museums, "the South Kensington" will always retain the highest position, though much is to be said in favour of the scientific commencement made at the Berlin Museum.

The directors of the South Kensington Museum cannot, we feel sure, but be embarrassed by a warm emulative desire in visiting the recently-opened German Industrial Museum. It is difficult to describe, without occupying considerable space, the system on which the collection is brought together. If, soon after passing the grandiose entrance into the central hall, the visitor is struck by a certain resemblance to our own institution in Cromwell-road, the series of rooms which on the first floor open on to the central hall recall so successfully a highly systematised Cluny Museum that it is evident the designer has endeavoured, as far as lay within his power, to bring to Berlin something of the charm that all lovers of the beautiful art of the past have felt on visiting the old museum built in the Roman Baths of Julian. It is, indeed, to the enthusiasm of such collectors as Du Sommerard, the founder of the Cluny, such men as Sauvageot, as Soulages, as Bernal Osborne, as the late Mr. John Jones, and many others, that we owe a debt of gratitude for the preservation of such treasures as now crowd our museums, treasures alone accessible in the past to the wealthiest, or shut up in great palaces abroad, where they were hastily visited by generations of wandering and wondering travellers. Now, however, the nation possesses similar gatherings for the education of the public, and the value of these collections, not alone as objects of pride, but as educational institutions, is at length being fully appreciated.

At Berlin, under royal patronage, the new Industrial Art Museum is, as one would expect from so thorough a nation of experts, a model of order, and if the collection is far from possessing the quantity of treasures that the South Kensington Museum shows, it cannot be said that there is noticeable any deficiency in the manner in which every object is duly presented to the public. There is something peculiarly instructive, — beyond the pleasure afforded,—in the cheerful domestic manner in which the more precious objects are exhibited in the rooms on the first floor; the severity of museum arrangement seems robbed of its chilling character; indeed, so successful is the general effect produced that we sincerely hope the South Kensington authorities in the new buildings they are now so actively preparing for the reception of the overcrowded collections, will not fail to take a hint from the ingenious mode in which the Berlin Museum directors have, as we have above remarked, obtained something of the domesticity of the Cluny Museum. Of the thirty-seven separate rooms and their well-organised contents we must forbear to speak in any detail; as far as lay within the power of the directors, the various products of the industrial art of the past have been grouped together; suffice it to say that it is gratifying to find our own South Kensington Museum so rich in every department represented at Berlin,* a fact which, to a great extent, is constantly recurring to the properly gratefnl mind in examining the great Continental collections. In years gone by foreign travel was, with most, the sole means of obtaining an acquaintance with objects that now, thanks to our Science and Art Department, can be calmly studied at home. Of what use this mere *dilettante* knowledge may be it is not easy to decide, unless it serves to render us more critical, or, perhaps, what is more to the point, more lenient from a knowledge of the difficulties. From a practical point of view, however, this is not the aim of the promoters of the existing industrial art museums. Their object is the formation of artists and artisans capable of producing work that may vie with that of the past, to revive the lost traditions which guided the workers of those days, and to present to the rising generation of artists and artisans the best examples from which to re-model the lost traditions. These aims the Berlin authorities are endeavouring as far as lies within their power to attain; the new museum, in addition to its collections, possesses a constantly increasing library and a school organised on the most approved modern principles. The new museum has before it a brilliant future in a city,—in a nation, indeed,— which is daily gaining a greater hold by its industry on the markets of the world. That industry, however, the authorities admit to be in want of improvement, and having set themselves to the task, we must now wait till the final results crown the work, and come to show after a reasonable lapse of time whether the efforts of our leaders in these matters justify further advance or modification.

The Industrial Museum at Dresden is a very different institution to that at Berlin, though aiming at the same results. It is, in comparison with its more showy rival, essentially a working affair, established on its foundation, some six years ago, in the old Polytechnic School. Nothing, indeed, could be more practical than the Dresden institution, arranged with the most skilful regard to every requirement, by its earnest director, Herr Graff, who has gathered together within an incredibly short time a most invaluable collection of objects suitable for his purpose. Here we have no unnecessary show: a few representative specimens of each branch of industry, with a special importance given to the department of tissues, the collection of which, if our memory serves us (we stand under correction), must equal in completeness the famous collection at the Germanic National Museum at Nuremberg.† Under his direction, Professor Graff has a large school of pupils, among whom is opened a competition for the design of any object required by the manufacturer who may apply to the Museum. Plainly exhibited in glazed frames is a rich series of pieces of drapery, some mere scraps, while in the desks and cupboards, for purposes of reference, are literally stacked away, on stretchers, hundreds of other examples of every period and country. The pupils, therefore, have a rich mine of suggestive study, intended entirely for their use, the public being admitted by courtesy, much as one is to the Mint or a great printing-office, where the real business is the work of the establishment, not the show. Professor Graff will in time, doubtless, have the room he requires to make his institution as pleasant a lounge as at present the museums of Paris, of London, and Berlin are made; in the meantime he has merely contented himself with the higher object of making his museum practical. In the city of such a gathering as the "Grünes Gewolbe," this is little inducement to the ordinary public, and yet how much more is to be profitably learned from a visit to Professor Graff's modest institution in the Antons Platz than from the two hours' obligatory ramble through the wealth of rococo *bric-à-brac* and

* Except, of course, in the rich china and porcelain collection, which, with us, is shown at the Museum of Economic Geology,— and the rare Schliemann collections of Trojan antiquities.

† The collection of tissues owned by Dr. Bock, now on view at the South Kensington Museum, is but the nucleus of a collection such as that at Dresden, at Munich, or Nuremberg.

Electoral barley-sugar-work of "the green vaults" in the Royal Schloss!

At Vienna, the Industrial Art Museum may be said to differ in some respects from other similar institutions in the importance assigned to the products of modern manufacture. The building, consisting of the museum, a library, and the school, was specially erected some years since, and forms one of the architectural features of "The Ring." The collection proper is interesting, one of its attractions being the Mediæval Guelph treasure which belonged to the Duke of Cumberland. The collection of china, like that at Berlin, is rich; the objects of *bric-à-brac*, if good in quality, are, however, sadly wanting in quantity. The rest of the museum is largely taken up by modern work,—a feature worthy of observation, as it is a point, it strikes us, which of late years has been too much overlooked at the South Kensington Museum,—the easy and ready means of comparison between the fine true art of the past and the modern results of its study. With this view, in Vienna a very large space, consisting of many rooms, has been placed at the disposal of the manufacturers and artists, for the purpose of displaying the last-elaborated products of their various shops; and although this portion of the exhibition is naturally the least interesting to the amateur, the antiquary, or the would-be critic, it is without doubt instructive to the artist and the practical workman; not but what these modern exhibits have the effect of depressing the lover of beautiful art who desires to produce something in emulation of the old, if he is to regard the work here displayed as that which the purchasing public are determined to demand,—if, indeed, cheapness and mere display, largeness, and apparent cost, are to be regarded as the highest aim of his exertions. Indeed, a great portion of the Vienna Industrial Art Museum resembles very much the Austrian annexe of one of our recent International Exhibitions, filled, as it is, with cases of artificial flowers, paste jewelry, cut glass, cutlery, specimens of bookbinding, leather work, enamel, furniture, and ironwork,—everything very suggestive of the sad necessity for a proper direction being given to the local industrial arts. The Viennese workmen are skilful, and their designers skilful also, perhaps only too much so, judging by the results produced. Their art, however, we suspect, as is so often the case,—is only representative of the general life of the Austrian capital, and that no museum can materially alter. Alarm at foreign competition is, however, being expressed, and only a few days ago, at a meeting of the bronze-workers in Vienna, where this branch of industry holds an important position, a unanimous resolution was passed as to the necessity,—in face of the increasing activity of the industrial museums of London, Paris, and Berlin,—of forming a special school for the education of bronze-workers. The cry has not come too soon; the exuberance of the Viennese designers requires somewhat toning down. Their existing industrial museum does not contain a sufficient number of examples of works of art of the past, to show the Viennese artists and workmen the extreme modesty and sobriety that in the periods worthy of study invariably marked the productions of what we have now come to understand as the industrial arts, which, aided by the daily growing influences of free trade, are taking so important a position in the commercial markets of the world.

FLATS AT HOME AND ABROAD.

THE question of house-rent is one that daily presses more and more heavily on all sections of the community, not alone at home, but abroad. At home, however, we are almost inclined to believe that the difficulty is greater, because it is, we cannot help feeling, less seriously grappled with than it is on the Continent, where, as with us, the great cities are daily growing in size, and, under the centralising influences of modern civilisation, the country population is pouring in in increasing numbers. We feel justified in our view that on the Continent the question of house-rent is more seriously grappled with than with us, on the score not only that the means provided abroad for housing the population tends yearly to increase the beauty, the splendour, and the sanitary condition of the great capitals, a point which, in the speculative greed of too many builders, is with us overlooked, but on the score also that the great consideration of an easy rent for a pleasant home conveniently near the business and other centres is more successfully satisfied than with us.

It can easily be guessed by any one familiar with the Continent, or, for the matter of that, familiar with Edinburgh, what is the means which can alone satisfy these demands,—building in flats,—a system which has for centuries prevailed abroad, and is only slowly and very imperfectly being introduced into our country. When, however, one sees this system fully and unhesitatingly adopted and continued in Paris, Brussels, Berlin, Rome, and Vienna, and now very largely in New York, all question of its adaptability to modern uses is, we consider, set aside. The foreign "flat," be it *appartement*, *quartier*, *wohnung*, or what not, is singularly the same all over the Continent, and, whether large or small, will be found only a variation, to suit various purses, of the same requirements, and very skilfully are these requirements always supplied.

No one can deny that house-rent is largely connected with social considerations, so much so, indeed, that this point is only one more factor in favour of the foreign flat system. Here at home those obliged to consider their house-rent,—and who is not in that position, for in England nearly everybody is over-rented?—are yearly finding the difficulty growing of accommodating themselves in quarters which, while answering all social requirements, equally answer all the necessary pecuniary considerations. Now this is a position which, with us, weighs on a very much larger section of the community than will be found to be the case abroad. There, though it is true that in a walled city like Paris the dependent classes, with their very small incomes, are yearly finding the cheap accommodation of the past more difficult to obtain, those above them in position and means are yearly finding their demands more and more amply supplied. Now with us, we submit, this is not the case. The possessors of limited incomes,—who in our country form so large and respectable a section of our society,—are, it will be freely admitted, great sufferers by the enormous rise of rents in the present day, and the inadequate supply of homes suitable to the limited purses of a large number of cultivated people, who are consequently driven especially to the Continent, or to the provinces, where the sad struggle of making both ends meet can be more easily waged. This, we again repeat, will not be found to be the case abroad, because the "flat" system enables the rich and the moderately well-to-do to occupy in common, and pay each in their just proportion, one and the same house; a system, in fact, of co-operation, is the secret of the whole matter, to the profit alike of the tenant and the landlord, whose house is always filled, and whose return on his outlay is invariably ample to satisfy all legitimate demands. When it is added that, by the erection of the block which his architect has skilfully and economically built for him, on the small tract of land he may have bought, the said landlord has beautified his city with an imposing architectural feature, can it be said that there exists any objection to such a system of what is, after all, we repeat, only the effect of intelligent co-operation?

Objectors there are, we know, to the so-called "French flat" system, but here again a small degree of ingenuity will overcome many of the difficulties attendant on the alleged housing of six or eight or more families in one block. Our American cousins have some years since considered, and to a great extent solved, this problem of adapting to Anglo-Saxon tastes (perhaps rather we should say prejudices) the question of what may be termed co-operative existence, by a very ingenious plan,—one we would sincerely wish to see attempted in our country,—of accommodating in a block of houses, each four stories high, four families in each house; a family, that is, on each floor, and a separate entrance to each house, this plan differing materially, it will be seen, from the foreign system, which has for the whole block only one entrance, invariably a stately *porte-cochère*, a great architectural want in our cities. This American system, delightful in its way, and admirably suited for small purses, certainly does away with the very satisfactory palatial element of the foreign flat, but it seems to answer our singular English ideas of privacy; each house in a block, such as we speak of, being supplied with an ingenious arrangement of *cordon*, bells, and speaking-tube, by which the occupant of each floor can from his own room communicate with the visitor at the front door, and by the *cordon* open the door without the necessity of leaving his own room. This, of course, is a thoroughly American plan of grappling with that most difficult of all questions in "the States,"—domestic service,—and might or might not be adopted in England. When we add that each floor in such a block is provided with an admirable bath-room, supplied with an ingenious boiler, as also a lift, in addition to the necessities of a kitchen, fitted up with range and shelves, washing-tubs, &c., dining, drawing, and sleeping rooms, some idea can be gathered of the manner in which our cousins have grappled with the question, yet we speak from the personal experience of some years back, and of late the flat system has made in New York immense strides, as our columns bear from time to time ample evidence.

In spite, however, of all these ingenious experiments, we cannot but feel that the system in vogue on the Continent is the best suited for all wants; a system which, as we have more than once described in these pages, enables the possessors of limited incomes to share in the upper stories in proper proportion with the wealthy tenant on the first floor the expenses of what exteriorly is nothing less than a palace. All over the Continent, in Paris, in Brussels, in Berlin, in Rome, in Vienna, these palaces are being erected, their apartments rapidly filled up from ground-floor to fifth floor, and the very large rent which in England falls so heavily on *paterfamilias* for a house,—a great part of which is probably unoccupied,—being shared on co-operative principles by a dozen or more tenants.

When we hear, as we have lately done, of the charitable efforts of would-be benefactors to our civil servants, suggesting such really impracticable ideas as the sale to our dapper young Government *employés* of the second-hand clothing of their more fortunate friends, we are strongly inclined to ask how it is that no one should have come forward with the suggestion that our civil servants should be housed on the co-operative principles they have worked so well in connexion with their other every-day wants. Why should the civil servants of one and the same office be scattered over all points of the compass, some at Brixton, some at St. John's Wood or Clapham, some, more fortunate, in aristocratic South Kensington, and where not? And once the system had proved successful, why should not a similar system be extended to that enormous army of *employés* who pour into the City from the suburbs every morning by every possible means of communication, crowding trams, omnibuses, and trains, hurrying up from long distances, and after hurried meals, to their offices in town, once again at the close of the day to hasten back to the same distant points from which they are destined day after day to repeat the same monotonous and expensive journey? We are at a loss to understand how a co-operative system of paying house-rent has not followed the success of the Civil Service co-operative system of supplying general stores.

As our flat system at present exists in London, our complaint against it, comparing it from personal experience with the foreign system, is, in the first place, that it has by no means solved the question of moderate rents, for the sum charged for any desirable flat is practically beyond any but very adequate means; in the second place, what flats do exist within the reach of moderate incomes cannot be said to possess any of that style or distinction which for half the same sum can be obtained on the other side of the Channel, where that first consideration of a bright entrance, or daily swept and waxed spic-and-span staircase, is a duty which, in the humblest *maison de rapport*, is enforced from that stern representative of the landlord the *concierge*, who occupies the *loge* on the ground-floor.

In the interests of the beautiful environs which surround London, daily damaged by the greedy advance of the speculative builder and his commonplace two-story residences,—not too often sufficiently healthy,—so pompously advertised as possessing all the advantages of "gas, bells, and venetian blinds; within two minutes of rail, 'bus, and tram, &c.,"—we urge the experiment being more freely tried, and nearer the centre of London, of the erection of a number of large houses on the foreign system of the French *maison de rapport*, which may be taken as the type most in vogue on the Continent, and only, after all, the

modern adaptation of the stately Italian *palazzo*, where from time immemorial it has been customary for the princely owner to occupy the *piano nobile*, the rent being defrayed by the occupants of the upper stories, who are thus able to enjoy at an economical rate all the advantages of living in a palace. This is the system which, with slight modifications, exists all over the Continent, and to any one who from experience is able to compare the appearance of the great foreign capitals with ours, we consider the question ought to be easy to decide which is the more desirable, that of building-up a palatial capital to last practically for eternity, and thus, as Willis, the American writer, once wittily remarked, making the sky pay ground-rent, or our own system of spreading out our petty residences over miles and miles of country, thus creating distances which only modern means of communication can overcome.

It is not, we think, a question which is wholly involved in the marked differences existing between our imperfect lease laws and the freer and more generous laws on this question prevailing on the Continent. It is largely involved in mere national prejudices and routine, and must sooner or later come under the consideration of the governing authorities, who, to quote the words of Mr. Francis Peck, the writer of a recently-published and admirable work, entitled "Social Wreckage," seem only disposed to defend the laws which jealously prefer "the supposed rights of property to the health, morality, and welfare of the people."

THE BURLINGTON FINE ARTS CLUB.

Having already bestowed considerable space in commenting upon Rossetti's work as exhibited at the Burlington House Loan Exhibition, we think it unnecessary to do more than mention the fact that the members of the Burlington Fine Arts Club have also got together a collection of oil paintings, crayon studies, water-colours, and small sketches by the late artist. Admirers of Rossetti who found the visitors to the Academy rooms were not so much impressed as they ought to have been, said, "Oh, you should wait till the collection at the Burlington Club is accessible: that will show better what Rossetti was." As we anticipated, there is nothing at the Club to lead to any modification of the views we have already expressed in regard to the value of the artist's work. A large number of the exhibits are replicas of, or studies for, works at Burlington House. Mr. Graham has lent a rather smaller edition of the Liverpool Corporation's picture, "Dante's Dream," which is entirely finished, whereas the Liverpool picture, we are told, was not. The smaller edition has the same characteristics, however, and remains, as in the larger one, a fine and pathetic idea marred by disagreeable colour and weak drawing. Some of the small studies in black and white media at the club show that Rossetti was often more powerful, and showed as a more true artist, in his first ideas than in his subsequent elaboration of them into paintings, in which form they were too often spoiled by the want of that technical power which the artist never seems to have laboured or cared to acquire.

THE MEMORIAL CHURCH AT CONSTANTINOPLE.

We regret to hear from an English resident at Constantinople that the church erected there as a memorial of those who fell in the Crimean war is in danger of falling into decay from want of any provision for keeping it in repair. It is now, our informant says, considerably in need of structural repairs, and the principal cross on the exterior has for some time been broken, and its remains stand upon the gable with a very forlorn appearance. It seems that the Society for the Propagation of the Gospel, which was entrusted with the funds raised by general subscription for the work, rather unwisely (though, no doubt, with the best intentions) expended the whole sum on the church, leaving no reserve fund for repairs, trusting, perhaps, to its future congregation to keep the church in proper condition. We are assured, however, that the congregation of the Memorial Church is quite the reverse of a wealthy one, the church being out of the way of the "fashionable quarter," and the wealthy English residents attend mostly another church at some distance from the memorial building. It is apparently no one's duty to keep the latter building in repair, unless it be the duty of the congregation, who have no funds for the purpose.

If this is correct (and we have it on the authority of a witness who ought to know), surely something should be done by the English public or the English Government to keep the building in a creditable state. It is a church designed by an eminent English architect (and a very good specimen of his ability), by national subscription, as a memorial to English soldiers; and it is certainly unseemly and discreditable to us that it should be allowed to fall into decay. We may have doubts, or more than doubts, at the present moment, about the wisdom of the Crimean war; but there are certainly no doubts as to the heroism displayed by our army that was engaged in it, and we should at least endeavour "to keep their memory green" as far as keeping up their monument will avail to do so; besides which, the spectacle of an English-built church in a foreign country, decaying for want of looking after, is not a sight to give us credit in the eyes of the natives.

HULL AND BARNSLEY RAILWAY AND DOCK.

The 23rd of January was a red-letter day at Hull. For the long account of the works now in progress to connect the Humber with the heart of the Yorkshire coal district and for the more adequate protection and convenience of the shipping that seeks the Port of Hull, we refer our readers to a detailed account in the *Times* of the 24th ultimo. We wish ourselves to call attention to one or two of the most important features of this great series of public works. The total length of railway to be constructed is sixty-one miles; the amount of excavation necessary is 5,000,000 cubic yards, or about 82,000 cubic yards per mile, which is 12,000 cubic yards per mile above the average given by Mr. Robert Stephenson in 1856. There will be four tunnels, of the aggregate length of 4,263 yards, in this distance; about half of which length is contained in the Drewton tunnel, which is 2,112 yards long, and 200 ft. below the surface. Near South Kirby is another tunnel, 1,224 yards long. But the features of the work which merit most attention (especially when we bear in mind the great project of the Manchester Ship Canal) are the swing-bridges over which the railway runs. The Hull river is crossed by a swing-bridge of 75 ft. span. The bridge over the Ouse is 135 yards long, the navigation being provided for by a central swing, having two openings of 100 ft. each, flanked by two side spans of 85 ft. each, the swing portion of the bridge being moved by hydraulic power.

The new Alexandra Dock at Hull will have an area of 46½ acres, which will raise the dock accommodation at Hull to about 134 acres. Between 1870 and 1880 the tonnage of shipping upon which dock dues were paid in Hull rose from 1,487,884 to 2,414,600 tons, or by 62 per cent. In the value of its imports and exports (although not either in its total tonnage or in the number of its vessels) Hull is already the third port in the United Kingdom, the value in 1880 having reached 38,735,272*l*. By a comparison of returns, however, it would seem that of the 9,455 vessels, of an average tonnage of 389 tons each, credited to Hull in 1880, only 65 per cent. can have paid dock dues, as the total tonnage set down in the official returns is 3,877,872 for 1880. To accommodate a trade of that magnitude it would require (according to the rough rule that we gave in our number for July 8th, 1882) upwards of 200 acres of docks. The dock accommodation of Liverpool, as we have shown, is 525 acres, for under 8,000,000 tons of shipping. In the twenty years from 1861 to 1881 the shipping of Liverpool has increased by 59 per cent., that of the Tyne ports has increased by 85 per cent., and that of the Clyde by 103 per cent. These enormous rates of increase, however (if the authority of the correspondent of the *Times* be reliable), are altogether distanced by the growth of Hull, which shows an increase of 62 per cent. in shipping, and of 58 per cent. in the rateable value of the Parliamentary borough, in the ten years from 1870 to 1880. The effect of putting a port evincing such signs of vigorous life into better communication with the entire system of West Yorkshire collieries must be considerable. It is only to be wished, on the part of those interested in Hull, that the service may be at least partly effected by the cheapest known method, that is to say, by inland water-carriage. The expenditure of two or three millions of money on a colliery railway is, just at present, a somewhat questionable proof of wisdom.

TALL CHIMNEY CONSTRUCTION.

Tall chimneys are to be found over the manufacturing areas of Great Britain, and, looking to the frequent failures of such structures, it is time some special attention should be paid to their construction, use and maintenance. At present the construction of tall chimneys is not under any form of official regulation and inspection, such as is given to ordinary buildings. By-laws regulate the thickness and construction of factory, warehouse, and other walls in proportion to height and purpose; but a tall chimney may be erected outside any such stipulations or restrictions. Again, when in use there is no limit as to the extent of work a tall chimney may be made to do, as, when designed for one set of furnaces, others may be added without stint; or, so long as the flue will receive and pass up its shaft the gases and intense heat of combustion. That tall chimney-shafts should have the inner lining burned out, clinkered, and swollen, and the main shaft bulged and cracked from bottom to top, is no wonder; but that they should be allowed to stand in this condition is a wonder. There are scores of tall chimneys now in work more or less bulged and cracked by the intense heat from the connected furnaces. Attempts to hoop and mend are made when the dangerous structures ought to be taken down. Again, many tall chimneys are made top-heavy by massive caps or cornices, supposed to be ornamental, but which really serve no other purpose than to endanger the stability of the chimney; and some such absurdly loaded chimneys have had their tops broken off in a gale of wind. Other tall chimneys have weak foundations, and if they do not fall when new, become leaning towers. Others, again, are caught by a storm when new, and are bent, or they bend from innate weakness, and then a celebrated Steeple Jack is set to work to wedge, saw, and cut the chimney-shaft to bring it back to the perpendicular. Now, if tall chimneys were placed under proper regulations and inspection, Steeple Jacks would have to find some better employment. It is absolutely intolerable that men should be allowed to tamper in such a way with structures which ought to be unmistakably safe. A tall chimney mended is self-condemned, and ought to be officially condemned to be taken down and rebuilt. Half measures should not be tolerated. There should be no mistake in foundation, in design, or in the construction of a tall chimney-shaft, placed in a town, and rising from 100 ft. to 300 ft. or even 400 ft. from the surface. For such structures the best talent should be employed to design, the best materials should be used in construction, and the best workmanship should put them together. The flue should be of ample capacity, and should be independent of the main structure, — having air-chambers betwixt the flue and the outer substance to prevent the transmission of heat from the flue, and also to enable the flue-lining, when burned out, to be safely renewed. The entire structure, from bottom to top, should also be homogeneous, and not a hybrid of wall-stone, rubble, bad mortar, and bad brickwork.

Civil Engineer.

Joys Green Schools, Lydbrook, Gloucestershire. — These buildings were formally opened for scholastic purposes on the 15th ult. They have been erected by the Forest of Dean U.D. School Board, from the designs of Mr. A. Smith, architect, Mitcheldean, and provide accommodation for 270 children. The walls are constructed with grey Forest of Dean rubble stone, with rock-faced dressings, and the roof covered with blue slates. The buildings, which comprise schools, with teacher's house detached, present a most picturesque appearance, being Gothic in style, and situated upon a hill overlooking the river Wye, with its attractive scenery in the valley beneath. They have been built by Mr. Thomas Foster, of Abergavenny, at a cost of 2,960*l*., Mr. Leary, of Bristol, carrying out the heating arrangements.

REPORT ON ARTS IN ROME.

AN official report on this subject has just been published, and contains some information worthy of reproduction. It is noted that the most ancient art institution in Italy is probably the Roman Academy of St. Luke. From time immemorial, and long before the League of Florence, there existed in the Eternal City a Society of Painters, which afterwards took the name of the "University of Arts," and had its seat in a small church dedicated to St. Luke, on the Esquiline, conceded to it by Pope Gregory XI., reigning at Avignon, in 1371. Sixtus IV. extended the statute of the college in 1478 by a code which still exists in the archives of the Academy. By Sixtus V. the institution was removed to the Forum, where it now is. The Academy is an independent corporation. It admits as fellows artists of all nations, creeds, and political persuasions; organises prize competitions, gives pensions to art-students, and attends to the care and progress of national art, and the preservation of ancient monuments. Napoleon I., with the assistance of Canova, formed its present statutes, with important privileges and functions. By them the number of resident fellows is fixed at twelve for each department, viz.:—Painting, Sculpture, and Architecture, and twenty non-residents of each class. The number of honorary associates is not limited. The art-gallery is the private property of the Academy; it contains the collections of pictures left to it by Fabio Rosa, Carlo Maratti, D. Pellegrini, Gregory XVI., Wicar, and others. Zuccari, Poussin, Pietro da Cortona, Maratti, and T. Nimardi have successively re-arranged the works of art, the catalogue of which is too well known to demand repetition here. There are over 200 pictures in the gallery, and a rich collection of medals given by Gustavus III. of Sweden, including also Pistrucci's Waterloo medal; those in gold, collected by Professor A. Juvarra; one presented by King Charles Albert, and many others.

The library given to the Municipality of Rome, by Antonio Sarti, perpetual honorary president of the Academy, and a distinguished architect, is enriched with from 10,000 to 15,000 historical archæological and art volumes. The donor bequeathed an annual sum of 40*l.* together this collection, one of the finest ever made by a private individual. During the winter season (November to June) the library is used by about 1,000 students.

The sculpture-rooms contain works by Thorwaldsen, Canova, Gibson, and other masters. In the archives are many fine sketches and drawings, engravings, and rare editions, as well as a certain number of interesting documents and manuscripts. There are 256 portraits of former members of the Academy in the gallery.

The famous French Academy, founded by Napoleon the Great on the basis of a very ancient previously-existing institution, well maintains its well-deserved renown. The last yearly exhibition showed some good work in every department, and more particularly in that of architectural design, as usual. The director of the Academy is selected from three candidates, by the President of the Republic, for a term of six years. Those students who have gained the "grands prix de Rome" in painting, sculpture, architecture, music, and engraving *en taille-douce*, are pensioned by the State for four years; medal and stone engravers for three years. They must remain unmarried. An annual sum of 3,510 francs is given to each, in addition to 600 francs for journey expenses from Paris to Rome, on their arrival and final departure, and a yearly sum to pay the expenses of their work. Student architects proceeding to Greece, where there is a sister institution, receive 800 francs; when travelling for the sake of instruction, the students receive 267½ francs per month. There is a library and museum of casts attached to the Academy; the members having also free admission to all the museums, galleries, and monuments in Rome, and the use of a living model sitting for two hours daily at the Academy. Each student of painting must, during his first year, execute a figure-subject from nature, a two-figure drawing after some great master, and a drawing of some noted statue or bas-relief; in his second year, a picture of at least two nude or semi-nude figures, life-size; and in his third year, a copy of some old master or noted fresco, full-size, to become Government property, and a sketch of his own composition; in the fourth and last year, he must send to Paris a painting with figures of his own composition. A similar course of work is expected from all the other students, each in his own department.

At the beginning of 1881, the Spanish Government opened a handsome art academy in Rome, on similar lines to the French Academy. An exhibition of work by the students was held at the time of the public inauguration of the building, and showed some good painting. No subsequent exhibition has taken place, and no report has yet been sent home from this institution.

The present Minister of Public Instruction, Dr. Bacelli, is very zealous in furthering excavations and restorations of ancient monuments Under his auspices the Pantheon has been isolated, and the Forum is being restored to its original ground-plan. Most of the monuments in the kingdom are now in the hands of Government officials, by whom they are well looked after and preserved.

A large and handsome building is in course of completion in the Via Nazionale, destined to be opened shortly as a permanent National Fine Arts Exhibition.

TRADE CONFLICTS AND CERAMIC SCHOOLS AT LIMOGES.

THE ceramic works for which Limoges is renowned throughout France and among all connoisseurs have been seriously disturbed by a general strike of the workpeople. This is, perhaps, the more unfortunate, as, according to the declarations which have been made in public by M. Jules Ferry and other prominent French statesmen, Limoges, by its native industry, is likely to assist French merchants to compete against foreign fabrics. In art industries the French have been sorely pressed of late, and, instead of quarrelling among themselves, workman, artist, and capitalist should seek to work in harmony if they wish to hold their own on foreign markets. The present dispute began, it appears, last May, when an employer reduced a workman's wages to the extent of about 20 per cent., because his health had become enfeebled through phthisis. This reduction, however, was soon extended to other workmen, and a partial strike of 150 hands ensued. A committee was then appointed, and negotiations were opened to fix a general scale of wages, and this compromise had already been accepted by eighteen out of thirty-five firms, when suddenly the agreement was torn up, the signatures were repudiated, and a general reduction of wages insisted upon throughout the trade. A general strike and lock-out has been the consequence, and there are now about 5,000 workpeople without employment. The work, it should be stated, is done by the piece, and the workpeople maintain that on an average they do not earn more than 2s. a day. In consequence of this strike, M. Roussier, a porcelain worker, and M. Joffrin, the working-man member of the Paris Municipal Council, have been over to London as delegates from Limoges, and have obtained some assistance from the London Trades Council for the French artisans on strike. The poverty and want at Limoges are very great, and, in spite of English assistance, it is doubtful if the strike can continue for long.

In the face of this important struggle, which is likely to attract some attention, a general description of the ceramic industries of Limoges will not be out of place. For a long time it has been felt that the tendency which particularly characterises this epoch, namely the disposition to sacrifice art to cheapness, and to trade in shoddy, was damaging the high reputation of French exports. Other nations could produce shoddy articles with as great or greater facility than the French, and, if their country is to maintain the reputation acquired in time gone by, it must fall back again upon art, pure art, and leave to other less gifted workers the care of making cheap imitations. This is the spirit, at least, which has clearly manifested itself at Limoges of late years. The mere mechanical work, which was formerly held in considerable honour, has now been replaced by more intelligent individualism. The teachers seek to appeal to the thought, the mind, of the pupil. They invoke his powers of comparison; and, when some particular form or design is selected, urge him to see and convince himself that it is the proper, the most suitable form, instead of merely executing it in blind obedience to the spirit of routine. The teaching is based on the maxim that "what is thoroughly understood, what is well known and well seen, is easily drawn."

Formerly, especially among the younger pupils, no care was taken to instil useful knowledge. They were taught how to hold and cut their pencil rather than how to draw, and the models given to copy were of the crudest and least inspiring description. Now, on the contrary, if there is any difference, greater pains are taken with the beginners than with the older students. These classes have been placed under the guidance of M. Haridas, and he makes his pupils execute *bas-relief* models representing combinations of geometrical lines, that become more and more complicated as the pupils advance. These models, placed in different positions, teach the pupils the laws of perspective, which are learned practically before they are taught theoretically. Thus the child's intelligence is not worried in its first lessons by dry and more or less unintelligible laws and rules. It is allowed from the very first to indulge in the more amusing effort to draw or model something; and by copying real objects, from the beginning, there is none of that timidity which so often impedes artists when, after studying only drawings, they are called upon to reproduce forms from life.

One of the most interesting features of this school of art industry is not only the presence of a large number of young ladies, but the very great success they have acquired. M. Meyssat, whose exhibits at the Palais de l'Industrie in the Champs Élysées have made him well known in French art circles, is the director of the higher school of Limoges, and it is under his tuition that Mdlle. Eva Alexandre has produced objects, notably a water-jug and a saucer, which have won universal praise. Mdlle. Bouteilloux, another pupil, obtained the first prize for drawings from the antique, and Mdlles. Garceau, Gautrou, and Faure won prizes at a local exhibition for their drawings and paintings of flowers. M. Grenaud is the teacher in this latter department, and he is also professor of composition and ornament; while it is to M. Louvier de Lajolais that is due the initiative of a concourse recently held between the ceramic art schools of Paris and Limoges. As each school has its special qualities and its special defects, it is natural to anticipate mutual improvement from such competitions. Thus we find that the first prize, a drinking-cup, was won by a Parisian, but the second best design was executed by Mdlle. Brunet, of Limoges. Mdlle. Marie David, of Limoges, for ardent colours, for amber tints, and yellow enamel, has greatly distinguished herself both in local exhibitions and at the Paris *Salon*. Many male students have also won laurels, notably MM. Honorat, Lajouanie, Burg, and Fournier; and so complete is the system of teaching that, under the personal direction of Doctor Chénieux, the pupils have also to follow an elaborate course of anatomy. M. Pradeau and Mdlle. Marie David are the laureats of the school of anatomical drawing.

At the distribution of prizes, M. Louis de Ronchaud, director of the National Museums, made a few felicitous remarks concerning the work done at Limoges. The union of two schools, so different and yet so brilliant in their works, would bring about many fortunate and unforeseen benefits. "By passing, in their manufacture, through the sculpture and ceramic painting workshops of Limoges, your compositions, inspired by the brilliant genius and imagination of Parisian artists, have acquired, under the supple fingers of young girls, your distant co-workers, new qualities, new delicacy of finish, and experience, from which works of art have resulted that are more pleasing, more attractive, and in every sense a notable improvement."

In all this work, and the progress that has been accomplished, the French Government deserves much praise. Throughout France, the need of improvement with respect to technical education has been keenly felt; and in all directions efforts have been made to introduce a more intelligent method of teaching. Routine, it is now at last admitted, is the worst of all schoolmasters. The individual intelligence of the pupil is the real foundation of genius; and it is themission of the teacher to develop and not to check, by old-fashioned disciplinarian rules, the personal idiosyncrasy of each student. At Algiers, at Nice, and especially at Limoges, these new doctrines have been welcomed; and

now St. Pierre les Calais has petitioned Government to found in that great industrial centre a school of arts applied to industry. The Budget does not, however, admit of very extensive expenditure, and some check has to be placed on these generous aspirations. In the meanwhile, if tranquillity is to be maintained, it is important that the interests of the workmen, as well as of the artists, should be taken into consideration. The workmen are electors, and will not support so willingly a Government that allows them to starve, though, doubtless, the dispute has nothing to do with the administration. Without taking into consideration the exaggerated claims of semi-political working men agitators, it must be acknowledged that 2s. a day, now that the price of provisions has so much increased, is not enough to procure the necessities of life, even in a French provincial town. It would be in keeping with the true interests of the employers themselves that their workpeople should be fairly contented. They would then not merely work better, but would not be so easily carried away by the extreme revolutionary propaganda and the anarchical movements that so embarrass the Government.

On its side the Government, freed from this source of anxiety, might more readily find the time and the funds to further strengthen the schools where art and technical education help so efficiently to create workers of the highest order. French manufactured articles would then, of course, find a more ready sale both on home and foreign markets; and thus, from the general contentment, national prosperity would surely ensue, and all parties equally benefit.

POZZOLANA DEPOSITS IN ITALY.

Pozzolana earth is won in large quantities near Naples, the mines of Bacoli near Pozzuoli especially yielding it in excellent quality. A very good material is also produced at Bassano, near Torre del Greco, and at Montenuovo, which is used very much for submarine works. In Naples, the better kinds are called "*pozzolane di fuoco*," to distinguish them from "*pozzolane dolci*," which contain many foreign earthy substances, and, being dug at a slight depth below the surface, even in the city itself, are much used for ordinary building purposes. The better descriptions are dark brown in colour; medium kinds are yellow, and inferior sorts yellowish white. A dark brown volcanic earth, called "*ferruqine*," is much used for lining cisterns. Near Naples, "*lapilli*," also of volcanic origin, are employed for mortar. This material consists of fragments of pumicestone and dense volcanic slag, and, mixed with lime, gives a very durable mortar, serving for paving and covering the roofs of houses. The pozzolana deposits of Bacoli, Montenuovo, and of Vesuvius are the most important, both on account of their favourable position with regard to being sent away by rail or shipped, and the excellent quality of the material and the quantity produced. All three are open workings. Although the mines of Bacoli alone supply annually 50,000 tons of pozzolana, hardly more than 10,000 tons are produced, which are delivered free on board at the price of 10d. per ton, and are partly taken as ballast. Montenuovo, near Bajae, produced in 1880 about 3,600 tons, of which two-thirds was taken away in a sifted, one-third in a crude state, the sifted material at 1s., the coarse at 10d. per ton. The mines of Bassano, near Torre del Greco, supply principally the Southern railways. The material is passed through screens with meshes 3-16ths of an inch wide at once into trucks standing in sidings, and sold at 1s. 10d. per ton.

Much pozzolana earth is mined in the volcanic zone of the province of Rome, especially near the capital itself, in the Albanese and Viterbo mountains. There it is found mostly of a reddish violet, very seldom of a black or grey colour. This kind of pozzolana is used instead of sand in the preparation of mortar not exposed to the action of water. As good sand cannot very easily be obtained near Rome, the use of the earth as a substitute for sand has become very general, and has imparted a certain importance to the mines. The earth occurs there along with tufa in alternate, regular layers of a thickness up to 40 ft. All the mines (from ten to twenty are being worked) are on the left bank of the Tiber. Nearly all are worked underground at a depth of from 30 ft. to 40 ft., and communicate with the surface by a sloping level. The system of mining pursued is that of board and pillar work; the chambers are from 7 ft. to 12 ft. wide, and from 9 ft. to 25 ft. high, whilst the pillars occupy a space of from 18 to 60 square feet. As a rule, only one level is being worked, no timbering or pumping and no ventilation being necessary. The two mines of Portonaccio, on the Via Tiburtina, and two others at San Paolo, on the road to Ostia, are also able, on account of their position on the Tiber and near the railway, to send their pozzolana to Rome. These pits have surface and underground tramways, and shoots at the river-side. In the other mines and open workings, the earth is loaded at the working places in trucks holding about half a cubic yard. The pozzolana earth of San Paolo has the following composition:—

Silicic acid	47·66
Alumina	14·33
Magnesia	3·86
Peroxide of iron	10·33
Lime	7·66
Water	7·03
Alkalis and volatile substances.	4·13
Sand	5
	100

For producing mortar, &c., pozzolana is mixed in Rome with fat lime, as it is obtained from the Cornicolani mountains. The proportions of mixing vary with the application; good hydraulic cement ought to contain 18 per cent. by weight of fat lime. In Rome the mixing is done in the following proportions, by volume:—

	Lime.	Pozzolana.
For coarse work (tufa)	15	85
For coarse work (bricks)	30	70
Facing with bricks	45	55
Paving of tiles	36	64
Paving of gravel	27	78
Plastering and stucco work.	40	60

In executing brick work, bricks and mortar are used in the proportion by volume of 3 to 2. The specific gravity of the pozzolana earth of Rome is, according to Cavalieri, 1·232; that of mortar, 1·324. The resistance to pressure of this mortar was ascertained by Rondelet to be 488·3lb. per square inch, while that of mortar, well rammed in, was 637·13lb., and that of mortar sixteen years old was 726·53lb. This mortar, which was tested at Paris, consisted of three parts of Roman pozzolana earth and two parts of slaked lime of Marly. The production of pozzolana earth near Rome varied during the last ten years between 150,000 and 200,000 cubic yards. The export of screened material was from 10,000 to 20,000 yards annually.

THE IMPERIAL PALACE AT STRASBURG.

The German Imperial budget for 1883-84 contains an item of 553,200 marks (27,610*l.*), being a second instalment for the erection of a palace for the German Emperor in the city of Strasburg, in Alsace. The Money Bill is accompanied by a design of the building, with some explanatory details and estimates of the cost. The palace is to be erected in a new part of the city, at a spot which is to be called the Kaiserplatz, or Emperor's-square, and opposite the present theatre and palace of the governor of the province. It is intended only for the occasional or periodical residence of the German Emperor and Empress, with their court retinue, or for their accommodation upon official visits to the "Reichsland" of Alsace-Lorraine. It will be quite a monumental building in style and proportions, and will be built as far as possible fireproof. The exterior will be in the grey sandstone of the Vosges. The chief front will present a series of Ionic columns, above which will rise a frieze, adorned with groups of heroic figures, and crowned with a cupola. The total cost will be 2,660,000 marks (133,000*l.*), of which 2,540,000 marks (127,000*l.*) will be for the building alone, the rest being for the gardens and other appurtenances.

Lerwick Town-hall.—The first of the gifts presented in aid of the decoration of the Lerwick Town-hall and Municipal Buildings, being the painted-glass medallion presented by the burgomaster and magistrates of the city of Amsterdam, has arrived at Lerwick. The design of the window, which is artistically executed, is intended to represent the nature of the intercourse which has existed for centuries between Holland and the Shetland Islands.

IN AND AROUND THE ROYAL COURTS OF JUSTICE.

Sir,—You have already discussed from time to time the general architectural character of the Royal Courts of Justice, a building which is undoubtedly the most important which has ever been erected in this country, the Houses of Parliament only excepted. It is not too soon, however, to offer some observations upon it, as the New Law Courts of the metropolis, from the experience which has been gained by its partial use since the beginning of the present legal sittings. And if the remarks appear too critical it must be borne in mind that it would be impossible to touch on the many satisfactory portions of this huge pile, and that in criticising it one is not to be taken as overlooking its good qualities. The most noticeable and prominent mistake which every day's experience seems to show has been committed is in the waste of space in the central hall. The courts do not open directly into it, and they are reached from narrow and dark galleries, which are connected with the central hall by equally dark staircases and passages. Consequently the central hall, it is clear, is used almost entirely as a mere passage through which persons hurry, and wait if they desire to do so in the galleries adjoining the courts. But Westminster Hall served as an enormous ante-room and waiting-chamber to the courts. It served as a place where barristers and solicitors walked up and down, arranged terms, and discussed pending cases and the conduct of them. But Westminster Hall was originally used for the purposes of the courts, and this other use of it was secondary. But the architect of the New Law Courts has adopted the principle of a great central hall, which requires a large amount of precious space, without having duly considered the actual use which it would be. This appears to us, for I speak for more than myself, and we think further experience will prove it, to be the central fault of the design. It is especially noticeable, also, because the passages or galleries connected with the courts are both dark and narrow, and had some of the space devoted to the hall been given to them, it is clear that they would have been not only more useful, but more architecturally striking. Any one who will take careful note of the north corridor, which runs across the building near the Carey-street entrance, and which is bisected by the passage which leads to this entrance, will have little doubt that greater height and space should have been given to this part of the building. Again, this north corridor is the main junction of the courts on both sides of the hall, and is rapidly becoming the main thoroughfare and meeting-place of the building; it is, in fact, taking the place of Westminster Hall. But though there is a large opening directly from it into the great hall, it is an opening which terminates in a gallery or balcony, so to say, which simply overhangs the hall, and leads to no place. Consequently, instead of descending by a direct communication, persons have to go down by the various troublesome staircases. It seems still possible to remedy this defect. Had there originally been a broad flight of steps leading up the court corridors, something after the manner of Westminster Hall, it would have been of great practical use. As it is, this gallery and balustrade should be altered, and a flight of steps from each corner should be constructed so as to place the court corridors in direct and easy communication with the hall, and thus make the hall ease the corridor of the throngs which now fill it and will, when the courts are in full working order, inconveniently crowd it.

We have already mentioned the darkness of the passages and the troublesome character of the stairs; it is really sad to think of the difficulty which any aged or feeble member of the public will have who has to use the public galleries, for even the strongest complain of the fatiguing character of the flights of circular stairs up which it is necessary to struggle to reach these public seats. In some of the courts much inconvenience is caused by the absence of any communication at the back of the court with each side. Of course, persons having business in the courts, whether as litigants, counsel, solicitors, or witnesses, constantly want to go from one side of the court to the other. It is not very respectful to the judge nor conducive to the placid conduct of business for persons to rush like rabbits through the solicitors' well, disturbing its occupants and

distracting counsel and judge. It is equally inconvenient to have to go outside the court and enter by another door; for each time the door is opened a noise and disturbance are created, and the noise of the persons passing up and down the adjoining corridors becomes distinctly distracting. These drawbacks can therefore only be avoided by having a communication between each side at the back of the court, and it is surprising that this should not have occurred to those responsible for the internal plans of the courts. It appears pretty clear also that the court of the Lord Chief Justice is too large; an undue size is not conducive to business, and only causes a number of idlers to congregate in it. The main or desirable feature of a court is that it should be moderate in size, conveniently planned, with good acoustic properties, be well ventilated and kept at an even temperature, and that there should be plenty of space outside for persons to wait and discuss their business. A great chamber such as that called the Court of the Lord Chief Justice of England is too large for the convenient despatch of business. As regards minor inconveniences, such as banging doors and noisy seats, these may be remedied, but defects such as too-large courts, and a too-spacious central hall and too-small passages adjoining the courts, are so intrinsic a part of the plan that they can only be noticed and regretted as now inevitable. But in speaking of small details we may draw attention to the seats, which are ingeniously contrived with a space between each, so that when a person has to sit very close in a crowded court he does so under somewhat uncomfortable circumstances. The mere fact that the seats lift up does not prevent them from adjoining throughout, and in the same way to cut off the corners of the desks is the cause of holes, which are capital traps to cause papers to fall to the ground. Nor again does the fact that the front row of the junior bar possesses ink-pots seem to be any reason why the benches at the back should have neither inkpots nor places for them. These are fortunately details which can be easily improved.

But it is quite clear also that it is not the inside of the New Courts which alone invites criticism. There are several urgent improvements needed immediately around them. The time has now come for the instant demolition of the miserable block of buildings which lies between the Strand and Holywell-street. The Strand is here far too narrow both for vehicular and passenger traffic; it is in a constant state of congestion. By removing these buildings and widening the roadway to the northern side of the Church of St. Mary-le-Strand, an open *place* would extend from this church and Somerset House right up to the site of Temple Bar. By this the traffic, which must necessarily increase in that part with the use of the new Courts, would have more freedom, and one of the most important sites in London would be vastly improved. For there can be no doubt that in a very short time both sides of the Strand, from Wellington-street to Fleet-street, would be filled with handsome buildings fitted for a chief thoroughfare of the metropolis. But this improvement is not the only one which is needed. A broad and handsome street should lead directly from the Royal Courts to the Embankment. All traffic from the south-east must now come along Fleet-street, and Norfolk-street is the nearest westerly approach from the Embankment to the Strand. Yet there is Essex-street, which actually opens into the Strand almost opposite the western wing of the courts. But Essex-street is now a *cul-de-sac* except for foot-passengers, who have to descend a flight of steep and dirty steps. It is obvious, therefore, that Essex-street should be made into a broad thoroughfare which would connect the Courts of Justice with the Embankment, and would form the channel by which traffic to the Law Courts and its neighbourhood coming from the south-east and the south-west would approach the courts. Here, again, one speaks chiefly with a view to practical convenience, but it must be apparent to every one that a fine open thoroughfare, with good buildings on each side, and flanked on one side as it approached the Embankment by the Temple-gardens, would be an exceeding improvement to London. Lastly, it is a cause of regret that the space lately occupied by the buildings which have just been pulled down between Bell-yard and Chancery-lane, immediately abutting on Fleet-street, is to be built over. Chancery-lane is too narrow as it is, but just at this part there is need for as much width as possible, not only to accommodate the passing traffic and the traffic which stops at and for the Law Courts, but to give a general view of the south-east tower of the Courts along Fleet-street, and thus add yet again to the architectural effectiveness of this new building. New circumstances involve fresh and unforeseen changes, and it is obvious that, having built the Law Courts, the work is far from ended, for all around old blots appear more clearly, and every day will show more plainly the need for improvements in the thoroughfares which connect all parts of London with the central home of English justice.

A LAWYER.

A DOCTOR'S HOUSE, BEDFORD PARK, CHISWICK.

VISIT OF THE ARCHITECTURAL ASSOCIATION.

ON Saturday afternoon last a new house which has just been erected for Dr. Gordon Hogg in Priory-gardens, Bedford Park, was visited by some of the members of the Architectural Association. This was the first "Visit" of the session, but in consequence of the inclemency of the weather there was but a small attendance of members. Mr. E. J. May, the architect, conducted the visitors over the house, which has been designed upon the principles laid down by Drs. Drysdale and Hayward, at the special wish of Dr. Hogg, as a residence for himself. The house consists of basement, ground and first floors. In the basement are the fresh-air chamber, the chamber for the heating-stove, with coal and wine cellars. The ground-floor contains corridor, 35 ft. by 8 ft.; staircase, 12 ft. by 8 ft.; dining or living room, 28 ft. 6 in. by 20 ft.; drawing-room, 18 ft. by 16 ft.; consulting-room; kitchen, 18 ft. by 16 ft.; and butler's pantry, offices, &c. On the first floor are corridor, 25 ft. by 8 ft., and six bedrooms, including nurseries and bath-room, &c. The principal thing aimed at is to produce a constant flow of fresh air through every room and corridor in the house, and it is calculated that the air in each room will be changed once in every twenty minutes. The air is admitted into the house by an area into a large chamber in the basement, containing about 1,500 cubic feet. It then passes up through gratings in the floor of the corridor into the various rooms of the ground-floor (which, with the exception of the consulting-room and domestic offices, are without doors, but have wide arched openings from the hall and corridor, across which openings it is intended to hang curtains), and up the well-hole of the staircase, and through special openings into every room on the first floor. From each room one or more separate extracting-flues go into a foul-air chamber in the roof, from which the foul air is drawn by a powerful current through a main extracting or down-cast shaft, which passes down an outside wall, and up behind the kitchen range, and ascends round an iron smoke-flue from the kitchen fire. The heat of the fire, specially arranged to act upon this ascending column of air, is intended to provide the suction power for drawing the air through the whole house, by means of the extracting-flues, from each room. The warming of the air in the winter is done by one of Mr. R. Renton Gibbs's hot-water circulating stoves in the basement, which warms about 550 ft. of hot-water pipe in the fresh-air chamber, as well as about 100 ft. of pipe running round the two nurseries on the first-floor. As the air enters the fresh-air chamber it will pass through canvas, and perhaps some special water-cleanser, and if thought necessary it can, in very hot weather, be cooled by being made to pass over ice. The windows are made to open, but are at present hermetically closed, excepting those in the kitchen; and as the air is thoroughly warmed by the hot-water pipes, the fireplaces which have been provided, but which are all bricked up (except, of course, that in the kitchen), are not intended to be used at present, though Mr. May stated that the system of ventilation could be worked in conjunction with open windows and fireplaces. It was incidentally mentioned to some of the visitors on Saturday that one of the few houses which have been built on this principle was occupied for three winters without any necessity being felt for fireplaces. But the head of the family was compelled to return to open fires on social grounds. The house, arranged on the principle described, possessed an equable temperature in every room; the result was that the members of the family scattered themselves in various rooms, to the apparent neglect of guests and visitors. Hence the return to what proved to be literally "the social hearth." The internal finishings and decorations of the house are all designed in very good taste, and the work has been well carried out. Mr. R. Renton Gibbs, of Liverpool, supplied the heating apparatus, as above stated, and gave much valuable advice in the arrangement of it. Messrs. Adamson & Sons were the builders. The whole of the work has been carried out from the designs and under the superintendence of the architect, Mr. E. J. May, of Hart-street, Bloomsbury. The cost of the house has been about 1,800*l*.

Some of the visitors afterwards went on to see another house which is being erected from Mr. May's designs in the Orchard, Bedford Park, but which will not be warmed and ventilated on the same principles as the house just described. Others of the visitors inspected the new extensions to the Chiswick School of Art, Bedford Park, consisting, on the first floor, of a large, light, and lofty modelling-room, with a semicircular roof in one span, the principals being of rolled iron, and made in Belgium. Below this room, on the ground-floor, is a lofty and well-lighted room, adapted for lectures and for science teaching. These works, which are nearly completed, have been, we understand, carried out from the designs of Mr. Burchett, the head master of the school.

TRAVELLERS TO BRIGHTON.

THE fluctuations in the rate of travel are shown most remarkably by an official tabulation of figures issued by the London, Brighton, and South-Coast Railway Company, as carried in a series of years over their lines. It proves the popularity of the Brighton line, the large volume of traffic it carries, and in a remarkable degree the downward tendency of travel. Selecting a few years from the eleven given in the table, we may present them at a glance, as follows:—

Year.	First Class.	Second Class.	Third Class.
1872 ...	2,166,328 ...	3,047,999. ...	17,569,327
1875 ...	2,335,005 ...	2,831,903 ...	18,274,878
1878 ...	2,224,277 ...	3,612,733 ...	24,841,425
1881 ...	2,116,009 ...	3,895,511 ...	32,368,605
1882 ...	2,056,518 ...	3,893,232 ...	33,921,791

The first fact that strikes the reader of these great totals of travel is that the number of the passengers has enormously increased in the eleven years bridged by the comparison. It was 22,783,000 in 1872, and it rose to 39,871,800 for the past year, so that in the eleven years seventeen more millions have been added to the number of the yearly ordinary travellers on this popular line (season-ticket holders being additional in all the years). It is an addition that is not exceeded by many railways, and it is one that shows how great is the growth of the habit of travelling. And in the first of the years named there were 101,533 season tickets, whilst last year the number had risen to 167,167, so that it is apparent that the popularity continues of the line with these important travellers. But a still more important change is shown in the classes of the travellers. Eleven years ago the first-class passengers were nearly a tenth part of the total,—now they form only a nineteenth part. The decrease, moreover, is actual as well as relative, for although the line has been increased, the number of first-class passengers is 100,000 less yearly now than it was eleven years ago. In the second class there is a slight actual growth, but a decrease in the proportion to the total. In 1872 the second-class passengers were about a seventh part of the whole, but last year they were only a tenth; and it is notable that whilst they have grown in the actual numbers down to the year 1881, last year showed a declension in the number carried, though the actual fall was small,—some 2,100. It is clear then that the growth that has been so very great in the eleven years shown in detail in the table, has been almost exclusively in the popular third class, and the extracts we give above show that sixteen million more passengers were carried in that class last year than eleven years ago. It is apparent that the whole growth of the traffic is now in that class, and this despite the fact that on the line there has hitherto been speed reserved almost exclusively for the upper two classes. The policy in this respect is now changing, and it is

probable that there will be a still more rapid growth of the popular class than there has been. Railways, as a rule, are now beginning to learn that it is to that class that they have to look for the growth of their revenue; and when this is recognised there will be a continual increase of the accommodation that is provided for it, and a continual endeavour to attract fresh traffic. Eleven years ago the popular class yielded 407,000*l.*, but it now yields over 700,000*l.*, and a growth such as that is marked enough to make its cultivation needful.

MONUMENTAL.

Victor Emmanuel.—On the 9th of January an equestrian monument to Victor Emmanuel was inaugurated at Verona with much ceremony, and in the presence of upwards of 30,000 persons. The execution of the statue is spoken of as very excellent. The sculptor is Signor Borghi.

Berlioz. — A public subscription has been started in Paris for the purpose of securing a bust of the well-known composer, Berlioz, and has been sufficiently successful to justify the promoters in giving an order for the work. The Abbé Franz Liszt has contributed 500 francs, and Hans von Bülow 300 francs to the fund. The bust is to be placed on the tomb of the composer on the 8th of March, the anniversary of his death. Subscriptions are received by "La Renaissance Musicale" of Paris.

PISA.

THE late Charles Dickens, in his "Pictures from Italy," speaks thus of the impression made upon him by that wonderful group of buildings at Pisa, which forms the subject of our illustration:—"It was a surprise to me to find it in a grave retired place, apart from the general resort, and carpeted with smooth green turf. But the group of buildings clustered on and about this verdant carpet,—comprising the Tower, the Baptistery, the Cathedral, and the Church of the Campo Santo,—is perhaps the most remarkable and beautiful in the whole world, and from being clustered there together, away from the ordinary transactions and details of the town, they have a singularly venerable and impressive character. It is the architectural essence of a rich old city, with its common life and common habitation pressed out and filtered away."

At first it may seem somewhat remarkable that the group of Pisan buildings should have impressed an Englishman in this way, because one would have thought that the recollections of our old English cathedral closes would rather have prepared our great novelist for the situation of these edifices.

Salisbury, Wells, and Winchester Cathedrals, are nearly as much removed from the bustle and ordinary life of the cities to which they belong as are the buildings at Pisa. We suppose, however, that Dickens's Continental experience had for the time being led him to forget this peculiarity of so many of our English cathedrals. In early times there can be little doubt that nearly all cathedrals were placed in closes or enclosures, but as the inhabitants of the cities increased these open spaces became built upon. This was especially the case on the Continent, where it was often found difficult to enlarge the walls and fortifications of the towns, and thus the only way of providing for a growing population was to build over the spaces left within the city.

One very great peculiarity of the group of buildings at Pisa is their remarkable unity. Although they contain work of every date, from the tenth to the sixteenth century, yet their general effect is that of a series of buildings, all erected at the same time and in the same style. A little study of their details of course shows this not to be the case, but there is a harmony about all the latter alterations and additions, which to any one not acquainted with architectural detail would lead to the idea that the whole group of buildings had been erected at the same date, and had presented pretty much the same aspect which they now do for some 700 years. This probably arises from the fact that a kind of Classical feeling pervades Italian architecture of every date. This will be seen at once by looking at the upper portions of the Baptistery, which, although Gothic as to their detail and date, yet from the exclusive use of the round arch, and a certain horizontal treatment in the arrangement of the various stories, the building has at first sight quite a Romanesque character.

The Cathedral of Pisa was commenced in the year 1004, and was completed in 1118. The architect's name is said to have been Busketus or Buschetto. Some writers have supposed that he was a Greek,—and the name certainly has a Greek sound about it. If, however, he was a Greek, he evidently did not show his nationality in the design for this cathedral, as the long nave and arches, deep transepts, and small dome at the intersection, are far more Italian than Greek in character. The building, in fact, bears a strong likeness to the old basilica of St. Paul's-without-the-Walls of Rome, with the addition of a developed choir and cupola over the crossing, neither of which features has any Greek characters about it. The oval form of the dome is, as far as we know, peculiar to this church.

There is a far greater amount of regularity about the Cathedral of Pisa than is to be seen in any church of its date, and its proportions were evidently carefully studied. Though very imposing, it is not a very large church, its internal length being little more than 300 ft. The interior of the building is wonderfully striking, and remarkable for its simplicity and dignity.

Close to the south transept is the celebrated leaning tower, which a few years back gave rise to so much controversy as to whether it had been originally built out of the perpendicular. It is, however, now a pretty well ascertained fact that this peculiarity is the effect of accident, and not of design; in fact, the west front of the cathedral and several of the columns are also out of perpendicular, and the high altar, a late Renaissance structure, had settled down so much at one end that it was found necessary to take it down, and re-erect it in 1825.

Although the "leaning tower" was not originally built out of the perpendicular, yet it is evident that this defect took place long before it was completed, because the upper stories have their columns longer on one side than the other, and the top story of all is built upright. The upper stories also are set back more on the inner than the outer side, all which shows that the builders were desirous of remedying the defect. The tower was erected in 1174, and it is said that one of its architects was a German (William, of Innsbruck); this, however, seems very doubtful.

The Baptistery, it is said, was commenced in 1152, under an architect called Dotti Salvi; but this seems to be contradicted by the existing inscription upon it, which is as follows:—"A.D. 1278 ÆDIFICATA FUIT DE NOVO." Now to what does this "Ædificata fuit *de Novo*" refer? It is generally supposed to mean that the work was "*resumed*" in 1278; but surely the expression "*de Novo*" can scarcely mean this. Then, again, 1278 seems too early a date for the upper portion of the building, which looks quite a century (if not a century and a half) later.

Is it not possible that the same failure of foundations may have taken place with the Baptistery which occurred in the case of the leaning tower, but to such an extent as to render its rebuilding a matter of necessity, and that it may have been rebuilt, the old materials being re-used, in 1278? The Baptistery is about 100 ft. in diameter, and 180 ft. high. The magnificent pulpit of Nicolo Pisano is in this building.

The Campo Santo, which is really the cloisters of the cathedral, and not a separate church, as it has been described, is isolated to the north of the centre of the cathedral. This is a great peculiarity, but is not unique, for the cloisters of the cathedral are isolated from the church, and could never have been connected with it structurally.*

The Campo Santo, which is of vast size, being 415 ft. by 137 ft., was commenced in 1278. It is full of monuments and sculptures of every date and style, and is a combination of cemetery and museum of sacred art. Its walls are adorned with most interesting frescoes, some of which are by Giotto, Orcagna, and others. The windows which look into the cloister garth are adorned with singular geometric tracery,—probably inserted at a later date than that of the erection of the building itself; is peculiar, and shows that the Italians never quite mastered this feature of Gothic architecture. The ground of the garth is said to have been brought from Mount Calvary by Archbishop Ubaldo; the tradition seems, to say the least of it, to be improbable, nor is it necessary as an explanation of the name Campo Santo.

* Old St. Paul's Cathedral had an isolated cloister, similar to the Campo Santo. It was called "Pardon Church Haugh."

"EVERSHOLT," CRICKLEWOOD.

THE building, of which we give a view this week, is being erected on the estate of Mr. Henry Horace Powell Cotton, at "Shoot-up-Hill," Cricklewood, as the residence of Mr. Thomas Bate.

The external walls are of deep-red Suffolk bricks; the string-courses, quoins, window mullions, and other masonry of Box-ground stone. The tower, which will form a conspicuous feature of the design, rises to a height of 62 ft., finished with an embattled parapet, and by its naturally elevated position (180 ft. above Trinity datum) will enable some extensive and pleasant views towards Hampstead, Highgate, Harrow, and Citywards to be seen from the summit. There will likewise be a turret on the north side rising 65 ft. to the vane. The dining and drawing rooms are 15 ft. from floor to ceiling, the former to be framed and panelled throughout in pitch pine, enriched with an elaborately-carved over-mantel reaching to the ceiling. A sufficiency of bed-rooms, also a morning-room, servants' offices, and so forth, will be provided, and the culinary fittings will have the latest improvements.

The architect is Mr. Edward A. Heffer, of 6, Victoria-road, Kilburn.

OXFORD AND CAMBRIDGE MANSIONS.

THESE buildings, arranged as residential flats, have been erected, during the last three years, upon land which has stood vacant for many years past, facing the Marylebone-road and Lisson-street, upon the Bond-Cabbell Estate, St. Marylebone.

In the arrangements of plan carried out, it has been thought advisable to limit the number of suites to six in each block, using one common staircase. The site being rather confined and of a peculiar shape, some blocks are smaller than others; the smallest, however, contain six rooms, and the largest nine rooms in each suite. All the usual accessories have been provided in making the different suites compact and self-contained. The elevations are finished in red bricks, with red Mansfield dressings; the staircases, in concrete, were formed by the Eureka Concrete Company.

In the rear is an open space, laid out as a garden, and common to the whole of the tenants, who have access to it from their respective blocks. The total cost of the buildings was 62,000*l.*, working out at about 10*d.* per foot cube.

The whole of the works have been carried out by Messrs. Mack & Humphreys, builders, under the direction of Messrs. C. Eales & Son, architects, of Welbeck-street.

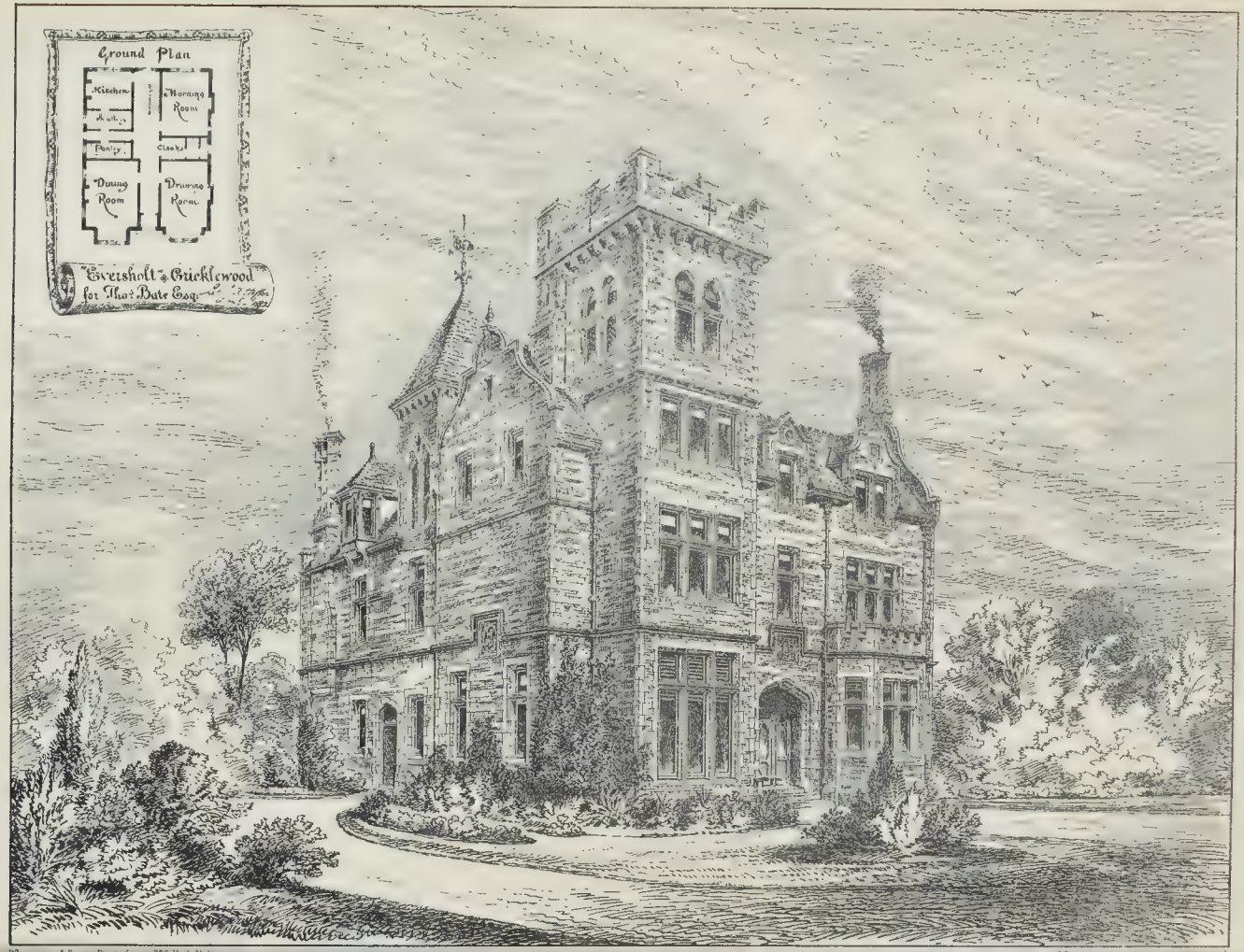
LONDON STREET ARCHITECTURE.

PREMISES IN OXFORD STREET.

THESE premises are erected on the estate of the Duke of Westminster, by Mr. William Adkins, whose increasing business rendered larger accommodation necessary. The block comprises two distinct houses and shops, the corner one being occupied by the proprietor. This has an entrance also in George-street. Very complete arrangements were made to meet the necessary requirements, and some rather elaborate planning was involved. In the prosecution of the works many difficulties were encountered, not the least of which was a running sand in the foundations, involving pumping for a lengthened period. The buildings are erected of red bricks and Portland stone, the shop piers being of polished Aberdeen granite. The shop-fronts are arcaded in cast iron, and are fitted with revolving shutters.

The whole of the internal finishings are of a better character than is common in similar buildings. The internal shop-fittings of pitch-pine, the gas chandeliers, &c., were all specially designed by the architect.

The works were carried out by Mr. William Macey, and the architect was Mr. F. Boreham, of Finsbury-pavement. The entire cost was something over 7,000*l.*



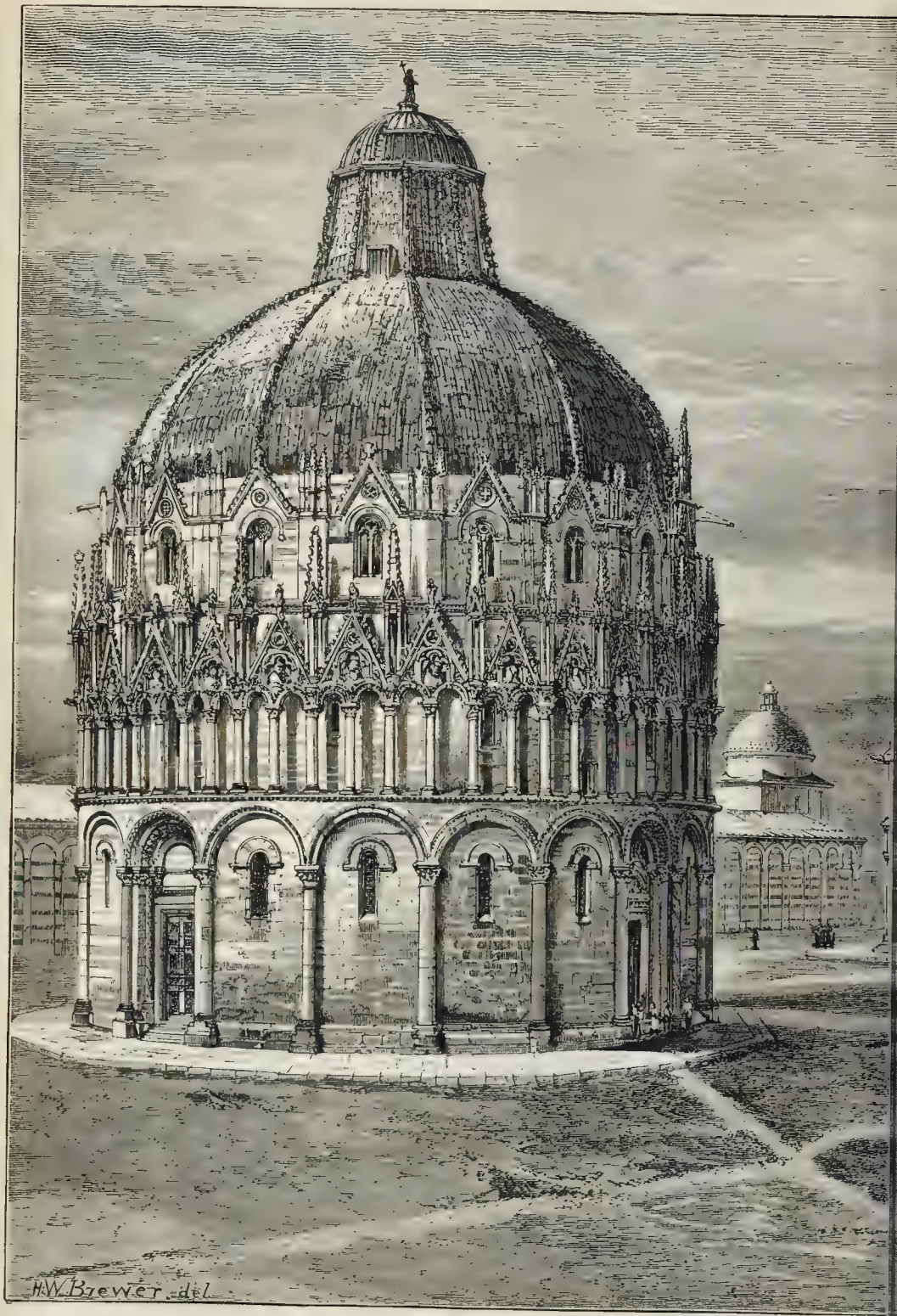
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OXFORD and CAMBRIDGE MANSIONS, N.W. C. EALES & SON, Archts.

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Wyman's Typographic Establishment



PISA: BAPTISTERY CATH



AND LEANING TOWER

OXFORD & CAMBRIDGE MANSIONS

MARYLEBONE





C. EALES & SON, ARCHTS
9. WELBECK ST W.



LONDON STREET ARCHITECTURE: HOUSES IN OXFORD STREET.——Mr. F. Boreham, Architect.

LLANBEDR CHURCH, MERIONETHSHIRE.

IT is proposed to make some improvements to Llanbedr Church, Merionethshire. Llanbedr is situated between Barmouth and Harlech, in the hundred of Ardudwy. It is a little village as grey as a sea-gull, on the river Artro, close to the sea, and close, too, to a group of mountains that rise steeply on both sides of it till each peaked top is lost in the clouds. The river dashes and eddies and winds along its pebbly bed through the village, where it is crossed by a grey bridge of two semicircular arches, bearing a seventeenth-century date on a tablet. There is a little inn covered with ivy in a Dutch-like garden. There is a smithy, latticepaned, open-doored, and smutty. There is a tall cream-coloured chapel. There are pleasant houses, perhaps three shops, and a row of picturesque cottages facing the main street, and turning, at a right angle, behind tiny foregardens bordered with a low wall finished with Gibraltar copiug, to face the hurrying river also. At the centre of this rectangular line of cottages is a reading-room, and at one end is a bakery, both recent additions made to the village by a benefactor. And a little further on is the ancient church, silver-grey and very venerable, with its hoary lych-gate, and grassy God's-acre. The churchyard is full of slate tombstones, and rising above these is a fine granite cross. On a hill-side overlooking this scene is a six-gabled house very pleasant to look upon, with bay windows and an open porch, as well as a verandah, covered with creeping plants, and with glistening shrubberies and ornamental and rustic lodges to the right and to the left of it, called Hafody-bryn, the country-seat of one of her Majesty's Counsel, Mr. S. Pope. And here and there, up the valley of the Artro, are smaller solitary residences; and here and there, on the sides of the mountains, are more solitary houses, grey and high up, like eyries.

Cathrall, in his "Topography," thus describes the parish of Llanbedr-juxta-Harlech:—"In the cwmwa of Ardudwy, cantrev of Domodig, now called the hundred of Ardudwy, is a curacy, not in charge, with the vicarage (Ectoris Thesaurus says rectory) of Llandanwg. The resident population of this parish in 1803 was 319, and in 1821, 351. The rates in 1803 were 95*l.* 5s. 4d., at 5s. 3d. per pound. It is seven miles north of Barmouth and two miles south of Harlech; six or seven miles in length and four in breadth; and is very hilly, except near the river Artro, on which it is situated. The mouth of this river is by some writers represented as the place where Gwyddno Garanhir's weir was situated, and where the far-famed British bard Taliesin was discovered by his son Elphin, in a leather bag, attached to one of the poles of the weir. The prince took compassion on the infant and had him educated. The source of this river is near a place called Cwm Bychan, a most romantic little valley surrounded by high and magnificent rocks. Mr. Pennant visited an old gentleman named Evan Llwyd, whose residence was near a beautiful lake called Llyn Cwn Bychan, whose ancestors had been in possession of that property ever since the year 1100. One of these ancestors was present at the battle of Bosworth with Henry VII. A Welsh tune, called "Yma dawiad Dar Llwyd," or David Lloyd's farewell, was composed at his departure. Drws Ardudwy, close by, was a pass occupied by the sons of Cadwgan in their contests with the sons of Uchtryd ab Edwyn, whom they at last expelled from the country."

Llanbedr Church, like those of a similar antiquity in neighbouring parishes, consists of a nave and chancel, with a bell-turret on the western gable. It is small, close, and compact, dark and somewhat damp; and was probably erected in the days when Christianity was first embraced in the district. At the angles are huge stones, placed much in the manner used in England by masons in the centuries before the Norman conquest. There is no window opening in the west end. The ancient lights in other parts of the fabric have evidently been enlarged at different times. The doorway, which is on the south side, at the western end, is rough-arched, and over it is a slate tablet, affixed to it, thus inscribed in the Welsh language:—

"Annedfaur cadarn nodfa cŏr treiniol
Ger bron Duw ar dyrfa
Er dim na thyned yma
Y dyn oud a medwl da."

This stanza expresses a hope that no man will enter the privileged refuge before God and the multitude but with good thoughts. The interior of the nave is furnished with plain open seats to accommodate about 100 persons; close to the door is an old alms-chest, dated 1739, and inscribed with initials H.E., I.W., W.A.Y., the font, and a large bier, painted white. There is a pulpit on the south side, but neither reading-desk nor lectern, and close to the pulpit is a small harmonium occupying the place of a pew or seat. The chancel is furnished with a double row of seats likewise. On the walls, which are covered with whitened plaster, are three marble tablets to the memory of members of the Poole family, and near them is an aumbry with the coat of arms and motto of the same family, "*Spes fulla cissima rerum*," painted on the door of it. On the south side of the nave is a stained-glass window, inscribed "*In gloriam Dei et memoriam Hannæ Pope*, 21st Nov., 1880. The east window is also filled with stained glass. Altogether, though there is an ancient open-timbered roof, there is an air of simplicity and bareness. There is no vestry, and the only substitute for one is a curtain.

To remedy the shortcomings in the matter of ecclesiastical requirements, and to impart a more finished and fitting appearance to the little structure, it is proposed to add a porch, a vestry on the north side, to remove the bare-looking plaster from the walls, and to insert a window at the west end, another in the nave, and a third in the chancel, to obtain more light. Furthermore, as the slating of the nave of the roof is imperfect, it is proposed to re-roof this portion of the building.

Within a couple of miles or so of this fabric, close down on the margin of the sea-shore, open to the winds and the sands, stands a similar ancient church, just as silver-grey and venerably beautiful of aspect, but abandoned and in decay. Many of its rich roof-timbers are in their places, others are lying on the ground, or rest, as they have fallen, against the walls. We may see the chancel roof was of the wagon-headed type, for there is a bay still standing, with traces of painting on it. There are two beams spanning the width of the nave, the one belonging to the ancient rood-loft, and the other to a more modern gallery; and there are long lengths of a carved cornice still *in situ*. There is the same extremely ancient rough-arched doorway here as at Llanbedr Church, only it is at the west end, and there is also a window opening on the south side formed in the same archaic manner. We may see, however, this edifice was enriched in the fourteenth century, when it was furnished with its handsome roof. The small ancient windows were then enlarged, and mullions and tracery put into the widened openings. There is also a lych-gate, scarcely injured by the hand of Time, at the eastern entrance to the surrounding churchyard, still roofed, and furnished with stone seats on either side. As we look upon its appealing aspect, we can but regret the exigencies that have caused this interesting structure to be abandoned. It is known as Llandanwg.

WINDSOR FOREST.*

YOU can scarcely speak or think of Windsor without calling up a host of associations. "Windsor is the Windsor of Chaucer and Shakspeare, as well as of the Plantagenet princes and Stuart kings." It is not only the "Windingshore" of the River Thames, from which circumstance it has its name; it is by common consent "Royal Windsor," the home of the British monarchy. New Windsor, so called still in law, is no newer than the time of William the Conqueror. It may be said to be Norman;—Old Windsor is Saxon. Some one mile and a half from the present castle, not, like its successor, on a chalk cliff,—"a steep chalk bluff, starting up from a meadowy margin,"—but far down, sheltered by its woods, amid the windings of the river, stood Edward the Confessor's lowlier dwelling, three miles from a ford, five miles from a bridge, and accessible only by bridle-paths. The first mention of the name Windsor occurs in an account of the miracles of the Confessor, written in the reign of the Conqueror. Since that day, from King William to Queen Victoria, there is not a sovereign but has ridden, driven, or hunted in this forest. Scotch, French, and Spanish monarchs have shared the chase. Here it is a pleasure to know that after the Battle of Poictiers, the captive French king had much alleviation of his captivity. Anon, says Froissart, he was removed from the Savoy to the Castle of Windsor, and went a hunting and a hawking thereabout at his pleasure and the Lord Philip, his son, with him.

You must allow me to gossip about things, which may have for you some of the great interest they have for me. I will attempt to lay out before you the extensive area of the forest. The difficulty, if you go back to early times, though not to the planting of its trees, is to know how to set bounds to that which was so long unenclosed, and without any visible boundaries. It is easy to suppose that in prehistoric times the whole tract of country south-west of the City of London was one large woodland or forest. It is so laid down in some of the maps, which profess to show us Roman, Saxon, and Norman Britain. Out of this wide tract were in time defined and recognised two woodland districts known to us as "Windsor Forest," in Berks, and the "Newer Forest," in Hants. The hunting of olden days was more like our shooting than our hunting. The hunting party did not depend upon the speed of their dogs to pull down the quarry. The dogs were to rouse the deer to bring him round to the open glade where the hunter was posted behind a tree, with his or her bow to get a good shot. The whole was not so very unlike what may take place now at the hot corner of a Hertfordshire pheasant cover. So it was in Henry VII.'s time, when he and Philip, the king of Castile, after dinner "went a hontynge in the lyttle parke wheare eyche of the kings killed certaine deare with their crossbowes." So it was in Bramshill Park, where the hapless Archbishop Abbott killed Lord Zouche's keeper with his crossbow. So it was in the earlier hunt in the New Forest, when Sir W. Tyrrell's arrow glanced (if it did glance) from a tree into the heart of the Red King. This tells us, in an indirect way, something about the date of the planting; for the tree which turned the arrow, we may be sure, was older than the days of Rufus's father's planting. He certainly could have done very little hunting in plantations of thirty years' standing, if the trees grew no faster in those days than in our own; and if they were planted as now, when it is customary to put 108 to the acre, with nurses of Scotch fir and larch 4 ft. apart.

We are sure that William the Conqueror did not begin Windsor Forest, for in the reign of Edward I. (say 200 years after the Conquest) an order was issued to the constable that he, with the assistance of the foresters and verderers, should sell the "old dead oaks" in the forest, and they hardly could have called for removal had they not seen the Saxon and Dane in the land. We take, then, Windsor Forest to have been the gradual appropriation and arrangement of all that woodland district stretching into Berkshire eastwards, south, and south-westwards of the castle, which stands on the extreme east of the county. The river Thames is the boundary of the castle domain on the east or north-east, and this river separates Bucks from Berks.

The present aspect of the forest dates from its surrender to the nation, about 1813, when commissioners, afterwards succeeded by the present Commissioners of Woods and Forests, became the landlords on behalf of the people. The Sovereign accepted a civil list in lieu of the old hereditary domains. 1,990 acres of land were sold to pay compensations and expenses, and 25,000*l.* worth of timber was cut down and sold for the same purpose. A certain area was reserved for the use of the Sovereign, and some 3,000 acres were planted as timber nurseries for the use of the nation,—for the navy. The forest then included eleven whole parishes, and entered into six others. We reckon that the Little or Home Park consists of 500 acres, and the Great Park of 3,000 acres, and all enclosures of forest and park equal 14,000. This is still a royal domain, but an annalist of Windsor thinks the arrangement of 1813-19 was the extinction of the forest,—an enclosed area seemingly ceasing with him to be a forest. "The forest of Windsor has," he says, "ceased to exist, though, for convenience sake, the name is given to the district south of the castle." So far as I have seen, every portion of the forest is marked out now by some earth mound and ditch, if not by other fence. It must be con-

* From a lecture before the Hertfordshire Natural History Society, by the Rev. Canon Gee, D.D., Vicar of Windsor.

fessed that the tourist will see very little, if any, portion standing out wild and unenclosed, but there is no derivation of the word "forest" which makes enclosure fatal to the idea. Professor Skeat, however, gives a quotation from Mediæval documents, showing that in those days the distinction between forest and park was understood to be that the one was unenclosed and the other enclosed.

The Long Walk is the largest avenue in Europe, and consists of elm trees planted in the reign of Charles II., though the ground was not appropriated until the reign of Queen Anne. It was in the time of King Charles a common, and it is only within our times that the Prince Consort arranged an exchange by which a road to Datchet was closed, and all that side of the castle became private ground. The elms are not quite so old nor so fine as those in Eton Playing-fields. The Etonians were planted by Provost Rouse in the time of the Commonwealth, and the circumference of the largest is 18 ft., while that of the largest in the Long Walk is about 14 ft. Their present condition confirms the statement that the allotted age of an elm is about 200 or 250 years. By that time the insect specially infesting them, the elm beetle, has done his work. The tree has no deep tap roots,—the roots are largely spread upon the surface;—the leverage of the full branches is immense. The wood appears to be brittle, and a heavy gale either snaps off a large limb or uproots the giant altogether. The elms at Windsor seem to be condemned. A few years ago a poor man sitting underneath was killed by one which fell unexpectedly. Since then a notice-board warns all strangers that they sit at their own risk; dating from that event, frequent removals have taken place. Not a winter passes but some three or four are executed. We look pityingly on, for the trees felled appear to an outsider to be as sound as they are evidently grand; and they are necessarily replaced by striplings of the size of one's wrist,—the earliest to sit under the shade of such will be our grandchildren, if not our great-grandchildren. There are two rows of trees on each side; the avenue is in that sense double, and is 70 yards across from outside to outside. There were originally 1,652 trees.

The Great Park is not entered until you reach the double gates; then you are about halfway to the statue of George III. by Westmacott, erected by George IV., "Georgio Tertio Patri Optimo Georgius Rex." Here the ground assumes the widespread look of a large park. We find fault, saying that the park is almost too large for pedestrians;—it takes too long to reach its beauties. If only a short time can be given, it is better to make for the Crown Cottages and be content with Queen Anne's Drive,—a charming avenue with grass between the trees, and a fair substitute for the Long Walk. In either case it is necessary to go through the park to get at the forest. There are charming residences within its inclosure;—especially Cumberland Lodge, the residence of Prince Christian, named after William of Culloden, who resided here, and did much planting and laid out the large piece of water known as Virginia Water. It was close to Cumberland Lodge that George IV. buried himself in the Royal Cottage, of which the conservatory and some apartments still remain.

General Notes on Trees.—In speaking of individual trees, I will divide or class them according to their claims to mention, whether from their size and age, or from their historical interest. In the splendid work published by a late deputy-surveyor, Mr. Menzies, the interesting trees are classed as "Veterans of the Forest," or as "Royal Trees," and I will do something of this kind also; saying, however, a word or two as to the growth of trees generally. A record has been kept, at least for the last few years, of all planting; more than this, iron tablets have been placed near each plantation, to inform the public of the date of its being begun, so far as this can be ascertained. Our descendants will derive much information in this way as to the growth of different timber. Trees, like children, thrive differently, even under precisely the same circumstances; and, of course, very differently in different circumstances. A tree grows much more slowly in a cold clay soil. If I were to go to a dated plantation, and take the finest or the poorest, I should draw a very different conclusion if I made the one the measure of progress, or the other. I have uniformly taken an average, but good specimen,—a healthy, fair instance of what might be expected. I find that sixty years, dating from the planting which followed upon the inclosure and new arrangement, is only sufficient to produce an oak of 4 ft. circumference, or, say, 16 in. through or across,—thus the growth of the oak is very slow. Trees that measure 20 ft. and 25 ft., not to say 30 ft., round, may be allowed all the age with which they are credited. Mr. Menzies reckons that fifteen years,—*i.e.*, fifteen consecutive rings,—go to each inch of radius. This would give 540 years to a yard, and would make a tree 6 ft. through and 20 ft. round, including bark and knots, to be just that age.

The whole character of a tree depends upon whether it stood at the first out in the open, or was in earliest days "cribbed, cabined, and confined" by very close neighbours. I am inclined to think that a dense neghbourhood, such as leads the tree upwards for light and air, is very favourable for timber, otherwise the tree branches too soon. Some of our largest oaks have a stem not exceeding 6 ft. or 5 ft. in height; this hardly seems the consequence of soil, as you will find trees widely different in character standing within 100 yards of each other. The tallest and best grown oaks in this sense are at a place called "Cawpond," not far from Cumberland Lodge, and close to the Rhododendron-walk. There is the oak which is at this present moment the best grown and in the best condition. It is about 70 ft. high; it does not throw a branch (not counting twigs) until the height of 40 ft. is reached; it is only 11 ft. 6 in. in circumference, and its age is taken as about 175 years. A distinction is made by foresters between a "Maiden" and a "Trained tree." The former has never been moved; it stands where the acorn from which it sprang was first dropped; it also has never been browsed, or cut for food for the deer. This seems to be really the original meaning of the term "*Vert*" (rights of *Vert* and *Venison*),—a cutting down of green branches for the deer in the winter. As the forester's perquisite lay in the branches when browsed, the trees suffered sadly from wanton clipping. The trained tree was reared somewhere else; it was begun in some nursery, and then at a suitable age was brought out and planted. It follows that while the interest of the maiden tree is greater, the promoted tree is more developed. The greatest height which Mr. Menzies claims for a maiden oak is 65 ft., while the height of a young oak which is, I believe, a trained tree, is 100 ft.

THE DOME OF ST. PAUL'S.

As there appears to be much reason for doubting whether Wren contemplated such a treatment of the dome as we may conclude is intended by the sub-committee, the following considerations may be worth attention. By this proposed treatment the dome would be divided into eight or more vertical parts by means of arabesque ribs, the divisions or compartments thus formed being filled in with separate pictures.

But, looking at Sir Christopher's actual details as his own part in the work before us,—what is the indication, if not the proof, of his intentions? A little study of these appears to lead to a conclusion that can scarcely be upset by criticism.

The internal architectural design as a whole consists of eight grand piers and arches at the base, surmounted by a circular drum or frieze, of little comparative height, and divided in its periphery into sixty-four parts, consisting of pilasters, panels, and window openings; and finished with an unbroken cornice marking the sphere of the dome at its base. Is it not clear from this that the designer considered that there could be no more beautiful termination to the work below than the grand sweep of this unbroken cornice, and that, in fact, he left the work,—so far as architectural details were concerned,—complete and perfect in itself at this line? The critical architectural eye demands nothing more. We instinctively expect the painter's aërial powers. Then it is a matter of fact that Wren left the dome itself a plain and smooth uninterrupted sphere, a fact which can only be interpreted in meaning that, in his opinion, the artists to come after him should, at least, be unfettered by any mechanical obstructions in carrying out a grand pictorial design distinguished by unity of motive. It is a strong additional argument that this was his opinion, that within bow-shot of St. Paul's he had already erected, at St. Stephen's, Walbrook, a dome with ribs,—doubtless, under the conviction that the funds for pictorial decoration would never be obtained for a small parish church. The conclusion, therefore, seems to be irresistible, that if Sir Christopher Wren had been now living he would have opposed any interference, by the introduction of vertical ribs or otherwise, with so grand a form as he had provided for the exercise of artistic genius in the unbroken sphere of his dome; and that he would have recommended that the proper principle of dome painting to be followed was that established by Correggio at Parma, and which caused the greatest painter of his time to exclaim, "If I were not Titian I would be Correggio."

St. Peter's at Rome has five zones of subjects, and although there are ribs they have been kept very subordinate in the general effect. On the other hand, Raffaelle, at Sta. Maria del Popolo; Guercino, at Pistoja; Guido, at Ravenna; Cinagni, at Forli; Pordenone, at Piacenza; Lanfranco and Domenichino, at Rome; and numerous others followed the example of Correggio in aiming at unity of effect, and avoiding vertical subdivision, which would seriously interfere with the heavenly character of the subjects so appropriately chosen for the decoration of a sphere. The subjects painted upon these Italian Renaissance cupolas would, of course, be inappropriate in England, but in St. Paul's conversion and active life an artist would, doubtless, find a sufficient number of striking incidents for the decoration of our metropolitan dome.

All that is here contended for is a principle, *i.e.*, that the dome of St. Paul's should be painted in one or more spheres or zones,—that the grandeur of its form should not be frittered away in a number of compartments, which would certainly tend to give it a mundane instead of an appropriate heavenly character, suggested by its form and position.

The treatment here suggested will give the opportunity of the figures being on a sufficiently large scale to be intelligible from below, which would not be the case if the artist should be limited by eight or nine ribs on the circumference.

In short, the possibility of a grand and magnificent result will be lost for ever.

H. De Sivart.

BUILDING NOTES FROM BRISTOL.

Several large city churches in Bristol are in the builders' hands, and will, when again opened to the public, be found to have undergone considerable alteration. In the case of Christ Church, Broad-street, the plans on which the alterations are being carried out are those of Mr. Henry Williams. The church, which is in the Grecian style of architecture, has a very ancient history, and it is said that in 1174 William, Earl of Gloucester, presented the living to the Priory of St. James and the Monastery of Tewkesbury. The fourteenth-century church, which was, judging from an old engraving, of considerable beauty, was destroyed a little more than 100 years ago, and the statue of a Saxon Earl, seated in a niche, which was found walled into the front of the building, has been regarded as that of the founder of the church. The structure now being improved is of freestone, and was opened in 1790. Nearly the whole of the old-fashioned interior arrangements, including high back seats and dingy fittings, have been removed; the old wooden sashes have given place to several stone windows filled in with stained glass; a fine stone reredos takes the place of the former wooden one; and a centre light of the new window at its rear delineates the Ascension. The internal decoration of the roof has a good effect, and care has been taken to harmonise it with the other parts of the building. The chancel floors are to be laid with Minton tiles, and separating the chancel from the nave will be built a low open screen of marble and freestone, with brass gates. The choir stalls, &c., will be handsomely carved, and the choir has been entirely reseated. The cost of the work will be about 2,000*l*.

St. Nicholas Church, which is also in course of improvement, is the third that has existed on the same site, and the most distinguishing feature of the present building is its lofty spire, standing 205 ft. high. This church is also interesting to local archæologists. In the present alteration the western gallery and the old vestry will be removed, and a chancel will be formed

with a freestone screen. The organ will be removed to the east end, the seating arrangements slightly altered, and other work attended to which will much improve the church. The total cost is put down at 1,600*l*.

The proposed Bristol and London and South-Western (Junction) Railway is creating quite a stir in Bristol, where the want of central railway accommodation has for many years been deeply felt. Public meetings have been held in all parts of the city, and from the universal approval expressed to the principle of the scheme, there is little doubt that it will pass the Select Committee of the House of Commons, and before long be in a fair way of being accomplished. The new line starts from the village of Grateley, a few miles this side of Andover, on the South-Western system; thence it cuts across to Westbury, in Wiltshire, bringing many places not now connected with railways into communication with the system. From Westbury it will run to Radstock, where a junction will be formed with the Bristol and North Somerset Railway. This railway will be doubled, and the traffic will run over it as far as St. Philip's Marsh. There the North Somerset line sweeps round to enter the Temple Meads Station, but the new line will be continued on archways and bridges through St. Philip's. It will cross over the Great Western Railway in St. Philip's, and will proceed right into the centre of the city. It is proposed to arch over a portion of the float between the stone bridge and the drawbridge, a water area which has been chiefly used by small coasting craft, and on the site so formed to erect a commodious passenger station. The removal of the present narrow drawbridge, with the evils attendant on the stoppage of the traffic when it is swung open for vessels to pass through, will be effected if the scheme is carried out. A goods station will be built in Lewin's Mead, and arrangements made to connect the line with the docks. A station will be opened in the heart of St. Philip's. It is stated that the promoters of the line will have, in order to carry it out, to acquire over 1,000 houses, but the majority of these are small tenements, and there are many old-fashioned dilapidated buildings which ought to have come down years ago. A very large number of streets will have to be crossed on bridges, and a handsome structure, of 100 ft. span, is contemplated in Old Market-street. The line is estimated to cost 1,500,000*l*. The site of the proposed passenger station is right in the centre of the city, while the present joint station at Temple Meads is nearly three-quarters of a mile from the centre. The advantage of having a more central London terminus than Paddington will also be considerable.

The Great Western Railway Co. have for years been pressed to provide a railway station for Bedminster, a district through the heart of which the old Bristol and Exeter line passes. The company are now advertising for tenders for this structure.

To accommodate the Severn Tunnel traffic the same company are seeking powers to widen the Bristol and South Wales Union Railway.

The Clifton Club has been reopened with a ball, after having undergone extensive alterations.

The east wing of the New University College, Bristol, has just been completed. It has been found necessary to make a material departure from the designs of the architect, Mr. C. F. Hansom, and instead of a complete quadrangle, with an elaborate façade on the left side as originally intended, there will now be an open quadrangle of three sides. In consequence of this alteration the east wing has a front view, and has been, while retaining the Tudor style, much more richly treated than its first plans provided for. Possibly at some future time the north wing will be similarly treated to make it harmonise with the portion just completed. The two corner blocks of the open quadrangle abutting on the road will now be made of rich and ornamental design, and will be the features of the building. They will, however, not be erected till the south wing is complete. The new wing includes a lecture-room 48 ft. by 26 ft. and 17 ft. high; a laboratory, 46 ft. by 30 ft.; a second lecture-room, 35 ft. by 30 ft. and 20 ft. high; as well as a large number of rooms for classes in the various branches of study. The laboratory provides accommodation for seventy or eighty students experimenting at the same time, and an exhaust fan is applied to this room to draw off the gases and fumes liberated in the laboratory work. The contractors are Messrs. Howell & Son.

An interesting discussion has been raised in Bristol by complaints of the disagreeable odours arising from various factories in St. Philip's, including the effluvia of barilla, gas waste, grease-melting, manure-factories, oil-boiling, varnish-making, &c. The medical officer of the city (Mr. Davies) maintains that, disagreeable as these odours undoubtedly are, there is no ground for alleging they are unhealthy. The rate of mortality for the whole city was, during the year, 19·1, and that in St. Philip's only 16·6. The death-rate of Brighton was 2·4 per thousand more than that of the densely-crowded district where these factories existed. Some authorities explained these singular facts by supposing that gas refuse and other odours were beneficial in certain complaints. Hygiene and æsthetics were not always conjoined; human beings throve and multiplied in St. Philip's, but he had never seen sunflowers or lilies there. The local authority declined to take any proceedings to stop the alleged nuisances after hearing the officer's report.

Several Bristol builders have been lately busy on new business premises in various thoroughfares that have been widened for street improvements. Buildings of florid design and constructed of many-hued bricks seem rather popular among those erecting new business premises.

Part of the Almshouses at the top of Christmas-steps, the western portion of which was improved in 1873, is being rebuilt by Messrs. Cowlin & Sons, from the designs of Messrs. Foster & Wood. The premises had an ancient origin, their founder being John Foster, who flourished amongst Bristol magnates in 1481. An interesting feature in connexion with it is the chapel dedicated to the Three Kings of Cologne, which was built in 1484. This chapel is being renovated. The work is expected to be completed in the autumn.

In building the new Trade School in Unity-street, College-green, the workmen of Messrs. Brock & Bruce came upon a piece of paving of encaustic tiles of very ancient design. It is supposed, from their appearance and situation, that the tiles formed part of the floor of the transept of the chapel which formerly stood on the site, and which were afterwards put roughly together, in the position in which they were found. Near the same spot a large stone coffin was found with the bones of several persons. Other human remains have been found in what, no doubt, was formerly the burying-place of the Hospital of the Bons Hommes or Begging Friars.

The St. George's School Board, the Bristol School Board, and the Bedminster School Board are all contemplating building new schools or additions to the old ones; and the Bristol Board have now in course of erection several large buildings.

THE USE OF TIN-PLATES IN BUILDING.

TINNED iron is protected from rust only as far as it is covered by the tin, and any portions which the tin does not cover, either from original defects in manufacture or from subsequent wear, are liable to rust. They rust even more rapidly than untinned iron, because the contact of iron and tin produces a galvanic connexion; the former being positively and the latter negatively electrical. Thus when exposed to damp the positively electrical metal is specially affected by the oxygen in the water. Hence the oxidation or rusting takes place.

Herr Karmarsch, in his "Handbook of Mechanical Technology," gives the above explanation of the process of oxidation to which tin plates are subject, and to the diffusion of knowledge on this point the diminution in their employment for the purpose indicated has been attributed.

A leading organ of the German metal-working industry maintains, however, that tin-plates have as a rule been found durable. The somewhat lighter tinning of the plates now produced does not really affect their durability, it is argued; inasmuch as they are rarely used without being painted. Besides, it is remarked that a thicker coating of tin can be given if orders for this special make are placed in sufficient quantity; while the so-called dull plates covered with an alloy of tin and lead are specially recommended for use in building.

THE BRADFORD CHIMNEY DISASTER.

THE inquest * was resumed on the 25th ult., before Mr. J. G. Hutchinson, Borough Coroner, assisted by Lieutenant-Colonel Seddon, R.E., on behalf of the Home Office. Mr. E. Tindal Atkinson, barrister, appeared for the trustees of the late Sir H. W. Ripley, owners of the mill; Mr. Scott, solicitor, represented the relatives of some of the deceased.

Mr. Francis Haley, of Vere-street, Bowling, steward to the trustees of the late Sir Henry Ripley, was among the witnesses examined. He said:—During Sir Henry's lifetime I acted for him. I had no connexion with the erection of the chimney. The property first came under my care nine or ten years ago. As a rule, it was my duty to bring all matters connected with repairs before Sir Henry, while Sir Henry was in Parliament and at Bedstone. Within the last two years he came over once a month or six weeks to look over his property. On each occasion I went round the mill property with him, and he minutely examined all the works and pointed out what repairs he thought necessary. During my stewardship I am not aware that any pointing or repairs were done at the chimney which formed part of the property. For the last ten years I have been in the mill-yard and have seen the chimney. I saw cracks in the angle of the chimney 13 yards or 14 yards from the ground, and about two yards along. I could scarcely have got my finger into the cracks. I drew Sir Henry's attention to them the first time he came. He did not consider it to be of any importance, and no instructions were given to me in reference to it. I noticed a further crack on the east face of the chimney about twelve months ago. It commenced about seven yards from the ground, and continued upwards about ten yards. The other crack was still there. I drew Sir Henry's attention to the second crack. I do not recollect any remark he made, or how long it was before he came. I observed nothing more of importance till Wednesday, the 20th of December, when, as I was passing up the mill-yard and looked at the chimney, I could see daylight through a bulge. I saw daylight between the two cracks, which were between two and three yards apart.

Had any part of the outer case then fallen?—No.

How far did the bulge extend?—Two or three yards in length.

Did you see any other cracks?—No.

Had either of the two cracks increased in width?—The one I had first observed appeated a week or two before to be wider. The chimney seemed to lean to the south-east.

Had you ever any complaint from any of the tenants or others as to the condition of the chimney?—I have no recollection of any before the 1st of December last.

Examination continued.—In the interview I had with Mr. Humphries on the Wednesday he said that when the chimney was straightened the throughs were broken for 10 yards or 12 yards, and that his foreman, Miles Moulson, had told him so. I said, "I should like to hear him say that myself." He took me to Moulson, who said the throughs were broken when the wedges were withdrawn. I met Mr. Fred Ripley by appointment on December 21st. Mr. Humphries was with us. Mr. Fred Ripley went to the place where I had seen daylight through the bulge, and looked at the chimney. Mr. Humphries said, "I think it is the outer case that is leaving the chimney. I do not think there is any danger of the chimney falling." He told Mr. Ripley what Moulson had said about the throughs. Mr. Ripley went to Miles Moulson, who again described how the throughs had been broken. Mr. Fred Ripley, turning to me, said, "Who is Mr. Humphries?" I answered, "He is a man I have great confidence in as a practical builder. In his earlier days he has done the practical part of chimney building himself." I afterwards observed to Mr. Fred Ripley, "We must have some professional man; I do not understand chimneys." He then said, "Whom do you consider the best man in Bradford to give an opinion on a matter of this sort?" I turned to Humphries, and asked whom he considered to be the best man to give an opinion on the matter. Mr. Humphries replied that he thought Mr. Andrews was as good a man as could be got. His firm were the architects for the chimney,

* See pp. 60, 90, 126, *ante*.

and had built as many chimneys as any firm in Bradford. At the suggestion of Mr. Fred Ripley, I asked Mr. Andrews to meet Mr. Fred Ripley and myself at three that afternoon. Mr. Andrews came at the time fixed, and looked at the chimney at various points, ascending a ladder which was against the stable. He then consulted with Mr. Humphries, and afterwards said there would be no danger in taking down the bulge. It would be well, he said, to go into the flues during the Christmas holidays, to see if there were any cracks inside the chimney. No orders were given at that time as to what was to be done to the chimney. I and Mr. Fred Ripley and Mr. Andrews met on the following morning. We examined the plans of the chimney. It was decided that the bulge should be taken out on the Saturday, after the mill hands had left. Mr. Fred Ripley told me to order Mr. Humphries to do the work as arranged. I told Mr. Humphries that I should be there to see him when he commenced work. I watched the taking down of the loose portion of the chimney on the Saturday, after which I wrote to Mr. Henry Ripley. I saw that the inner coating was sound, and I formed the opinion that there was no danger. I told Humphries to make a good job of it, and do it quickly. Mr. Humphries asked, "Do you wish my men to work on Sunday?" I replied, "Every hour of daylight until it is finished." I then wrote to Mr. F. Ripley. Mr. Andrews was at the place on Sunday at noon; I was there three times on the Sunday, and saw the men at work. On Sunday I complained that the men were going on slowly, but Mr. Humphries said it was very risky, and that he dare not trust his men under till scaffolding was put up. The men afterwards left work on account of the rain. I made no further communication to Mr. Henry Ripley. He was at the mill on the day before the chimney fell. After I saw that the inner case was sound on Saturday, I left the work entirely in charge of Mr. Humphries. I next saw Mr. Andrews at the place on Sunday afternoon.

By Colonel Seddon.—I have never heard of any examination of the chimney; in fact, it never has been examined for six or seven years. A man went inside the flue to clean it every eighteen months. I thought that the damage was confined to the outer case, and that therefore there was no cause for alarm. I ordered the work to proceed as quickly as possible, not because I apprehended danger, but because I wished it to be done before the hands came on the Wednesday morning.

Mr. William Beanland, Horton-lane, builder, said that he examined the chimney at the request of Mr. Andrews, and that he agreed with the evidence of Mr. Andrews and Mr. Humphries.

By Lieut.-Col. Seddon.—I would not have constructed a chimney of such materials as this. My opinion is founded on what I saw of the chimney both before and after it fell. The outer shell would have been better if the wall stones had been broader on the bed. The throughs were mostly broken. The packing was very common, and should have been of solid brick.

On the 26th ult., Mr. W. H. Greenwood, one of the members of the firm of Messrs. Greenwood & Co., who occupied part of the Newland Mill, and several of whose workpeople were killed by the fall of the chimney, deposed that he observed slight cracks in the chimney almost from the time of his taking the mill, ten years ago. In October last he noticed the cracks had increased in width, and he spoke to Sir H. Ripley's agent, and advised him to have the chimney examined. Mr. Haley subsequently told him that an examination showed that the chimney was perfectly safe, the outer shell only having given way. About a week before the accident he again complained to Mr. Haley, and either immediately, or within a few days afterwards, he saw workmen employed on the chimney. It was also agreed between them that Mr. Moulson, a builder, should be called in to examine and report on it. Getting nervous about the state of the chimney, witness took the precaution of increasing the insurance upon his life. To prevent injury from the falling of bricks from its bulged shell, he also removed his horse from the stable near the chimney. A day or two before the accident he pointed out to Mr. Webster Moulson, the builder engaged in its repair, that it leaned over on the side where the bulge was, but Mr. Moulson said he had plumbed it from Castle-street, and found it to be straight. Mr. Moulson assured him the chimney was safe.

Mr. William Humphries, a member of the firm which originally built the chimney, said some months ago Mr. Haley asked him to look at the chimney. There was one small crack in it, such as was to be found in most chimneys. Witness said, "I cannot tell anything until we go up to look," but this was not done, and no repairs were executed for some time after. Last October witness was engaged on some of Sir Henry Ripley's property, in the neighbourhood of Newlands Mill, and several times "sighted" the chimney. He noticed, at the same time, that the chimney had lost its "batter," and was leaning towards Castle-street. He never mentioned the subject to Mr. Haley, although he saw him frequently. On the Thursday before Christmas Day Mr. Haley called him to look at the chimney. A portion of the outer case seemed about to fall, but the inner case exposed appeared perfectly sound. He feared some of the outer case might come down, but he never thought there was any danger of the chimney falling. From his examination of the ruins, he had come to the conclusion that the work was as good as could be expected. The material used, however, was of the commonest kind above ground. The backing below the ground was very good, and it could not be got out without wedges. As a practical man, he did not think the foundations had anything to do with the fall of the chimney. He should have no hesitation in building a chimney of the same bulk as the fallen one upon the present foundations, but he should not like to build it in the same way, because the three parts of the chimney would not settle together. At witness's suggestion, Mr. Andrews, a member of the firm of architects who built the chimney, was called in, and both of them came to the conclusion that only the outside shell was affected, and that the chimney was perfectly safe.

By Mr. Scott.—From what he had seen of the red brick lining in pulling down the stump of the chimney, he was of opinion that if Mr. Andrews and himself had examined the inside instead of only examining the outside of the chimney, they would have come to exactly the same conclusion.

The proceedings were continued on Monday last, when Mr. Webster Moulson, of 46, Holme Top-lane, Horton, a member of the firm of Humphries & Moulson, contractors, was the first witness called. Examined by Col. Seddon, he said:—My opinion is that the fall of the chimney was entirely due to the dislodgment of the stones and the crushing of the masonry at the point where it was cut into, and that if it had not been cut into it would still be standing, although it might have gone 12 in. or more out of plumb. I ground this opinion upon my knowledge of other chimneys, similarly constructed, still standing, although they are more out of plumb. I formed the opinion that the chimney got out of batter through the action upon the point where it had been cut through, caused by the continual rocking. The chimney had been weakened at this point.

Mr. John Waugh, Associate of the Institute of Civil Engineers, practising at Bradford, said that he had assisted Lieut.-Colonel Seddon in his investigation respecting the fallen chimney. He was first on the ground on the 9th of January, when he saw the stump of the chimney and the fallen *débris*. The material of which the chimney had been composed was very much crushed and broken. He found a greater quantity of powdered lime than he had anticipated. He did not find any large portions of the chimney adhering together. There were also more large lumps of mortar, evidently from the hearting or backing, than he expected. He noticed that the lime in the mortar had not been riddled. The mortar used for the outer casing was of a much better quality, and had been riddled. That also applied to the mortar on the red-brick lining. He found some of the mortar and the stones in the backing coated with soot, which he also found upon some of the stones that had formed the outer casing. Some soot-stained stones were among the *débris* on the side of the yard towards which the chimney fell, and others near the base of the chimney. The outer casing seemed to have been well jointed. On some of the joints he found both mastic and cement, which indicated that the chimney had been repaired at some time. Generally speaking, the stones he found in the ruins had less of mortar upon them than he expected.

The Coroner.—Can you form any opinion as to the cause of the cracks in the fire-brick lining?—The cause was settling of the chimney in more than one direction. This settling might be attributable to the wind, to the subsidence of the foundations, or the operation of straightening the chimney. Any of these causes would be assisted by the natural expansion of the fire-brick lining itself, as a result of the heat from the flues. This should have been left to expand independently.

To what do you attribute the bulging of the chimney, as described by the witnesses?—To the subsidence of the backing or hearting. This subsidence has taken place on the sides where the cuts were made. At first there would be cracks caused by compression of the hearting, followed by cracks and bulges. I should expect the breaking of the throughs to follow as a consequence of this subsidence. There would, however, be plenty of throughs higher up that were not broken. The outer case would still have a tendency to support the structure, but that support would be diminished when it began to bulge out.

In your opinion what was the cause of the fall of the chimney?—In my opinion the fall of the chimney was attributable to the mode adopted in straightening it. The first cut was made between the lower "eyes" and the lower long panels. The mode adopted, as described by the witnesses, was in itself calculated to put a limit to the existence of the chimney, which ought to have stood almost for all time. By the drawing out of the iron wedges after the first cutting, the chimney was brought over to the other side, and more than half its weight thus came upon that side. The second cutting was the death-blow of the chimney, as it shortened its eye very materially. The chimney was cut through twice at points about 3 ft. apart. After that the bottom of the chimney would be as solid as rock, and all the vibration would be upon the space between the two cuttings, which would be gradually pounded and crushed by the weight above, some 2,200 tons, or equal to 6·8 tons per superficial foot, supposing the weight to be uniformly distributed. In periods when a high wind was blowing, however, the weight might be brought almost entirely over upon the side where the cutting took place, and the pressure per superficial foot would be at least double. When the wind blew the chimney would rock, as all chimneys rock, and the material in the space between the two cuttings would be crushed and pounded. To me the wonder is that the chimney stood so long. The same cause that cracked the outside would crack the inside. I have no doubt that if the shaft had been examined internally, it would have been found to be bulged inside correspondingly with the outside.

By Colonel Seddon.—When the chimney was brought over, it must have pounded and compressed everything before it, until it found a sufficient bearing area without further compression. Considering that it was a live and not a dead load, that pressure must have been more than double what it was ordinarily. The foundation yielding was, in his opinion, the primary cause of the chimney having to be straightened. An old coal-pit would not commend itself to his mind as a suitable site upon which to erect a chimney intended to be 100 yards high and 4,000 tons in weight, upon an area of 30 ft. base, although shafts were sunk and filled up with concrete.

The inquiry was concluded on Wednesday last, when Mr. Waugh, in continuation of his evidence, said that the two ½-in. cuts made in the chimney to straighten it would only have had the effect of bringing it back 15 in. at the height of seventy yards. The fact that the chimney was brought back 3 ft. was due to the crushing of the masonry at the point where the structure was cut.

Mr. Andrews, the architect who was called in to inspect and report on the state of the chimney before it fell, said he had not completed his examination when the catastrophe occurred. He was waiting to see what would be the result from the external examination before deciding to make an internal examination.

The Coroner having summed up the evidence, the jury, after deliberating for two hours, returned the following

Verdict:—"We find that the owners of the property at Newland Mills did all that unpractical men could reasonably be expected to do under the circumstances; therefore we do not attach any blame to them, or find them guilty

of negligence; and we give our verdict—'Accidental death.' We are of opinion that the foundation was good and the fall of the chimney was partly due to cutting, aided by the strong wind on the morning of the accident, and regret the works were not stopped during the repairs."

ANCIENT WATER COMMUNICATIONS.

IN the recent explorations at Olympia, the German *savans* have given special attention to the detailed measurements of the water-communications which have been discovered. Investigations of a similar character have also been carried on in Italy, where an interesting discovery has been made at Altri (near Rome) of an old Roman aqueduct. An inscription in the town itself had indicated the existence of this aqueduct, but from its position there was evidently a connexion with it by means of pipes, and it was to the further researches made in consequence of this supposition that special interest attached. The subject has been occupying the attention of the Prussian administration, and Dr. Hagen was entrusted with the task of prosecuting the necessary researches. He was recently successful in discovering, at Monte Paielli (in the direction supposed by him to be the right one), a lead pipe communication of about 4 in. in diameter. This would have been a portion of the communication through which the water (2,000 years ago) was brought down 100 yards to the Cosa Valley, and then was brought up a corresponding distance to Alatri.

THE VOTE FOR FINE ARTS IN FRANCE.

DURING the past year the orders given and the works purchased for the French nation by the Department of Fine Arts involved an outlay of 320,000 francs, or 12,800*l.* sterling. Of this sum, 52,800 francs (2,112*l.*) was for original paintings, 15,500 francs (620*l.*) for copies of Old Masters, and 192,000 francs (7,680*l.*) for sculpture. Among the most important paintings purchased were the portrait of Lakanal, by Fritel (2,900 francs); the Battle of Bapaume, by Armand Dumaresq (12,000 francs); Herculaneum, by Hector Leroux (6,000 francs); the Fêtes at the Centenary of the Independence of the United States, consisting of ten water-colours, by Régamey (75,000 francs); and Orpheus killed by Bacchanals, by Bin (3,000 francs). The works of sculpture included the statue of Mariette Bey, by Jacquemart, for the town of Boulogne-sur-Mer (18,000 francs); the statue of Rameau, by Allesseur, and that of Gluck, by Cavelier, both for the Grand Opéra, and each costing 7,200 francs; the bronze statue of Camille Desmoulins, by Doublemard (8,500 francs); monument to Alexander Dumas, a statue and group, by Gustave Doré (12,500 francs); monument of Rouget de l'Isle, for Choisy-le-Roi (9,000 francs); monument of Denfert-Rochereau, for Belfort, a group by Mericé (5,000 francs); a bust of Pétion, for the Salle du Jeu de Paume at Versailles, by Dupuis (3,000 francs); Judith and Holofernes, by Lanson (15,000 francs); and the Childhood of Bacchus, by Doublemard (8,500 francs).

THE STONES OF COLOGNE CATHEDRAL.

ACCORDING to Prof. von Lasaulx, who has written an account of the different kinds of rock employed in the masonry of Cologne Cathedral, the quantity of stone used in building the two great western towers between the years 1863 and 1881 alone was not less than 2,110,000 cwt., or 105,500 tons. The stone originally employed in the structure was a trachyte, coming from the Drachenfels quarries; but as this had proved very subject to decay under atmospheric influences, it was decided to obtain other materials on the resumption of the work of erection. In fact, various kinds of stone were used in the completion of the edifice, such as the Andesite of Wolkenburg, Stenzelberg, and Bockum rock, Unkel basalt, and Niedermendig basalt lava. Towards the conclusion, the well-known stone of Heilbronn, the excellent Udelfang rock, and the beautiful stone from the quarries of the Weser Gebirg and the Teutoburger Forest, were chiefly employed. The figures and baldachinos on the outside of the towers are almost invariably of the warmish yellowish Oberkirchen sandstone; while the ornaments and smaller sculptures consist of the easily-worked Savonnières limestone. Thus almost all parts of Germany have contributed their quota of building material to the immense pile.

A NEW FEATURE IN HOUSE BUILDING.

WHAT may be regarded as an architectural curiosity, namely, a private mansion constructed of iron, a Mr. Huston, of Parkesburg, Pa., America, contemplates building. The floor of the hall, vestibule, and library will be laid with polished cast-iron tiles, and by using different qualities of iron it is considered that a very pleasing effect will be produced. The other floors of the house will be of stout iron plates, bolted together firmly to the iron joists. All through the house the outside walls and inside partitions will be made of two courses of iron plates, bolted together so as to be air-tight. These hollow iron walls and partitions are to be used instead of chimneys and for conveying heat to different parts of the house, and also for ventilation. It is believed that the heat passing inside the walls will be sufficient to keep the house comfortable in the coldest weather. All the doors and window-sashes will be of iron. The house outside will be painted so as to give the appearance of wood. The roof will be of strong boiler-plates. An effort will be made to make the house an architectural and scientific curiosity, and to this end most of the furniture will also be made of iron. It is admitted that the cost of the house may be twice or three times as much as that of an ordinary one, but it is urged in its favour that it will last for centuries (if properly attended to), and that no fire-insurance will be necessary.

ROYAL BERKS HOSPITAL, READING.

THE new chapel at the Royal Berkshire Hospital, Reading, an interior view of which appeared in vol. xlii. of the *Builder*, p. 14 (Jan. 7, 1882), has been opened by the Bishop of Oxford.

The building is of a Classic character, though somewhat freely treated. The walls are built of Bath stone inside and out. The roof is of polished pitch-pine, with arcaded ribs resting upon panelled wood pillars. The walls have wooden dados of polished pitch-pine and walnut, and the stonework above is relieved by panels of arabesque carving, exceedingly well executed by the late W. Finley. The seven windows are filled with stained glass: that in the chancel represents the Crucifixion, and the others portray subjects of healing, three being taken from the Old and three from the New Testament. The artists are Messrs. Gibbs & Howard, of Charlotte-street, Fitzroy-square. The seats are of pitch-pine and oak, and the pulpit and prayer-desk of oak and walnut, tastefully carved. The whole of the details have been very carefully carried out, and the effect of the building, although small, is very good. The chapel will accommodate about 100, and has cost about 2,000*l.* It forms part of a considerable addition which has recently been made to the hospital.

The new library is nearly completed, and we may give some particulars of that portion of the work when it has been opened.

The builder employed upon the chapel is Mr. A. Sheppard, of Reading; and the architects are Messrs. Morris & Stallwood, of the same town.

AFFECTATION IN ART.

SIR,—Cordially as I agree, in the main, with Mr. Calderon's discourse against "Affectation in Art" [p. 92, *ante*], yet it becomes more and more evident to my mind that in order to discourse consistently and correctly upon art, it is not alone sufficient that men be artists, but that they should also have made the theory of art, or æsthetics, a special study. The main portion of Mr. Calderon's discourse is most ably and wisely directed against affectation in art, and all proceeds well and consistently till he emphatically exhorts the students before him to be "original"! Now, sir, I must here venture to diverge and differ from the eminent artist; for this, if accepted as a main principle of action, would be diametrically opposed to what he had previously inculcated. This striving to be "original" is the very source of eccentricity and affectation in art. All the greatest art work is freest from individual bias or peculiarity; it is most like that which we should conceive would proceed from the Divine Hand,—right in every respect,—the standard work, at which all the best workmen would aim. It is only by aiming at this freedom from every taint of individuality, of originality, that affectation in art can possibly be avoided. All art would be at one if it were not for some individual peculiarity in the constitution of an artist's nature. It is at this at-one-ment, or rightness, divested of all peculiarity, and not at "originality," that students should be exhorted to aim, if it really be desired that they should avoid "affectation in art." Individuality of every kind is an aberration, or differentiation from the perfect or central form of any species of art. To be original, therefore, is to differ in some way or other from the typal condition of art; or, in other words, is to be peculiar or affected, unless, indeed, the artist's originality consist in being right amidst the general pursuit of wrong. Aristotle puts the matter thus,—"Art commences when, from a great number of experiences, one general conception is formed; and again, "Experience is the knowledge of individual things; art is that of universals." In respect to thought this universal is that common-sense which underlies every aberration of opinion on any special subject, and which is only another title for that "sanity" which Mr. Calderon so justly says "brings men nearer to the divine." It has, however, most unfortunately come to be believed that in order to be divine in art, an artist's works ought to exhibit the dominance of any sense but that of common sense.

If it be argued that in this sublunary and imperfect state we are scarcely prepared for that universal art we have already referred to, it will, nevertheless, be perceived that it behoves artists to moderate their individuality or originality, and if unable entirely to divest themselves of it, at least to mitigate and reduce it to a minimum. Humanity in its tastes is, doubtless, a most complex subject of study, for this unity of style, this universal style, free from all affectations, or peculiarities, would become monotonous by constant repetition; and, from the monotonous, human nature is apt to fly to change. It is in this tendency to change that the original, the affected, has its *raison d'être*; it is a reaction or foil in its novelty; it is for a time a delusion and a snare, but in the long run it leads men to prefer more proportioned, more symmetrical, more universal, work.

No! the exhortation to the student, for the future, will not be to be original, but to be right! For to be able to say that a work of art were, in every respect, right, would be equivalent to pronouncing it to be perfect of its kind. To be right is the great moral principle in the conduct of art, as it is in the conduct of life. The only originality that is commendable is that which discovers the right way when others have been invariably and affectedly wrong, or which lights upon some new vein of right-thinking or upon new and great subjects for illustration. But the mode and form of art is most perfect when it is freest from all bias of originality. Grecian art, of all art, will, perhaps, best illustrate my meaning, for it is freest from individual bias, and at its best most appears as if it had all been executed by one and the same perfected hand.

W. CAVE THOMAS.

THE EXCAVATIONS AT THE PANTHEON AT ROME.

HERR ADLER recently addressed the Berlin Architects' Society on the question of the connexion between the Pantheon and the Thermæ of Agrippa. He maintained that the results of the excavations made on the spot in question indicate that the latter was an independent building, and that it had been constructed in imitation of similar edifices in Alexandria and other places, instead of being a model of original Roman architecture.

America.—A new altar and reredos have just been erected in the Church of the Sacred Heart, East Cambridge, Boston, U.S.A. It has been executed from the designs of Messrs. Pugin & Pugin, of Westminster, by Mr. R. L. Boulton, of Cheltenham. It was made at Cheltenham, sent out to America, and erected in the church by Mr. Boulton's men. An east window for the same church was made by Messrs. Hardman, of Birmingham, and sent out at the same time. The total cost of these works was 2,000*l.*

LIVERPOOL ENGINEERING SOCIETY.

The first meeting of the session was held on Wednesday, the 17th ult., at the Royal Institution, Colquitt-street, Mr. H. Bramall, M.I.C.E., President, in the chair, when a paper, entitled "Engineering Notes from the United States and Canada," was read by Mr. John J. Potts, Assoc.-M.Inst.C.E. The author having recently made a tour of between six and seven thousand miles on the American continent, during which he visited the principal cities lying between the eastern seaboard and the Missouri river, and between Manitoba on the north and Tennessee on the south, described the various sights and works of engineering interest on the route, which included railways, bridges and bridge works, ironworks, waterworks, elevators or grain-warehouses, steamboats, &c., and concluded that a visit to the United States, where there is much to be learned, while tending to soften insular prejudices, strengthens the bond of friendship between the two countries; indeed, a holiday cannot be better spent than in that country, where new health is to be gained from entire change of scenery and living.

COMPETITIONS.

Knightstone Island (*Weston-super-Mare*).—Nine sets of designs have been submitted in the competition for laying out and utilising the island of Knightstone. Mr. W. Bruce Gingell, architect, of Bristol, was appointed by the proprietors of the island as their professional referee. After a public exhibition of the whole of the drawings, at the Assembly-rooms, Weston-super-Mare, the referee has awarded the premium of 50 guineas to the designs under the motto, "Justitia," of which Mr. Herbert J. Jones, architect, of Wellington-chambers, Bridge-street, Bristol, was found to be the author. The premiated designs provide for laying out the island as a promenade, and for the erection of Turkish baths, a marine hotel, library, reading and billiard rooms, and two boarding-houses. The styles of architecture adopted are, Oriental for the baths, and a free treatment of Italian for the other buildings. The estimated cost is 9,400*l.*

NEW BOARD SCHOOL, SHEFFIELD.

A group of schools differing both in design and construction from any of the twenty-two other sets of schools erected by the Sheffield School Board were opened recently. It is the first school of the series provided with a central hall, at the end of which is the master's platform, and surrounding which, and divided from the hall by large glazed partitions, are twelve class-rooms of various sizes. The floor of the hall is laid with wooden blocks on concrete for the prevention of noise, thus securing quietness in the working of the school. The upper portions of the schools and class-rooms are plastered and finished in various tints. The lower portions of the hall and corridors consist of white and buff glazed bricks, and in the class-rooms of stained and varnished pitch pine, boarding and capping The usual playgrounds are provided, and there are also drinking-fountains in them and inside the schools. The heating of the entire schools is by steam, on Leeds's patent system, fixed by Messrs. Longden & Co., Sheffield. The ventilation, which is by fresh-air inlet-tubes with regulating valves, and by Boyle's patent exhaust ventilators, is found efficient. The main block of the buildings is in two stories, and the roof is surmounted by a large well-proportioned *flèche* as a bell and ventilating turret. The walls are of Walkely (local) wallstone, with Grenoside ashlar dressing, the roof being covered with black Westmoreland slates. The design is a free treatment of the Tudor style successfully adapted to modern requirements, from plans prepared by Mr. C. J. Innocent, Sheffield, the contractors for the whole works being Messrs. Chadwick & Co., of Rotherham. The contract amount is 8,800*l.*, and the total accommodation is for 1,024 scholars.

The Sportsman's Exhibition, at the Agricultural Hall, Islington, will be open till the 10th. The private view will take place this, Friday, February 2nd. The Exhibition addresses itself to a large number of persons, and offers many points of interest.

BILLS IN PARLIAMENT.

A large market is proposed, as before noted, to be formed in Brompton-road, opposite Pelham-crescent, for the sale of provisions. The market is intended to be called South Kensington Market. Another market is proposed to be built on the south side of Harrow-road, between North Wharf-road and Church-place. This market will occupy an area of about 12,000 superficial feet, and is intended to be called Paddington Market.

The Mid-London Market Company has scheduled a portion of the Victoria Embankment Garden, near the Charing Cross Railway Station, York Gate, and the house in Buckingham-street, formerly in the occupation of Peter the Great, and now partly occupied by the Charity Organisation Society.

The Danish Church, High-street, Poplar, which contains some interesting work by Caius Cibber, is scheduled by the Poplar and Canning Town Railway. The church appears to belong at present to the Midland Railway Company.

The Metropolitan and Metropolitan District Railway Companies propose to take property on the east side of Seething-lane, including the whole of the south side of Catherine-court, which consists of some picturesque Queen Anne houses. There is a remarkable piece of wrought ironwork across the entrance to the court.

The Bexley Heath Railway, which is proposed to be formed from Lee to Crayford, has scheduled a portion of Eltham Green.

SURVEYORSHIP.

Mr. John Hayward, Architect, of Exeter, having resigned the post of surveyor to the Devon and Exeter Hospital, a position he has held for over thirty years, an election for a new surveyor took place last week. The applicants were:—Messrs. J. Crocker, A.R.I.B.A.; R. Medley Fulford, F.R.I.B.A.; G. Packham, C. Pinn, J. M. Pinn, and C. Cole, all architects, of Exeter; and Mr. W. R. Bryden, architect, of Bideford. The running lay between Messrs. J. M. Pinn, J. Crocker, and R. Medley Fulford. Ultimately the latter gentleman was elected by a majority of two.

VALUABLE WEST-END PROPERTIES IN THE AUCTION MART.

THE MEMBERS' MANSIONS.—CRAWLEY'S HOTEL.

On Tuesday last Messrs. Chinnock, Galsworthy, & Chinnock submitted to competition at the Auction Mart two important freehold properties. The first offered, which was by order of the first mortgagee, was that in Victoria-street, Westminster, known as the Members' Mansions, erected within the last three or four years, at a large outlay, and specially intended as residential chambers for members of Parliament. In the descriptive printed particulars, the property was stated to have its main frontage on the north side of Victoria-street, with a return frontage to Chapel-street, within a very short distance of the Houses of Parliament and the Government Offices, and comprising five blocks of chambers and offices. The buildings alone, exclusive of the freehold site, were said to have cost upwards of 100,000*l.* The estimated rental value, when fully let, was stated to be 6,900*l.* per annum, the present actual rental being about 3,500*l.* per annum, or half the full rental value. In addition to the buildings already named, covering a ground area of 9,712 ft., the property offered also included an adjoining corner plot of freehold building land, containing an area of about 2,488 ft., described as being suitable for the erection of banking premises, offices, stores, or chambers. The biddings commenced with an offer of 50,000*l.*, and by advances of 1,000*l.* at each bid, 60,000*l.* was reached; when, there being no further advance, the property was bought in at 65,000*l.*

The auctioneer next offered the freehold property known as Crawley's York Hotel, comprising a block of four residences in Albemarle-street, Piccadilly, occupying a site of about 6,800 superficial feet. The premises were described as adjoining the Royal Arcade, presenting a handsome elevation, and having a frontage to Albemarle-street of 101 ft., with a return frontage to Stafford-street of 43 ft., and admirably adapted for a first-class club or hotel, for the latter of which the tenants were ready to take a lease at a fair rent. Mr. Chinnock, in estimating the value of the property, said that from his personal knowledge of the value of land in that part of the west end of London, the land alone upon which the hotel stood was worth 6*l.* per foot, which represented about 40,000*l.*, and he estimated the annual value of the four houses forming the hotel to be 400*l.* each. The first offer was 20,000*l.*, and 34,500*l.* being the highest bid, the property was withdrawn at 38,000*l.*

VALUE OF PROPERTY IN EASTCHEAP.

A Corporation leasehold property, which commanded a large sum, was last week offered for sale at the Auction Mart by Mr. V. Buckland. The property comprised the business premises, No. 33, Eastcheap. The auctioneer, in submitting the property, remarked that although leasehold it was almost freehold, being held from the Corporation upon a lease renewable every fourteen years, for ever. He observed that the premises were situated in the best part of Eastcheap, and had recently been rebuilt. They had a frontage of 18 ft. 10 in. to that important City thoroughfare, and included, in addition to the building in front, a large warehouse in the rear, altogether covering an area of 2,100 ft. There was a numerous attendance of capitalists present, and a close and spirited competition for the property. The first offer made was 10,000*l.*, followed by an immediate bid of 12,000*l.*, and by advances of 1,000*l.* the property was quickly brought up to 22,000*l.*, and was ultimately sold for 22,850*l.*

GARLANDS ASYLUM, CARLISLE.

The contract for building the female junction block, at Garlands Asylum, has recently been let to Messrs. Beaty Brothers, builders and contractors, Carlisle, and the work was commenced on the 1st of February. The whole will be built, on as usual, with red Newbiggin stone, relieved with white quoins and strings. This block will complete the enlargement, which has occupied over four years, and has all been entrusted to the same contractors. The total cost of the enlargement from 400 to 600 patients will cost over 25,000*l.*, and has been carried out in portions so as to keep all things in working order. The total length of the main front is about 1,000 ft. The heating and steam power for the works has been carried out by Messrs. Haydon & Sons, of Manchester, under the management of Mr. Blake. The plans, from the beginning of the asylum, some twenty-five years ago, have all been prepared by Mr. Cory, architect and county surveyor, Carlisle. Mr. Plant has been clerk of works for over five years.

NOTTINGHAM MUNICIPAL OFFICES COMPETITION.

Sir,—The instructions for the above-named are expressed with admirable clearness; but the terms of the contest include some doubtful stipulations, on which it appears to me that the profession should express its opinion. In default of an abler hand, I ask your permission to state what these points are.

The first is, that the Corporation "will provide the quantities." In my opinion, the architect ought to have the option of doing this work himself (as is the practice in the Northern counties), or of appointing some one to do it. The translation of the design into measurements is a work which may very easily be done in such a way that the Corporation will find themselves bound to reject the tenders; and I submit that if the chosen competitor has no control over this part of the business, he is at the mercy of he knows not what or whom, and his work may be thrown on his hands without any fault of his.

Then, the first premium (300*l.*) is to "merge in the commission if," &c., &c. How well this shameful, paltry phrase is known to persons who draw up these documents! By implication, the right is hereby reserved to discharge the "best man," after getting his design out of him, by paying him 300*l.* for designing a building which will cost, it is said, 100,000*l.* If the Corporation engage a qualified man to do this work, they must pay him from 1,000 to 1,200 guineas. What inducement then remains to the "competent and experienced architects," whom the Corporation expressedly invite to

join in the competition, when the prospect of further emolument is uncertain?

Further, all "premiated designs are to become, and to remain, the property of the Corporation,"—there being a second premium of 200*l.*, and a third of 100*l.* The Corporation evidently intend to get much for their money; indeed, a great deal more than it ought to buy. Such is the wretched, mean spirit in which public bodies in England enter upon a building project. In other countries,—countries far poorer,—they know better how to build, and how to pay their advisers.

But the most striking novelty is the provision that "the whole of the contract drawings and specifications, prepared by the elected architect for the buildings, are to be given into the possession, and to become the property, of the Corporation!" It is difficult to see what object is to be served by this stipulation, unless it be to fill up a nook in the new buildings. Will this arrangement include the detail drawings, or not? Why do not the Corporation demand to have the architect's letters, his tee-square, his desks, chairs, tables, &c., as well?

Finally, no travelling expenses will be paid, so that non-residents will be taxed to that extent in favour of the omniscient and gifted "local man," who nearly always comes in first.—Accept sentiments of my esteem,

A COUNTRY ARCHITECT.

BRISTOL MASTER-BUILDERS' ASSOCIATION.

ANNUAL MEETING AND DINNER.

THE annual meeting and dinner of the Bristol Master Builders' Association took place on Wednesday evening at the Grand Hotel, Bristol. Until the election of a president for the coming year, which took place towards the end of the evening, the chair was occupied by the retiring president (Mr. W. H. Cowlin). There was a large attendance of members of the Association and friends, and a very pleasant evening was spent. After the loyal toasts and that of the Army and Navy had been drunk, the business portion of the meeting was transacted, it being commenced by the chairman reading the annual report, which contained the following passage:—

"The principal feature of the year was, perhaps, the action taken by the Association with a view to modify the rules that existed between employers and employed, resulting, as you are aware, in the abandonment of all such rules. Your committee would wish to state that such an important step was not taken until after the workmen had refused to try the experiment for a twelvemonth, and not then until the question had been thoroughly debated, numerous meetings having been held, deputations received, and correspondence taken place on the subject. Your committee are of opinion that the ability on the part of employers to make such rules and arrangements best suited to the circumstances of particular cases cannot but be a step in the right direction; while the payment of workmen according to their value and the state of the labour market is a fair condition for the employer, and, at the same time, ought to induce operatives to improve themselves, and so be in a position to obtain the highest rates."

The report was unanimously adopted. The chairman, who said he had been president of the Association for five years, next nominated, as the new president, Mr. A. Krauss, who was unanimously elected.

BUILDING PATENT RECORD.*

APPLICATIONS FOR LETTERS PATENT.

213. E. A. Showell and C. Turner, Birmingham. Sash and casement fastenings. Jan. 13, 1883.

220. G. Davis, Aberystwith; W. Jones, Llannon; and R. Girdwood, Edinburgh. Chimney cowls and ventilators. Jan. 15, 1883.

234. J. Hudson, Bolton. Apparatus for holding and releasing roller blinds. Jan. 15, 1883.

238. H. H. Lake, London. Water-closets, &c. (Com. by J. Bennor, Philadelphia, U.S.A.) Jan. 15, 1883.

240. R. Stone, London. Manufacture of artificial stone, &c. Jan. 15, 1883.

244. W. Wright, Droylsden. Latches for doors, &c. Jan. 16, 1883.

254. A. Frank, Charlottenburg, Germany. Manufacture of porous silicious material for building purposes. Jan. 16, 1883.

280. J. H. Starling, Erith, and E. A. May, Belvedere. Manufacture of bricks, tiles, cement, &c. Jan. 17, 1883.

290. J. D. Sprague, London. Fastenings for blinds and sash cords, &c. Jan. 18, 1883.

309. L. Hart, Hull. Construction of factory chimney shafts. Jan. 18, 1883.

330. A. Dowson, London. Groynes for protecting foreshores. Jan. 20, 1883.

336. J. W. Blakey, Leeds. Preventing the freezing of water in water-closets, &c. Jan. 20, 1883.

341. T. Trier, London. Dressing stone, &c. Jan. 20, 1883.

352. J. M. Hart, London. Fire-resisting doors, &c. Jan. 22, 1883.

387. G. F. Harrington, Ryde. Ventilating sewers. Jan. 24, 1883.

389. E. Verity, J. M. Verity, and B. Banks, Leeds. Window stays or holders. Jan. 24, 1883.

NOTICES TO PROCEED

have been given by the following applicants on the dates named:—

Jan. 16, 1883.

4,353. H. Pearce, London. Apparatus for opening, closing, and securing fanlights, casements, sashes, &c. Sept. 13, 1882.

4,995. T. Kay, Stockport. Apparatus for warming and heating rooms, &c. Oct. 20, 1882.

Jan. 19, 1883.

4,423. W. R. Lake, London. Composition for the preservation of wood, stone, &c. (Com. by A. Buzolich and T. K. Smith, Melbourne, Victoria). Sept. 16, 1882.

4,430. J. Imray, London. Waterclosets, &c. (Com. by R. H. Lecky and J. Hay, Pittsburg, U.S.A.). Sept. 18, 1882.

4,811. A. J. Boult, London. Door stops or checks. (Com. by G. R. Elliott, Boston, and J. M. Winslow and T. E. Clary, Norwood, U.S.A.). Oct. 10, 1882.

Jan. 23, 1883.

4,449. W. G. Stevens, Bristol. Combined range and register grates. Sept. 19, 1882.

4,462. J. McPhail, London. Chimney-tops, &c. Sept. 19, 1882.

4,466. E. Edwards, London. Apparatus for closing, &c., window and other frames. (Com. by A. Descaves and D. Hallet, Paris.) Sept. 19, 1882.

5,778. J. D. Sprague, London. Window sash-fastenings. Dec. 5, 1882.

Jan. 26, 1883.

4,514. J. W. Cook, London. Temporary partitions for rooms, &c. Sept. 22, 1882.

4,592. H. Blair, Glasgow. Ventilating appliances for soil-pipes, &c. Sept. 27, 1882.

5,685. F. Smith, London. Walls, arches, &c. Nov. 29, 1882.

5,848. J. W. Butler, Blackheath. Indurating artificial stone. Dec. 7, 1882.

ABRIDGMENTS OF SPECIFICATIONS.

Published during the Week ending January 20, 1883.

2,656. J. Harris, London. Means for holding up windows. June 6, 1882. Price 6d.

Rollers are placed in the sides of the sliding window, which are forced against the frame by springs.

2,772. R. W. Hutchings, London. Slabs of plaster or composition for ceilings. June 13, 1882. Price 2d.

This is an improvement on Patent No. 1,665 of 1875, in making the slabs of plaster, &c., upon coarse canvas or wire netting in long lengths. (*Pro. Pro.*)

2,844. J. H. Browne, Cleobury Mortimer. Manufacture of panels, boards, &c. June 16, 1882. Price 6d.

These are made of leather cuttings, curriers' shavings, &c., which are reduced to pulp, and then pressed into the form required.

2,718. T. Ogden, Burnley. Stoves, &c. June 9, 1882. Price 6d.

The back of the stove presents to the fire a concave face in which are formed flutings or air passages to consume the smoke.

2,815. A. B. Brown, Edinburgh. Apparatus for ventilating, cooling, and distributing air. June 15, 1882. Price 8d.

The ventilating-fan is driven by three single-acting cylinders, and connected with the shafts are two other sets of cylinders, one of which draws in the air and compresses it when it is passed to the other set, where, by expansion, it is cooled. Thence it passes to the fan.

2,859. H. C. Tucker, Peterborough. Sash weight attachments for sash-windows. June 17, 1882. Price 2d.

A catch is secured on the sash-frame which, when turned, passes through a mortise to lock the suspending slip and prevent the weight from falling. (*Pro. Pro.*)

2,882. W. S. Laycock, Sheffield. Self-acting window-blind apparatus. June 19, 1882. Price 2d.

The blind is rolled round a spring roller, and a rocking-bar engages ratchet-teeth on the roller to prevent its being wound up, but when the weight of the blind is lifted, the rocking-bar is also disengaged and the roller revolves. (*Pro. Pro.*)

* Compiled by Hart & Co., Patent Agents, 186, Fleet-street.

THE SOUTH KENSINGTON MARKETS.

THE promoters of the South Kensington Markets scheme,—a scheme, as already mentioned by us, which provides for the erection of a market and other buildings on an area of about 7 acres of land, in the Fulham-road, opposite the new South-Western terminus,—have instructed Messrs. Perry & Reed, of the Adelphi, to prepare the necessary drawings for the new buildings, and Messrs. Hills-Owen & Elwes, of Victoria-street, to act as consulting engineers. The promoters of the Paddington Market scheme have also appointed the same gentlemen to act as their professional advisers.

ACTION AGAINST MESSRS. LUCAS & AIRD.

A CLAIM FOR WAITING.

A CLAIM of a novel character was last week made in the Guildford County Court against Messrs. Lucas & Aird, the well-known builders and contractors. Messrs. Lucas & Aird are the contractors for the Kingston and Guildford Railway, now in course of construction, and in that capacity had employed a navvy named Smart. Some short time since Smart was dismissed from the defendants' service, and he now claimed 6*s.* 8*d.*, the loss which he alleged he had sustained by having had to wait two days for his wages. He said he was suddenly discharged on the Wednesday, and on applying for his wages, he was told that he must wait for them until Saturday.

Mr. Freeman, cashier for the defendants, appeared on their behalf to prove custom.

The Judge, Mr. Lushington, told the plaintiff that he was sorry he could not assist him, and observed that if every person who had to wait for money could make a claim for the waiting, a good many of them would become wealthy

Judgment for the defendants.

CASE UNDER EMPLOYERS' LIABILITY ACT.

BEVAN *v.* TROW.

THIS case (heard in the Walsall County Court on the 25th of January, before Mr. W. D. Griffith, judge, and a jury) was one of some importance. It had been sent down from the Court of Queen's Bench to be re-heard, Mr. Justice Stephen desiring his Honour to state definitely and distinctly what was the relation between the defendants and a man named Williams, who was alleged on the one hand to have been a sub-contractor and on the other to have been a fellow-servant of the plaintiff's.

The plaintiff's case, as originally set before the Court, was that as he was working under Williams at the Presbyterian Church, Walsall, in November, 1881, a chain broke which was being used to raise an iron column and he was thrown off a scaffold and his leg was broken. He declared that nothing was ever said to him when he was sent to work under Williams to lead him to suppose that he was being transferred from the service of Messrs. Trow. The chain, it appeared, had not been supplied by Messrs. Trow or their general foreman, but had been borrowed by Williams from a man named Powell, the foreman of the stonemasons; and this was one circumstance that was relied upon as releasing the defendants from responsibility,—the other, and principal one, being that Williams was really a sub-contractor and not a fellow-workman of the plaintiff's, he having undertaken to put up the roof of the church and find the labour for 65*l.*, the defendants finding materials and appliances. The verdict on that occasion was for 60*l.*, the amount to which it was agreed that he was entitled, if entitled to anything at all. An appeal was made, and Mr. Justice Stephen having desired the information named above, a new trial was ordered.

The evidence adduced on this occasion was substantially the same as that previously given, with the addition that the plaintiff's injury had taken a bad turn and that he was not likely to be able to do anything whatever for another six months.

His Honour summed up briefly, and left the following four questions with them, viz.:—(1) Was Bevan the servant of the defendants at the time of

the accident? (2) Was Williams, besides being a contractor, in the service of the defendants? (3) Did the accident occur by reason of any defect in the condition of the plant connected with or used in the business of the employer? and (4) Did the accident occur by reason of the negligence of any person in the service of the employer who had the superintendence of the work, and whose orders the plaintiff was bound to obey?

The jury answered all four questions in the affirmative, and found for the plaintiff for 70*l.*

DAMP AND POROUS WALLS.

Sir,—Many houses have recently been erected in the neighbourhood of Bristol with badly burned or half-baked bricks, and mortar little better than dirt. Is there any cheap method of rendering the walls impervious to wet, so that the houses can be safely inhabited, and should the application be on the outside only? The matter is a serious one to many poor and innocent owners. House Agent.

STONE-CUTTING MACHINES.

Sir,—In your notice of Mr. Schmidt's stone-cutting machine [p. 59, *ante*] you were perfectly justified in not vouching for the novelty of the process.

To divide blocks of stone by some kind of percussive slotting tool has been tried again and again in this country, in France, and in America.

It is evident, from the description, that Mr. Schmidt's machine has only been tried on a small scale, and that conclusions have been drawn from experiments only, and not from every-day working on a commercial scale.

To divide blocks of granite, or of any stone composed for the most part of silex, is quite impracticable, on account of the great wear of the tool, the effect of the percussion and the attrition against the sides of the slot, as well as the wear and tear of the machine.

As to dividing marble and softer stones in this way, the process would not bear a moment's comparison with the ordinary saw-frame, in which many blades can be fixed at one time, performing the work with the least possible waste of stone.

Machines similar to that described by Mr. Schmidt are being used extensively in Belgium and the United States for cutting blocks out of the quarries. A row of long chisels is mounted on a frame capable of travelling automatically on girders laid on the bed of the quarry. The chisels are usually attached directly to the piston of the cylinder, which is driven either by steam or compressed air. The chisels have a reciprocating vertical movement, and cut a groove often 6 ft. deep and 60 ft. long. Cross slots are cut where no natural joints occur, and the blocks are lifted out by wedges in the bed-joints. The writer has seen as many as twenty of these machines at work at one time in the immense marble quarries at Sutherland Falls, Vermont, U.S.

These machines effect an enormous saving in material, often as much as 75 per cent., where the natural formation of the rock is favourable to their application. They are also used in quarries of grit-stone, but only of very moderate hardness.

Slotting granite by this means is quite out of the question. Nor is it needed.

Granite, and other stones approaching granite in hardness, can be readily split in large masses from the face of a well-worked quarry, and these masses are afterwards, by a similar splitting process, divided into blocks of the required dimensions.

The problem of surfacing hard stone has been completely solved by us. One of our machines has been in constant use in Paris for over three years, dressing a very hard granite, frequently doing as much as 45 superficial feet per hour, taking 1 in. deep cuts, and producing a perfect surface.

Many very large contracts have been executed here and abroad with these machines on stone of every degree of hardness, showing a saving of 60 per cent. (and more) over hand labour. Needless to say that no percussive action has accomplished this result; it has been due to a true and perfect application of our system of rolling sharp-edged circular cutters. Brunton & Trier.

SUB-CONTRACTING IN THE BUILDING TRADE.

Sir,—The question of piecework in the building trade having frequently been argued by the artisans of the building class, it is now an undivided opinion that the system is productive of unmitigated evils, not the least of them being the insecurity of workmen's wages employed under this system.

It is an anomalous condition for the law to permit a builder to intrust the wages of a number of men, without bond or surety, to the hands of one man who possesses no social standing. If builders benefit themselves by sub-letting their work, they should, by common fairness in business, be held responsible for the character of the sub-contractors.

One who has Twice lost his Wages.

THE WATER COMPANIES.

Sir, The periodical reports made by Messrs. Crookes, Odling, and Tidy, on the quality of the water supplied to Londoners, would be more duly appreciated if you could inform us by whom these great chemical celebrities are paid. I am told their remuneration is derived, if not directly, indirectly from some of the London Water Companies through the Metropolitan Association. Will you kindly say if this is so? If this is true, it will detract considerably from the impartiality of these reports.

T Tidor.

*** We believe it to be correct that the chemists in question are in reality paid by the Companies.

PAYMENT FOR MEASURING.

Sir,—When a contract is entered into between a builder and a proprietor to erect any building, with a clause inserted in the agreement that the proprietor shall make *any alterations at any time or times he pleases*, and that the proprietor's architect shall measure the extra works that may be executed, and also the omissions not executed, but where it is not stated in the agreement who shall pay for the measuring,—the proprietor or the builder,—what is the usual or universal custom throughout the United Kingdom in such cases? Are there any parts of the United Kingdom where the custom, whatever it may be, is varied? and if so, What is the variation? A. Z.

PROVINCIAL NEWS.

Wolverhampton.—At a special meeting of the Sewerage Committee of the Wolverhampton Town Council, it was, after some discussion, resolved,—"That the Sewerage Committee be and are hereby empowered to engage a competent engineer to be selected by them to advise upon the whole question of the disposal of the sewage of the borough."

Stafford.—Alderman Cox, Chairman of the Gas Committee of the Stafford Town Council, has just turned the first sod of the new gas-works extension. The works comprise the construction, at a cost of nearly 3,000*l.*, of a large tank, which will contain an additional gasometer capable of holding some 480,000 ft. of gas. Alderman Cox expressed a hope that the works would be completed without accident and in a manner satisfactory to the Corporation and to the contractor, Mr. G. Moss, of Liverpool.

Miscellanea.

A Remarkable Clergyman.—The Rev. Wilse Browne, M.A., rector of Whitstone, near Exeter, was buried on Saturday in his own churchyard, aged 72. From 1862 Mr. Browne had served as a private in the Exeter Rifle Volunteer Corps, and continued so until the day of his death. He was a capital shot, and took many prizes at Wimbledon. He was the only clergyman in England serving in the Volunteer ranks. He was a skilled mechanic, and possessed over a ton of tools, of which he made good use. As a brewer, his beer and cider were amongst the best in Devonshire. He handled a needle and cotton with the skill of a tailor. His generosity knew no bounds. His funeral was attended by the ex-Mayor of Exeter, and a large number of Volunteers.

The late Mr. C. Lamb Kenney.—An admirable representation of "The School for Scandal" was given at the Gaiety Theatre last week, for the benefit of the widow of the late Chas. Lamb Kenney. Messrs. Henry Neville, Hermann Vezin, Arthur Stirling, Fred. Terry, Edmund Lyons, and Mrs. Arthur Stirling, were amongst those who most distinguished themselves; but the feature of the performance under the circumstance was the appearance of Miss Rosa Kenney for the first time as *Lady Teazle*, with a very successful result. The quarrel scene, Mr. Maclean being *Sir Peter*, was played with great vivacity and intelligence, and the screen scene brought tears into many eyes. Mr. C. H. Kenney was a capital *Careless*.

Society of Arts.—Among the premiums offered by the Society of Arts for the 129th session of the Society (1882-3) are the following:—Fothergill Prize.—A Society's Gold Medal, or 20*l.*, for the best invention having for its object the prevention or extinction of fires in theatres or other places of public amusement. Mulready Prize.—A Society's Gold Medal "To that student in a School of Art in the United Kingdom who exhibits the best drawing from the nude figure, executed in black and red chalk, in the manner so successfully practised by Mulready."

Tenders are being sought for the construction of a new graving-dock, 600 ft. in length, in Roath Basin, Cardiff.

The Administration of the Office of Works.—A correspondence on this subject has been published in the columns of the *Morning Post*. An "Ex-Official" writes,—Having been attached to that office for some little time, I was enabled, as a looker-on, to see, perhaps, "more of the game" than was given to others. There is no doubt that the Office is simply "swathed in red tape," and the waste of time spent by a multitude of clerks over trivialities is marvellous, the generally prevailing idea amongst its officials being that all applications made to the Office are superfluous and ought to be refused. Every credit should be given to the present permanent secretary for his wish and earnest endeavour to break through this red-tape bondage, but I fear me that tradition has proved too strong for him. I think, however, that your numerous correspondents should recognise the fact that the Office of Works is by no means the chief culprit in these matters. This office is entirely under the control of the Treasury; nothing can be done without its sanction; no vote can be exceeded without the Office of Works incurring its severest censure. Treasury officialism rides rough-shod over every suggestion that emanates from the Office of Works, and that would cost money, even if that suggestion were instrumental in promoting sanitary or architectural improvements. . . . . There is something rotten in the State of Denmark, but the Treasury is the office at which to commence reforms, and not a subordinate office like the Office of Works.

Rome.—The Syndic, Duke Leopoldo Torlonia, has entertained the artists who have come to Rome for the Exhibition and the architects and engineers who are now holding their fourth congress on the Capitol, at lunch in the great *palestra* of the Baths of Caracalla. Tables, under awnings stretched along the sides of the hall, were laid for upwards of twelve hundred guests. At the end of the lunch a number of the artists who had previously withdrawn returned as a masque, representing the Emperor Caracalla, who, attended by senators and courtiers, came forward to thank the Syndic of modern Rome for the honour he had done his baths.

Peterborough Cathedral.—After a careful examination of the condition of the central tower of Peterborough Cathedral, Mr. Pearson has pronounced the whole structure to be in a shattered and unsafe state, and it has been decided to take down the failing walls to below the tops of the lantern arches, and to rebuild that structure. The walls of the transepts are to receive attention, the choir is to be thoroughly restored, and the west front strengthened. All this will be done if the necessary funds are forthcoming. The estimated cost of the works enumerated is 55,000*l.*

Messrs. F. W. Reynolds & Co., of Acorn Works, Edward-street, Blackfriars-road, London, have just paid the 100*l.* stamp duty which secures to them for another seven years the patent rights for the manufacture and sale of the "Eclipse" Mortising Machine, the special feature of which is the "toggle" or articulated elbow, which not only produces the requisite vertical motion of the chisel, but gives it increased power as it penetrates deeper into the wood being mortised.

Lifts.—Messrs. Clark, Bunnett, & Co., Lim., have received instructions to fix one of their Patent Invalid Lifts to Lambeth Workhouse. They are also fitting their Direct-acting Hydraulic Invalid Lift to the West London Hospital, Hammersmith, and also lifts to the Home Hospital, Dean-street, and Hospital for Women, Chelsea.

Society of British Artists.—Mr. Edward Freeman has resigned the post of Acting Secretary to this Society, and in the autumn will inaugurate a new series of Exhibitions to be entitled the "Nineteenth Century Art Society," at the Conduit-street galleries, known in the past season in connexion with the "Christ before Pilate" of Michel de Munkacsy.

The Great International Fisheries Exhibition.—A private view of the buildings erected in the gardens of the Royal Horticultural Society, South Kensington, for the great Fisheries Exhibition, will take place on this Friday, February 2nd. Structures of very large capacity are already erected.

Liverpool Art Club.—A memorial exhibition of the works of the late Hablot K. Browne ("Phiz") has been arranged by the Liverpool Art Club, and will be opened to the public next week.

Trees in Streets.—The Geneva correspondent of the *Times* writes:—An interesting controversy on the utility, or otherwise, of trees in streets and open spaces has been lately going on here in the columns of the local press. The controversy arose out of a discussion in the International Hygienic Congress, which was held here in August, and Dr. Piachaud, a member of the Congress, has since contended, in a letter addressed to the *Journal de Genève*, that trees in streets do more harm than good, that they impede the circulation of air, and that, as for the shade they afford, people who do not like sunshine have only to keep on the shady side of the street. Instead of planting more trees in towns, as some propose, he would rather, in the interests of hygiene, remove all existing trees. To him replies Professor Goret, of the University, who, though an eminent physicist and chemist, disclaims any special knowledge of medicine or hygiene. He treats the matter from an exclusively common-sense and scientific point of view. As for people who want shade keeping always to the shady side of a street, he points out that, as streets have generally shops and houses on either side, Dr. Piachaud's advice in this regard, however ingenious, can hardly be regarded as practical. But the functions of trees in streets are not limited to acting as screens for sun-shunning wayfarers; they temper the heat and serve as a protection against dust. The evaporation from their leaves tends to keep the surrounding air cool and moist. So far from trees impeding the circulation of air, they help to purify the air; the evaporation from their leaves determines a current from above, and the fresh air thus brought down helps to drive away the heated and dust-impregnated gases of the streets. Another useful property of foliage is that, while in hot, dry weather it moistens the surrounding atmosphere, thereby rendering it fitter to breathe, this effect, which is due to evaporation, ceases in wet weather. Trees, moreover, act as purifying agents by absorbing carbonic acid and giving out oxygen. But the action of trees on the air is far less important than their action on the soil. Their roots draw up stagnant waters and absorb the organic matters contained in the filth from which the streets of a town are never free, and which, after infiltrating the ground, are a frequent cause of fevers and infection. Trees, in fact, have the same effect on the subsoil of towns as fields have on the contents of their sewers,—they act as disinfectants. Taking these facts into consideration, Professor Goret ventures to differ from the conclusions of the Hygienic Congress, and strongly recommends the planting of trees in streets and squares.

"A Perfect Safety Lamp for Miners." Mr. Thomas Burt, M.P., has issued a circular stating that Mr. Ellis Lever, of Culceth Hall, Bowdon, has agreed to hand over to the Central Board of the Miners' National Union the sum of 500*l.*, to be paid as a premium to any person, either in or out of the United Kingdom, who shall invent a portable electric or other safety lamp to be used in mines. The lamp is to be a perfectly portable electric or other lamp, which working miners can conveniently carry from place to place in the mine, and which will not, under any circumstances whatever, cause an explosion of gas. The efficiency of the lamps put in for competition will be submitted to five gentlemen, composed as follows:—Three scientists to be named hereafter, one to be selected by Mr. Lever, one by the Council of the Royal Society, and one by the Council of the Society of Arts, one person representing the mining engineers, chosen by themselves, and one person representing the workmen, chosen by the Central Board of the Miners' National Union. The offer will remain open until the 31st day of December next.

Bourn Abbey Church. — The work of restoration of the west front of the Abbey Church has at length been completed. The builder and contractor was Mr. T. C. Halliday, of Greetham and Stamford, who has been represented at Bourn by Mr. S. F. Halliday, and the work throughout has been carried out under the care of the clerk of the works, Mr. C. Bentley, of Stamford. The task of supporting the superstructure and the careful bonding together of the new work with the old, was brought to a successful issue without any signs of fracture or settlement. The architect is Mr. J. C. Traylen, A.R.I.B.A., of Stamford and Peterborough, under whose superintendence the operations have been done.

The Calcutta International Exhibition, 1883.—An International Exhibition will be opened at Calcutta, on the 4th of December next, under the patronage of the Viceroy and Governor-General of India, and the Lieutenant-Governor of Bengal. There will be nine principal sections:—1, fine arts; 2, apparatus and application of the liberal arts; 3, furniture and objects for the use of dwellings; 4, clothing, including fabrics and objects of personal wear; 5, products of mining industry, forestry, &c.; 6, apparatus and processes used in the common arts; 7, food, fresh, preserved, or in various states of preservation; 8, artisans' workmanship; 9, children's work. Certificates of gold, silver, and bronze medals will be awarded by special juries of experts. An attempt will also be made to hold an exhibition of live stock, agricultural and horticultural products, and of a loan collection of paintings, sculpture, and works of art generally. The India Government has granted the use of the India Museum, together with the grounds and buildings adjoining,—a magnificent pile of buildings.

The Vienna Railway.—It is announced that the Minister of Commerce has, with the Emperor's sanction, granted the concession for the construction of the Vienna City Railway to the Fogerty Syndicate. The works will be carried out under State supervision, and the cost of the line is estimated at 60,000,000 florins. In a letter to the Burgomaster notifying the concession, the Minister observes that the construction of the line is rendered necessary not only for the public convenience, but on account of the present state of labour. We gave a view of the station some time ago.

American Social Science Association.—The annual meeting of the American Social Science Association will be held in Saratoga, New York, in the first week of September next. Papers from members of our own association, for reading in the Education Department, would be gladly received. The secretary of this department is Mrs. Emily Talbot, and her address is 66, Marlborough-street, Boston, U.S.A. She would be glad to hear from any members of the English Association who might be contemplating visiting New York in the month of September.

The Lowering of the Wellington Statue, Hyde Park Corner, has been slowly but safely proceeded with since we wrote last week. The upper arch which carried the pedestal having been cut away, the statue had been lowered, up to Wednesday evening last, a total distance of about 19 ft. In our article last week on the subject, on p. 123, col. 1, line 2, by a slip of the pen certain shores or struts were spoken of as raking downwards to balks secured to the tops "by" the iron girders. The sentence should have ended "secured to the tops *of* the iron girders."

TENDERS.

For additions and alterations to Lewins House, Ederbridge, for Mr. Joseph Robinson. Mr. J. M. Brydon, architect, 5, Cambridge-place. Quantities by Messrs. Franklin & Andrews:—

Foster & Dickson, Rugby	£3,124	0	0
Bingham, Headcorn	2,959	0	0
Martin & Wells, Aldershot	2,875	0	0
Birch & Co., Farnham	2,580	0	0
Punnet, Tunbridge	2,471	0	0
Durtnell, Brasted (accepted)	2,441	0	0

For villa residence for Mr. A. McEwan Brown, Knole-road, Bournemouth. Messrs. Kemp-Welch & Pinder, architects:—

W. Walden	£1,230	0	0
A. D. Beynon	1,120	0	0
Hoare Bros. & Walden	1,085	0	0
A. H. Stroud	1,070	0	0
J. H. Drake (accepted)	975	15	6

For works at Forest Gate:—

Dunmore, Hornsey	£2,142	0	0
Adams, Hackney	1,930	0	0
Blomfield, Tottenham	1,889	0	0
Wyman, Edmonton	1,850	0	0
Hoare & Son, London	1,924	0	0
Cardus, Acton	1,875	0	0
Marshall, Stratford	1,828	0	0
Nicholson, Southend	1,811	19	1
Pound, Bow-road	1,809	0	0
Bell, Wood Green	1,799	0	0
Wood, Chelmsford	1,795	0	0
Brighouse, Woolwich	1,734	0	0
Oliver, Brighton	1,720	0	0
Carter, Anerley	1,660	0	0
J. Jackson, West Ham	1,600	0	0
Nicholls, Wood Green	1,539	0	0
Pizzey, Hornsey	1,525	0	0
Harris, Stratford	1,507	0	0
Freeman, South Hackney	1,499	0	0
Spurgeon, Forest-Gate	1,498	0	0
Impey, Leytonstone	1,488	0	0
Jesse Jackson, Leyton (accepted)	1,444	0	0
Wilson, Lavender Hill	1,395	0	0
Benley (too late), Chiselhurst	1,395	0	0
Perry (too late), Merton	1,298	0	0

For alterations to No. 26, Buckingham Palace-road, for the Albion Bakery Company (Limited). Mr. George Edwards, architect.—

Jay	£894	0	0
Sage	685	0	0
Stimpson & Co.	567	0	0
Reading	500	0	0
Scharien & Williams (accepted)	495	0	0

For extension of the Esplanade, including alteration to skating-rink and swimming-bath, for the Sheerness Local Board. Mr. H. W. Stringfellow, surveyor:—

G. Bligh, Eastchurch	£1,190	0	0
J. Hall, Queenborough (accepted)	1,150	0	0

For the erection of a villa residence at Woodford Green, Essex, for Mr. Geo. Franklin. Mr. W. Doyley, Loughton, architect. Quantities supplied by Messrs. R. L. Curtis & Sons:—

Ranger	£1,533	0	0
Knight	1,370	0	0
Robson	1,365	0	0
Egan	1,345	0	0
Cuthert	1,329	10	0
Wells	1,239	0	0
Holloway	1,169	0	0
Burrage	1,125	0	0

For the erection of a pair of first-class villa residences, Enfield, for Mr. G. J. Summers:—
A. Fairhead, Enfield (accepted, by private contract).

For alterations and additions to No. 51, and 57, Gibbon-road, Nunhead, for Mr. Jabez Smith —
Eldridge & Gee (accepted).

Accepted for dwelling house, boundary-walls, and out-offices, &c., at Lockwood, near Huddersfield. Mr. F. Moorhouse, 31, Byram-arcade, Huddersfield, architect:—
W. Sharp, Mold-green (Mason).
W. Buchan, Paddick (Joiner).
Lidster & Armitage, Huddersfield (Plumber and Glazier).
W. E. Jowitt, Huddersfield (Plasterer and Slater).
J. Wood Primrose Hill (Painter).

For taking down and re-building two cottages, Sidney-street, Bethnal Green, for Mr. W. Wooding:—
Parrish & Hawker (accepted).

For the erection of a new church in Packhorse-lane, in the Parish of St. Luke's, Barton Hill, Bristol. Mr. C. F. Hansom, architect. Quantities supplied:—

	Contract No. 1. Nave and Aisles.	Contract No. 2. Chancel and Vestry.
G. Humphreys & Sons	£2,798 0 0	£1,032 0 0
King & Son, Bitton	2,495 0 0	1,335 19 0
Eastabrook & Sons	2,642 0 0	980 0 0
W. Veals	2,683 0 0	949 0 0
Stephens & Bastow	2,517 0 0	917 0 0
W. E. Walters & Son	2,460 0 0	1,040 0 0
Lewis & Edbrooke	2,335 0 0	940 0 0
Messrs. Hatherley	2,448 0 0	874 0 0
Messrs. Howell & Son	2,490 0 0	870 0 0
Messrs. Cowlin & Son	2,389 0 0	849 0 0
R. & S. Davey	2,434 0 0	897 0 0
Wilkins & Sons (accepted)	2,190 0 0	852 0 0
W. C. Pugsley	2,228 0 0	928 0 0
W. Church	2,195 0 0	849 0 0
H. A. Forse	2,264 8 0	785 12 0

For alterations and additions to the Hammersmith Baths. Mr. Roberts, architect:—

Adamson & Sons	£1,090	0	0
Mansell (accepted)	875	0	0

For converting two private houses into shops, at Crown-villas, Forest-hill-road, Honor Oak, for Mr. W. Geary. Mr. A. Birt, architect:—

Stevens	£295	0	0
Watson, Dulwich (accepted)	270	0	0

For constructing the main drainage and outfall works at Sudbury, Wembley, and Alperton, in the parish of Harrow, for the Hendon Union Rural Sanitary Authority. Mr. C. A. Woodbridge, architect. Out of a list of twenty-two tenders the lowest six were:—

Rayner, Liverpool	£14,050	0	0
Stevenson	13,899	0	0
Culpepper, New-cross	13,675	0	0
Felton, Kilburn	13,498	0	0
Ford & Everett, Westminster*	12,900	0	0
Palmer, Birmingham	12,788	0	0

* Accepted.

For constructing Hanwell main drainage and outfall works, for Brentford Union Rural Sanitary Authority. Mr. Christopher J. Clarke, engineer:—

Cook & Co, Battersea	£12,700	0	0
Wm. Crockett, St. Pancras	12,400	0	0
J. W. & J. Neave, Lewisham	11,984	0	0
Corderey & Sons, Gloucester	10,612	0	0
Thomas Adams, Hackney	10,100	0	0
James Dixon, St. Albans	9,940	0	0
Poole, Wimbledon	9,900	0	0
Cardus & Thomas, Acton	9,895	0	0
Gibson, Southall	9,878	0	0
Beadle Bros., Erith	9,837	0	0
Kellett & Bentley, Queen Victoria-street	9,750	0	0
Ford & Everett, Westminster*	9,690	0	0
Palmer, Birmingham	9,321	0	0
Rayner, Liverpool	9,075	0	0
Bottoms Bros., Battersea	8,925	0	0

* Accepted.

For completing twenty-four houses, Evesham-road, West Ham, for Mr. F. D. Dixon-Hartland, M.P. Messrs. Muggeridge & Powell, architects:—

G. & S. Fisher, Camberwell*	£1,987	0	0

* Accepted.

For the erection of a restaurant, No. 6, Green-street, Leicester-square, W.C. Messrs. Benison & Bargman, architects:—

Greenwood	£1,940	0	0
Shepherd	1,917	0	0
Condor	1,880	0	0
Reed	1,861	9	0
Killby	1,843	0	0
Macey	1,840	0	0

For construction of roads and sewers, in laying out the Westside Estate, Clapham Common. Mr. W. Newton Dunn, architect, Nos. 1 & 2, Bucklersbury, Cheapside:—

	No. 1. Extra cost of brick sewer.	No. 2.
Dierden	£4,047 10 0	£1,660 0 0
Botterill	3,289 0 0	800 0 0
Adams	3,000 0 0	550 0 0
Trueman	2,750 0 0	1,000 0 0
Mayo	2,650 0 0	1,001 0 0
Turcombe	2,450 0 0	359 0 0
Bottoms, Bros.	2,400 0 0	800 0 0
Pound	2,203 0 0	731 0 0
A. Blake	2,143 0 0	882 0 0
Wilson	2,125 0 0	870 0 0
Bloomfield	2,101 0 0	613 0 0
Armstrong	2,100 0 0	2,000 0 0
Pizzey	2,087 0 0	994 0 0
Ibbs	2,071 0 0	884 0 0
Beadle Bros.	2,010 0 0	675 0 0
Landridge	1,997 0 0	984 0 0
Woodham & Fry	1,799 0 0	589 0 0
Carter	1,767 0 0	2,703 0 0
Neal	1,724 0 0	1,936 0 0
Torkington*	1,705 0 0	1,906 0 0

* Accepted conditionally on first estimate.

For executing the draining, development of surface, retaining wall subway, and lavatory fencing, &c., in enlarging the cemetery, for the Burial Board, for the Parish of Tottenham. Mr. F. W. Searle, surveyor. Quantities supplied by Messrs. New & Son:—

Contract No. 1.	If Fir pegs add	If Socket-pipes add
Meston	£3,040 0 0	£10 10 0	£57 17 4
Bell	2,894 0 0	38 3 6	33 17 8
Taylor	2,884 0 0	12 14 10	33 17 8
Harris & Wardrop	2,690 0 0	22 0 0	33 0 0
Hare	1,970 0 0	23 9 2	67 12 4
Bloomfield*	1,948 13 0	12 14 0	16 18 0

* Accepted.

Contract No. 2.	Piers, retaining wall, add
Bloomfield	£460 0 0	£43 10 0
Harris & Wardrop	449 0 0	29 0 0
Linzell	400 0 0	33 0 0
Taylor	359 0 0	36 16 0
Johnson Bros.	386 0 0	17 0 0
Bell	329 13 0	50 0 0
Fairhead (accepted)	329 0 0	33 0 0

Contract No. 3.	
Brown	£245 17 6
Bird & Co.	860 0 0
Walls & Co.	744 15 0
Bloomfield	714 0 0
Hermitage	668 15 0
Harris & Wardrop	617 0 0
Riding & Son	576 14 0
Rowe	510 0 0
Simpson & Wood	505 6 1
Johnson Bros. (accepted)	482 0 0

Contract No. 4.	
Bell	£961 19 0
Meston	857 18 0
Bloomfield	811 0 0
Linzell	800 0 0
Taylor	776 4 0
Johnson Bros.	755 0 0
Harris & Wardrop (accepted)	574 0 0

Contract No. 5.	
Taylor	£265 0 0
Meston	224 19 1
Hare	220 0 0
Bell	197 0 0
Harris & Wardrop	190 0 0
Bloomfield (accepted)	165 16 0

For alterations at No. 12, Little Exmouth-street, W. C. for Mr. Mercer. Messrs. Muggeridge & Powell, architects:—

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Feltham	248 14 0
Burman	235 0 0
Castle	225 0 0
Fisher	209 0 0
G. & T. Riddell (accepted)	190 0 0

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Staines & Sons	2,284 0 0
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B. Wells	2,023 0 0
J. Beale	1,998 0 0
Earl	1,992 0 0
Greenwood & Sons	1,936 0 0
Cox	1,870 0 0
Mills	1,847 0 0
W. Shurmur (accepted)	1,782 0 0

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The Builder.

VOL. XLIV. No. 2268. SATURDAY, FEBRUARY 10, 1883

ILLUSTRATIONS.

Lambeth Palace: Main Courtyard Entrance; the Great Hall, now the Library; Entrance Doorway to Chapel 166, 167
Design for the Upper Portion of the West Window in Ledbury Church.—Executed by Messrs. Lavers, Westlake, & Co. 176
Design for Organ, to illustrate Paper read by Mr. H. W. Brewer (Double-page Engraving) 178
Ulm Cathedral: the Choir with the "Sacramenthäuschen" (Double-page Engraving) 180, 181
The Wellington Arch, Hyde Park Corner, showing the Arrangements made for Lowering the Equestrian Statue 185

CONTENTS.

The Inquest on the Bradford Chimney Accident 163
Lambeth Palace and its Associations 165
The Position of the Choir and Organs in Churches 168
The Eden Theatre, Paris 171
Buildings for Technical Education: Royal Institute of British Architects 171
Ulm Cathedral and its Restoration 173
New Window in Ledbury Church, Herefordshire 174
The Triumphal Arch and Wellington Statue, Hyde Park Corner 187
The Royal Courts of Justice: The Contractors' Claim for "Extras" 187
Of Architecture and Decoration 188
The Construction of Theatres 191
Architectural Association 193
Competitions 194
The National Association of Master Builders of Great Britain .. 194
Variorum 195
Miscellanea 195

The Inquest on the Bradford Chimney Accident.

IN our last will be found the report of the conclusion of the inquest on this lamentable and discreditable accident, and of the verdict thereupon returned, a verdict which, read in connexion with the evidence, amounts in reality to little more than a naïve confession on the part of the coroner's jury of their inability to understand the facts of the evidence, and their consequent desire to avoid the responsibility of expressing any decided opinion upon the cause of the accident. The weakness and futility of such a vague verdict only shows anew the incompetence of average coroners and juries to deal with such questions. The coroner was, indeed, supposed to be assisted by the advice and co-operation of Lieut.-Colonel Seddon, R.E., who was sent (very properly) by the Home Office to represent the skilled opinion and judgment on practical building questions so seldom represented among the ranks of a coroner's jury trying a case of this kind. All who remember Colonel (then Captain) Seddon's important paper read some years ago at the Institute of Architects, on "Our Knowledge of Building Materials," will feel sure that he was a most competent adviser on such a subject; and the nature of the questions which he put to some of the witnesses shows pretty clearly which way his opinion tended. But Colonel Seddon might as well have spared himself the trouble, as far as influencing the verdict was concerned. The coroner, indeed, thanked him, it appears, for the trouble and interest he had taken in the case, but there the legal appreciation of the engineer's assistance seems to have ended. It was well, however, that the Home Office took the step of sending down a professional expert, as, though it does not appear to have had any influence on the verdict, some of the evidence elicited by him had a material effect in bringing out the true facts of the case for those who could appreciate them.

Let us take a critical view of the history as far as revealed by the evidence. The whole of the details of the evidence, it is true, are not before the public; the condensation of the evidence in the daily papers is obviously full of inaccuracies, but a large proportion of these are of such a nature that it is easy to conclude in most cases what was really said or implied by a witness, after correcting for the various distorting media,—the witnesses' unskilled English, the reporter's misunderstanding of the point of the question, or the occasional evident mistakes in telegraphy (as "strengthening" for "straightening," and so on). To begin at the beginning, we find at the outset the late proprietor taking, as he did in some subsequent stages, the initiative in a by no means fortunate manner. He found signs that the ground proposed for the site had been previously disturbed, a discovery which would have led most people who knew anything of the matter to hesitate considerably about placing such a great weight upon it, and to think it desirable to look for another site. Sir Henry Ripley's conclusion seems to have been the reverse: here was so much saving, the principal foundation shaft already sunk, and merely wanting to be cleared and repacked. Of course, it was assumed that this was merely a ready-made shaft where one would have had to be made otherwise; but that the ground had been much cut up and pulled about is apparent from the evidence. No man in his senses, who knew anything of the possible effects of heavy weight upon foundations, would have chosen such a site for the purpose if he could have got another. That this was the opinion of the two persons concerned in the inquiry who were best qualified to judge, Colonel Seddon and Mr. Waugh, is evident from the reply of the latter to the examination by the former, to the effect that "an old coal-pit would certainly not have commended itself to his mind as a suitable site upon which to erect a chimney intended to be 100 yards high and 4,000 tons in weight, although the shafts were sunk and filled up with cement. If he had had to build a building there he would have started to erect it from the seating of the coal. The difficulty of packing old coal-workings was notorious." The proprietor, however, appears to have had a very obedient set of people round him, and "they all fell in with Sir Henry's opinion," Mr. Andrews, the architect, included, that this old shaft was a kind of indication of Providence for the site. The old shaft and the new ones that were sunk at the angles, were not, however, "packed with cement," but with a concrete of lime and stone, and engine-ashes: a good foundation for a moderate weight. But we can easily appreciate the point of the question put by Colonel Seddon to Joseph Moulson, the foreman who superintended the works:—"Taking the lowest calculation of 4,000 tons as the weight of the chimney, do you think it is safe to put on common lime-concrete a weight of five tons per foot?" "Yes, if the concrete is properly made and the ground not loose." "Would you consider it safe to put half as much again on that bed of concrete,—seven tons and a half per foot?" "I should." Now, considering that Mr. Kirkaldy has found seven tons to the square foot the crushing limit of ordinary well-made mortar (one lime to three sand), and that the security of the lime-concrete foundation must depend very considerably on the resistance of the lime-matrix to crushing pressure, these questions and answers are rather significant. Upon the top of these five columns of lime-concrete descending into the honeycombed ground came a platform of concrete, 2 ft. 6 in. thick. We hear nothing in this case of cement-concrete either; we are left to infer that it was the same lime concrete as in the shafts. If so, that was certainly not a thick enough template (for that is what it essentially was, in intention, at least) to distribute the weight. But what we wanted to know was, how long *after* this foundation was made was the building commenced? In the published reports we can find no evidence on that head; yet that is most important. With concrete made as described, and intended to bear so great a weight, some months should have been allowed to elapse for thorough consolidation and hardening, before a stone of the chimney was laid. For anything we can find to the contrary, the work was proceeded with as soon as the first setting of the packing or concrete had taken place. Mr. Waugh's evidence certainly was that the packing beneath the ground-line was, when examined after the fall of the chimney, "as solid as a rock, and had to be quarried out." Very likely, after it had been there for years with the weight of the chimney upon it. But in the first instance we have the starting of the chimney on a template of apparently new lime-concrete only 2 ft. 6 in. thick, supported on new lime-concrete legs going down into ground that had been cut about and disturbed by coal-workings. The packing was not rammed, but was "occasionally levelled." A chimney of great weight and thickness is carried up seventy yards from this base, and is found at that height to be leaning three yards from the perpendicular. One witness suggested vaguely that it might have been sent out of plumb by some bad workmanship in setting, in the course of building. That appears to be simply nonsense; it is evident that the builders and their *employés*, however innocent of general principles some of them may have been, understood their practical work considerably better in some ways than any of their employers. It would have taken far more careless work than could possibly be expected from fairly good workmen to have put the chimney as much out of plumb as that. The foundations had given way on one side, as Mr. Morpeth, the clerk of the works, seems to have said at the time. That it should give way, considering the nature of the site chosen and the way it was treated, was what need have surprised no one; had it not done so at all, it would been a piece of good luck, rather than anything else.

The recent fall of the chimney did not, however, arise directly from any defect in the foundations. They had settled to their bearings

long before. But it was from the insufficient and badly-chosen foundation that the mischief first began. It was owing to that result that the owner and those who were working for him found themselves with a leaning chimney seventy yards high on their hands. But before we come to this point we must look at what had passed in regard to the construction of the chimney. It was to have an ashlar stone face, rubble stone backing behind that, and a brick lining behind that, with a separate unbonded inner ring of fire-brick, allowed to expand and contract freely with the variations in temperature when in use. The exterior face was to be octagonal. Before the chimney was commenced, the builder's clerk of works, who seems to have known what he was about, suggested that the fire-brick and red-brick linings were too light, and that red-brick ought to be substituted for the packing. He obtained permission from his employers, Messrs. Moulson, to make this suggestion to the owner. "Sir Henry replied that he thought the packing ought not to be dispensed with." Whether this is the blunder of the reporter, or the witness's misuse of English, we do not know, but it would convey to the ordinary reader the erroneous idea that Sir Henry was standing up for a superior mode of construction. The fact was obviously the reverse. The clerk of works was suggesting a safer and more expensive construction, and the owner insisted that the packing would do, but seems to have accepted Mr. Morpeth's criticism so far as to suggest a thickening of the brickwork to 18 in. for the lower part of the chimney, and 14 in. for the upper portion.* As there was to be rubble packing, this thicker brickwork was certainly better than the 9-in. lining which appears to have been at first intended. It was a stronger jacket for the packing, and afforded opportunity for better tying, if this had been taken advantage of properly, which it does not seem to have been, but it is needless to say to any practical reader that the packing system is one of the worst that can be adopted when it is a question, as it was here, of making a thoroughly secure and steady walling, the lower part of which was to sustain great weight, and the whole of which eminently required stiffness and cohesion. How bad it is, the history of some of the Mediæval cathedrals, with their packed and cased piers, can tell. If this plan, however, were adopted to save some of the expense of a great amount of coursed brick or stone work, the mortar should at least have been of the best, and the stone casing and brick lining should have been connected by occasional strong through stones, going right through the backing. We have the evidence of Mr. Waugh, however, that the mortar found adhering to the stones which had formed the backing, or "hearting," was of inferior quality to that used in the inner and outer casings, it had not been riddled, and contained many large lumps. Here, then, was a chimney, 80 yards high, with a stone shell and a brick shell with no through connexion, and packed between with rubble "of the sort generally used in dry walling," and with mortar of an inferior description, and which had evidently not formed a homogeneous mass. Ought any one to feel surprised that such an erection should show a tendency to bulge, to throw off its outer skin, even without the system of pulling about to which it was subjected to straighten it? Mr. Moulson, the contractor, seems, indeed, to have been pretty well aware of this. Some of the practical witnesses, however, seem to have had the most confused ideas as to the constructive relations of the different thicknesses of the chimney. Nearly every one was agreed that the outer ashlar casing was no support to the chimney, and might be pulled about and removed *ad lib.*, this case being the only outer confinement of the rough rubble of the backing. Another witness thought the backing contributed nothing to the strength of the chimney, and that it all depended on the brick lining, which would have stood by itself. Some of the witnesses, in fact, seem to have regarded the construction as "not one chimney, but three chimneys," built up within each other for purely accidental or sentimental reasons. We should certainly not have liked to risk the brick lining alone, but we do think that in all probability the brick lining with the exterior ashlar, if carefully laid and bonded, would have been a more stable construction without the intervening thickness of rubble padding. It is of no use to add mere thickness to a chimney or a pier to strengthen it unless the addition be made in a workmanlike and scientific manner; otherwise it may be little better than so much extra weight hung on. Mr. Moulson put this plainly and well in his evidence. "He was still of opinion that the chimney would have been much stronger if either brickwork or inside wall stones had been used throughout instead of packing. He was of opinion that no stone chimney of such a size ought to have been built as this chimney was built. . . . . The weak point in packing was its uneven character, and he should consider that a chimney in which packing had been adopted would be more likely to be disturbed by the rocking action of the wind than if it were a brick chimney." This is plain practical common sense, and it appears that Mr. Moulson and his foreman were precisely of the same mind on the matter. This was in the witness's examination by Colonel Seddon, and it seems curious that in his previous examination by the coroner he had admitted to having ultimately agreed with the owner that with the increased thickness of brickwork the chimney would be strong enough with the packing. But another bit of his evidence gives the explanation. It is evident that the late Sir Henry Ripley, whatever his admirable qualities, was one of those wealthy and genial, but positive, Englishmen, who will have their own way, even in managing matters which they do not understand. All the discussion about this important question of the construction of this great chimney was settled by the owner with the builders without any professional adviser, — architect or engineer. When the chimney was about ten yards up, it seems to have occurred to Sir Henry for the first time that the architectural effect of the chimney ought to be considered, so "he got designs for holes and panels" (!). Witness, his father, and Mr. Morpeth protested that these adornments would weaken the chimney, but Sir Henry smiled, and said, 'You must do it my way.'" Were not the occasion so serious, we might also smile at this delightful example of the average English gentleman's notions of the way of making architecture by getting "designs for holes and panels," and the average capitalist's reply to the arguments of men who knew more about the matter than himself,—"You must do it my way."

Unfortunately, not being men with the responsibility attached to professional standing, they did do it "his way" in everything. They laid the foundations in an old coal-working with unequal bearing, to please Sir Henry; they built the chimney with backing, which they know was an insecure construction; they made "holes and panels," which they declared weakened the structure, and a "Steeple Jack" from Manchester came and put the finishing touch by cutting the chimney and preparing it for its future fall, and all to please Sir Henry. For in this latter case, too, it is stated in the evidence that Woodman "convinced Sir Henry that he could make the chimney perfectly straight, and with Sir Henry's consent he cut through the chimney in two places on the side opposite to which it leaned." No architect or engineer was consulted; "Sir Henry" and the "Steeple Jack" settled it between them. We do not emphasise this fact with the desire of making unkind reflections on the memory of Sir Henry Ripley. We do it in the faint hope that some other "Sir Henrys" (they are a race well known to architects) may take warning from the lamentable consequences in this case, and not think that because they are large capitalists and have some shrewdness, they can dispense with skilled advice and please themselves by carrying out important constructions "their way," to the possible detriment of the lives and limbs of their fellow-men.

The doubtful fitness of the chimney-doctor for his task in this case is proved by the fact that, although he himself said, according to the evidence, that the chimney had gone at the foundations, he proceeded to set it right by a cut 18 yards up its height. Independently of the crushing action of the chimney when brought over, such a course was the very way to leave a bend and a tendency to bulge in the chimney at that spot. How, after such an operation at that point, the chimney could have "looked perfectly straight" to any eye, it is difficult to understand, unless Mr. Waugh's suggestion be the true explanation, that the foundation having canted, in the first instance, the weight of the chimney coming over after the wedges were withdrawn carried it back again. The chimney-doctor, however, could never have counted on the foundation behaving in so obliging a manner, and if he had, matters would have been still more against him, as it would have been obvious that such a movable foundation was a thoroughly unfit one, and might just as well have canted again: that it did not do so would have been mere luck.

The chimney was cut, however, a number of the half-throughs broken (as a matter of course) in its settling over, and under the influence of wind-pressure and disturbance at that point the cohesion of the external masonry was further weakened, while the ill-mortared rubble within it, now with no bond at all to the inner and outer skins of masonry and brick, began to bulge the outer skin. Once the bulge began, it was bound to increase, as on the ashlar facing once losing plumb and opening its joints, there was no tie to counterbalance the force of gravity tending to drag it away from the hearting. Its fall was only a question of time.

We come now to the third stage of the inquiry, in regard to the extent of foresight and care taken to guard against the worst results. At the outset of this portion of the evidence we come across the "Steeple Jack" again.

The second witness called, the solicitor to the trustees of the late owner, stated that the chimney "had been examined twelve months before" by an architect, by an engineer, by any man of standing and responsibility? Oh dear, no!—"by a man called 'Bill the Greaser,' who would be produced. He could not say when or by whom the chimney had been otherwise inspected." We looked in vain, however, through the report of the subsequent evidence for the appearance of "Bill the Greaser." He does not seem to have come on the scene. Some sixteen or seventeen years ago, according to another witness, part of the outer case bulged in four places. It does not seem to have occurred to any one to consider why it bulged; the bulges "were an eyesore," however, and the witness (one of Messrs. Moulson's masons) took them out and put in new masonry. According to the account of Mr. Haley, the steward to the trustees, he could not remember that any repairs had been done to the chimney for many years. The flues were cleaned once in eighteen months, but no other kind of inspection was made. He noticed cracks in the chimney from time to time, and pointed them out to Sir Henry Ripley, who "thought them of no importance." At last, on the morning of December 20th, this witness "saw daylight through a bulge," and he then seems to have thought it was time to do something decisive, and sent for Mr. Humphries, "a man he had great confidence in as a practical builder." Mr. Humphries said the facing was coming away from the backing, but it did not matter, as the facing was no support to the chimney. True, perhaps, if the backing had been coursed brickwork, but even then there should have naturally occurred to this "practical" man the question, what made the facing come away? Stones do not move from their beds without a compelling force of some kind. As it was, the backing was hanging upon and dragging down the whole structure, a fact of which the forcing away of the outer casing was but a sign. The history of the remaining few days is astounding to read. Quantities of masonry were falling from the chimney day by day, the workpeople were evidently, from the evidence given by some of the survivors, under the greatest alarm; and yet none of the persons who were properly responsible seem to have shown any anxiety about it. The statement of the mother of a poor lad who was killed, how she had reassured her son as to the danger, telling him that his employers "would not allow them to work there if there were real danger," was pathetic to read after the accident. The poor woman seems to have reckoned without her host, nor can we for our part in the least pretend to understand the apparent indifference in regard to the imminent danger which overhung the unfortunate *employés*. There seems to have been plenty of anxiety in regard to some persons. The solicitor, Mr. Little, begged one of the partners, who was his son-in-law, not to go near the mill or the chimney while the bulge was being removed; but he does not seem to have extended his fatherly advice to recommending any care for the safety of the "hands"

* According to one witness, however, the interior brickwork consisted only of 9-inch red brick and 9-inch fire-brick; a discrepancy in the evidence of which we find no explanation.

in the mill. Horses were removed from the vicinity; one partner in an adjoining mill insured his life; so there must have been an extensive anxiety and sense of danger, but no one thought of stopping the mill for a few days to keep the "hands" out of danger. The day before the chimney fell Mr. F. Ripley said to Mr. Greenwood, "So you have insured your life because of the chimney?" and on receiving an affirmative, said, "Oh, it is not going to fall yet." This is a grave matter, and we think such a reply can only lead to one of two opinions: either the speaker was very stupid, or he was reckless as to the safety of those who had to work for him; one or other conclusion is inevitable. The attitude of Mr. Andrews, the architect, is alike inexplicable to us, except on the supposition that he had not personally been able to pay much attention to the construction or history of the chimney.

Comparing the verdict with the weight of the evidence, it appears that a chimney of this kind may be built according to the fancies of a non-professional owner, whose object would naturally be economy (more or less); that its first failure may be corrected in a most unscientific way by a chimney-doctor who had never before applied his method to any but brick chimneys; that it may show such unmistakable signs of danger for a week before its coming down as to cause general remark and apprehension in all who are obliged to be in its neighbourhood, without any move being made to place them in security; that it may fall and kill over fifty of them; that an engineer may give positive evidence that the previous construction and treatment of the chimney had been such as almost absolutely to insure such a catastrophe sooner or later; that the contractor at work on the repairs was afraid to trust his men under it; and that no blame attaches to any one! "Is that law? Ay, marry is't; crowner's quest law."

The Bradford jury have given their verdict; we beg to give ours, as follows:—We are of opinion that the chimney fell in consequence of inadequate and unscientific construction, acted upon in the most detrimental manner by an operation of cutting the chimney, carried out without proper and skilled professional advice; and that this operation was first rendered (in a sense) necessary by the subsidence of the foundation owing to a very bad and ill-judged choice of site. We consider that very grave responsibility attached to the original owner for having caused the erection of a chimney with these defects and this unsatisfactory and unstable construction. We further consider that in view of the obvious warnings of danger which the chimney gave for a week preceding the disaster, the carelessness of the owners in allowing their workpeople to continue in the mills under such circumstances is strongly to be condemned.

It is to be hoped that no more large chimneys will be built or looked after as the Bradford chimney was, and that owners who think they can do all these things for themselves and without proper advice and direction will take a lesson from this tragical history.

LAMBETH PALACE AND ITS ASSOCIATIONS.

AMONG the few and decreasing number of ancient buildings which London and its immediate vicinity still is able to point out, Lambeth Palace occupies a peculiarly prominent position. The Great Fire left in London little of the ancient and the picturesque, the hallowed and the historical, behind it, unharmed by its fiery ravages. It is true that we have, in or near the City boundaries, the Tower and the Temple, St. Bartholomew's Church, with its marvellous apse, a few crypts and other portions of early churches, some bits of Roman wall, some old rooms at the Charterhouse, and a few houses elsewhere. Many of these have been photographed by the "Society for Photographing Relics of Old London," and for cheapness and excellence of the plates the Society deserve every praise. But all these antique edifices and relics must fain yield in point of magnitude and of historical association to the palace of our archbishops, which forms the subject of the work* to which we propose to direct the attention of our readers on this occasion. It would not be, therefore, unreasonable if the student of Mediæval London architecture were to expect to find more than a few works devoted to the consideration of the palace, but the fact is that the author has here filled up a great gap in the literature which circles around Lambeth. Not that there are no accounts of the palace, but those that are extant are difficult to procure, and in most instances appear to fail singularly in the spirit or the execution of their task. We have, in Mr. Cave-Brown's book, for the first time, a readable history, consisting in main of facts carefully examined and verified, not taken, as is so often the case with books of this class, from haphazard, second-hand, and uncertain sources; it is this feature of original research which raises the work beyond the level of ordinary topographical antiquarianism. During a period of nine years' residence in Lambeth, the author cherished his love of literary research, and made a practice of collecting every little particle of information from history, architecture, archæology, and art, bearing upon his favourite subject, while the vision seems to have constantly floated before him that he might, at some future time, be enabled to mould his gathering into shape, and so write the history of the place he had learned to love. But many years were destined to intervene between that period and the production of the work, and twenty years of Indian life were to be spent before he found himself standing in his old haunts, and found too, that "though Lambeth Palace had passed into other hands, its portals were as widely open to him as before, and even greater facilities and encouragement were offered to him for carrying out his long-cherished wish." Then it was that he set himself strenuously to the task of arranging and digesting the data which he had previously accumulated, and to add to them from every available quarter. The principal authority who had recorded his labours on the subject was Dr. Andrew Ducarel, at one time keeper of the Lambeth Archives, whose "History of Lambeth Palace," the author admits, has been, and ever must be, the basis of all subsequent histories of the site. Denne, Nichols, Herbert and Brayley, Allen, Tanswell, and others, have in turn written, from their several points of view, upon the history of the palace, but of their productions some are obsolete and others antiquated, whereas in the volume before us the author avows his aim to "tell the tale of Lambeth, or rather, to make those historic portions of it which belong to days gone by tell their own tale" down to the present day, so that the general reader, as well as the architect and archæologist, may find an account intelligent and trustworthy, as far as he can make it, of what Lambeth Palace has been, and what it is now. Identifying himself, as he passes from place to place, with the spot which he is examining, his desire has been to carry the imagination of his reader with him, labouring throughout to portray, with all possible certitude and truth, the personages, the characters, and the actions, as far as possible, of the distinguished men who for many centuries have from time to time in succession found a home or a prison, or even signed a document, or assisted in a consecration at Lambeth Palace. Conscious that he was,—the author tells us,—bringing forward many details of the history which had been hitherto unnoticed, and in some cases endeavouring to refute local traditions of general acceptance, he felt called upon to justify his statements, and therefore, at no little personal labour of research, he has striven to trace up every statement to its fountain-head, in order to give his authority for making it, and to verify every reference given by other writers before becoming himself responsible for it.

The late Archbishop, in his short introduction,—almost the very last literary labour in which he was engaged,—gladly calls attention to the book, and records his confidence that Mr. Cave-Brown will be found to have collected a larger number of historical facts relating to Lambeth Palace than has yet been published in any available form, while the skill with which these copious materials are arranged and edited, speaks for itself. He trusts, and we may cordially echo the sentiment, that the gates of Lambeth Palace will ever be readily opened to all who take an interest in its history, and in the work which centres within its walls. We may quote a single paragraph from the introduction, which eloquently and vividly indicates the archbishop's feelings of reverence and veneration for this historic pile. "Even if we confine our thoughts to the time, now nearly seven centuries, during which the archbishops have lived in Lambeth, we find ourselves connected, by the associations which cluster round these walls, with each step in the onward progress of our church and people towards fuller light and higher liberty. We can find memorials here of the successful efforts made to secure freedom from the thraldom of Rome, which marked the reigns of the later Plantagenets, and of the Lancastrian and Yorkist sovereigns. We can trace the mode in which Christian influence was maintained throughout the land in spite of marauding barons and rapacious kings. We can see how the professed followers of Christ bore themselves amid the struggles preceding that great upheaval of society, in which the hitherto non-privileged classes asserted their rights as Englishmen. We learn how the Church of England, notwithstanding the grave faults of many of its rulers, adapted itself,—under the good hand of God,—in all these troublous times, and in the changing days which followed them, to the real wants of the English people. The admonitions of places are, to the student of history, as powerful as the admonitions of books. Men's hearts may well be stirred, and their loyalty to the National Church confirmed, as they trace the many memorials in the architecture, pictures, and ornaments of Lambeth, which bring them face to face with the past, and so arouse their high hopes for the future."

The inquiry into the manner whereby Lambeth Palace became the residence of the Archbishops of Canterbury, nearly seven centuries ago,—since which time exactly fifty prelates have occupied the see,—naturally preceded other questions in the history of the palace itself. The author's researches on this point indicate that the palace owes its position mainly as a memorial of a great struggle with the Papacy, and as a material evidence of the early assertion of the championship of the rights of the English people against Papal usurpation. The contest which had been carried on between the Archbishop and the monks of the Priory Church at Canterbury had eventually to Archbishop Baldwin resolving to have a chapter of secular canons outside the city, and independent of the monks, and to set up among them a residence for himself, where he might be free from the interference of the regulars. Hackington, or St. Stephen's, near Canterbury, was first selected, but it was abandoned on account of its proximity to monastic influences, and the site of Lambeth, though at first equally obnoxious to the monks (who anticipated a lessened influence of their order), by which some of its first buildings were destroyed, gave, —under the powerful hand of Hubert Walter, - a substantial and permanent dwelling for himself and his successors. Little appears to be known of Lambeth in Saxon times, beyond the confirmation, in 1062, of the manor to Waltham Abbey. According to the evidence of Domesday book, this manor belonged, with many others, to Goda, the Countess, sister of Edward the Confessor, and wife, successively to Walter, Count of Maine, and Eustace, Count of Boulogne. Goda appears to have granted the manor to the Bishop and Convent of Rochester, but it soon passed back to the Crown. William II. restored it to Rochester, and from these owners it passed to the ownership of the archbishops of Canterbury. Of the derivation of the name there appears to be little doubt, the word being a compound of *lam*, Saxon for loam, or mud (a word found curiously enough also in the Portuguese language, *lama*), and *hêd*, *hithe*, or *hythe*, the haven, or landing-place: hence the word Lambeth apparently signifies "the muddy landing-place," a title, no doubt, then, as now, significant of its condition. There is, however, room for conjecture that there may have been some connexion with the Celtic word *Llan*, a sacred enclosure, or *Lamprey*, with which the River Thames abounded at this point, and of which the number of 500 were charged to be sent yearly from this manor to the Bishop of Rochester. It is, nevertheless, impossible to assign even an approximate date to the original building of the palace; the crypt,—undoubtedly the oldest portion of the building now remaining,—does not contain any architectural portions to which a date can be attributed before the beginning of the

* "Lambeth Palace and its Associations." By J. Cave-Brown, M.A., Vicar of Detling, Kent, and for many years Curate of the Parish Church of St. Mary, Lambeth. With an introduction by the Archbishop of Canterbury. With illustrations. (William Blackwood & Sons, Edinburgh and London, 1882.)



Main Courtyard Entrance, Lambeth Palace.

thirteenth century, but the author thinks the roof of the crypt may point to a rather earlier period than 1245, the date of Boniface, who was called on to repair or re-build the edifice. It is probable that this archbishop raised the present chapel over the already-existing crypt, and perhaps,—as suggested by Ducarel, laid the foundation of the great hall. In the early years of the reign of Henry VI. Archbishop Chicheley erected his tower, and repaired other parts of the building, which had by his time become somewhat extensive. Later on Cardinal Morton erected the present gateway, and at a subsequent period the ill-fated Cranmer is said to have built the small tower at the north-east of the chapel. But the aggregate result of successive additions to the domestic portions of the primate's residence was found to be without system, order, or regard to comfort, until Archbishop Howley, who succeeded to the dignity in 1828, while preserving with appreciative reverence, and carefully restoring all that was really ancient and historic with zeal and taste, swept away the patchwork jumble of more recent dwelling-apartments, and substituted, at very considerable private expense, the present handsome range of buildings, which form one long line eastward from Cranmer's Tower, and present, both in the main courtyard,—of which we give a view,—and in the garden, an imposing battlemented frontage, effectively broken by irregular projections of bay-windows and oriels, and relieved by turrets.

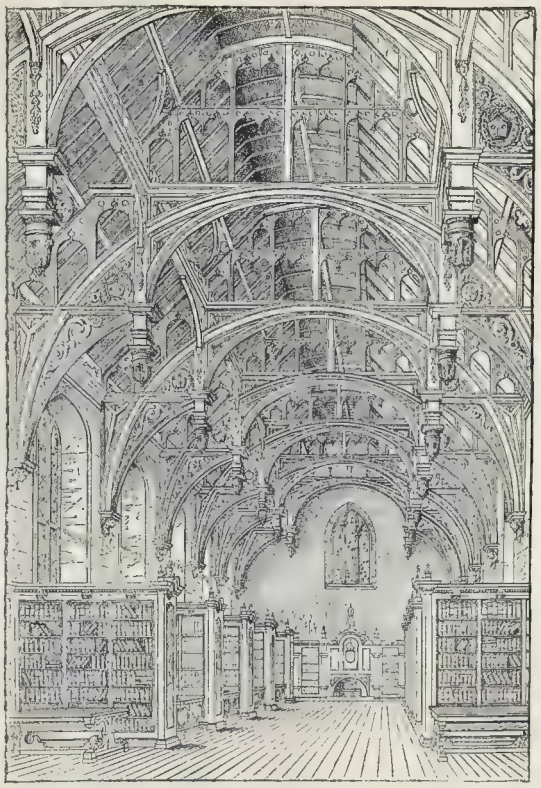
Of the great gateway, or "Morton's Tower," opposite, in all probability, to the *pons*, or water-stairs, and on the site of an older gate, much has been written by the author. Of it the author says, "This stately yet somewhat sombre pile of buildings, red brickwork, with stone quoins and dressings, forms no unworthy portal to an archiepiscopal palace; scarcely can England produce a finer specimen of the early Tudor style of brick building in so good a state of preservation. Indeed, in size and height, in massiveness of character, and harmony of design, Morton's Gateway may almost claim to be without a contemporary rival." He contrasts it with the earlier and more decorated specimens at St. John's College, Cambridge, Layer Marney Hall, Essex, and Oxburgh Hall, Norfolk. The great hall on the eastern side of the outer court is an important member of the palace. It is now commonly called Juxon's Hall, and used as a library. The light for the centre of the room is obtained from five lofty windows reaching from within a few feet of the ground to the cornice, and lying deeply recessed between buttresses, while two end bays, containing broader and longer three-light windows, project into the yard like wings. The entrance is through a small doorway under the arch which leads to the main courtyard. The room measures nearly 100 ft. in length, 50 ft. high, and 38 ft. broad, and the book-cases, filled with a valuable collection of books and manuscripts, line the sides and project at regular intervals in the room. Here again we have no authoritative record of the original building, but the mention of the "Magna Aula" at the beginning of the fourteenth century clearly points to such a building, in which consecration banquets were customarily held, and possibly some councils, convocations, and high commissions. Archbishop Juxon spent nearly 15,000*l.* in repairing the palace, of which the hall absorbed two-thirds. The roof,—which is well shown in the accompanying illustration,—possesses considerable architectural beauty. The massive projecting hammer-beams, with upper and under braces, are to be referred to the Plantagenet era, but while the original lines of construction have been preserved, the more elegant adornments have given place to the round lathe-turned bosses, which like the large balls or globes that do duty for finials on the walls outside, betray a tardy and reluctant concession to the intrusive demands of the Renaissance. The lantern on the centre of the roof carries a vane charged with the heraldic bearings of the See of Canterbury, and of the Juxon family impaled. The date of 1663 appears on the leaden gutters under the cornice. The library contains many thousand volumes, the nucleus being formed by Archbishop Bancroft, who, according to Aubrey, acquired a large portion of his library from that of Robert Dudley, Earl of Leicester, the once powerful favourite of Queen Elizabeth. To these were added the archiepiscopal registers, beginning in date from A.D. 1279, the period of Archbishop Peckham. The value of these registers is enhanced by the state papers, wills, bills, and miscellaneous political documents which they embrace. The miscellaneous MSS. include no less than seven series named after their original possessors; but it would be impossible to follow Mr. Cave-Brown into his lengthy notice of the collection. We may only point out the MS. "De Virginitate," by Aldhelm, Bishop of Sherbourne, a work belonging in point of date to the eighth century, of which some believe that the illustrious Alcuin, the friend of Charlemagne, was the actual scribe; the "Gospels" of Mac-Durnan, Abbot of Derry and Bishop of Armagh, in the ninth century; the Sarum Missal, once the property of Archbishop Chicheley; the printed Mazarine Bible, believed for a long time to be a manuscript; and the transcript of Anselm's works by the historian William of Malmesbury.

Mr. Cave-Brown devotes a most interesting chapter, of considerable dimensions, to the numerous portraits which adorn the guard-room or dining-hall, on the site of the ancient *camera armigerorum*, significantly placed between the Great Hall and the private apartments, as a means of protection and defence for those whose sacred office could not always, as in the cases of Stratford's narrow escape in 1340, and Simon de Sudbury's fate in 1381, secure them from the lawlessness of a rabble. Changes and restorations have done much here to the room; the floor has been raised and several internal details modified; the portraits ranged around the room do not indicate much variety of dress at first sight, but the careful observer will find a great deal of illustration of ecclesiastical costume if he compares the details of the portraits. The original and probably faithful portrait of the nobly-born Cardinal Pole is remarkable for the distich which is inscribed along the bottom of the picture; the imperfect condition of the second line (p. 131), should not be difficult of emendation. The biographical anecdotes which the author has introduced into this part of the work are exceedingly interesting. They are written with evident feeling and judgment, and form, perhaps, the best literary feature in the work. The portrait ascribed to Katharine Parr, the last of the six queens of Henry VIII., which hangs in the private dining-room, is disallowed by the author, who adduces evidence in favour of its being a representation of Katharine Howard, first wife of Lord William Howard, afterwards first Lord Howard of Effingham, and sister-in-law of the unfortunate queen, Katharine Howard. She died in 1535. A brass effigy of this lady, it is worth while to note, is still in its place in the adjoining parish church.

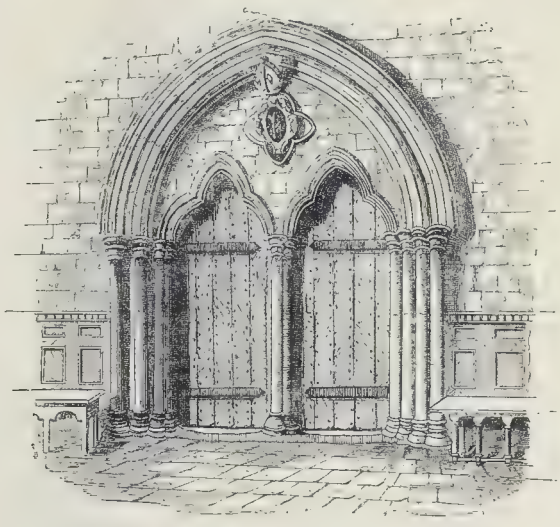
Another point which Mr. Cave-Brown elucidates is the Water Tower, commonly called the Lollards' Tower. To this latter title he asserts that it has no right, either in whole or in part. The central part indicates, by the details of its architecture, a date of the earlier half of the fifteenth century, and the arms of Archbishop Chicheley, on a shield borne by an angel, confirm the record in the Steward's accompts that this tower was erected by that primate, and completed in 1435. A square abutment close by is attributed to the close of the twelfth cen-

tury, forming, perhaps, a part of Hubert Walter's original building. The turret, if we may trust our author, massively constructed with oaken planks and of primitive carpentry, with wooden bolts, and showing marks of the ancient adze and saw, was standing in Chicheley's time, and utilised by him, but it is impossible to fix the exact age of this edifice; it may, however, be questioned if this old turret is not the most ancient part of the palace, and entitled to bear the honour of age away, even from the chapel crypt itself. The third portion of this tower is to be referred to the period of Archbishop Laud. It consists of a spacious staircase, by which the chambers in the tower could be reached more conveniently. The author discusses the causes of this tower being called the "Lollards' Tower" with much acumen, pointing out that no antiquary of the sixteenth or seventeenth century,—not Leland, Speed, Spelman, or even Aubrey,—and no historian of the period, speaks of any Lollards' Tower at Lambeth. The only one they knew was that attached to London House, and really forming a part of Old St. Paul's. Even in the days of the Republic and Commonwealth, when Lambeth Palace, and especially this portion of it, was converted into a political prison, the tower still retained its original designation of Water Tower. The author explains the later and erroneous application of this term here by the excited condition of theological feeling, which set up a welcome invention that was immediatedly accepted as having the impress of unquestioned tradition. Attached to Chicheley's Tower was one apartment undoubtedly constructed for use as a prison, and but a slight effort of popular imagination, already at fever heat, was requisite in order to transfer to Lambeth, without a thought or scruple, all the obloquy that had been poured out upon the veritable "Lollards' Tower" at London House. But if there be no record of Lollards having been incarcerated in this part of the palace, these Lambeth prisons held other inmates from time to time, and in the seventeenth century were crowded with victims, not of Papal persecution and tyranny, but men whose loyalty to Church and Crown drew upon their heads the remorseless vengeance of a revived and exaggerated Lollardism. There yet remain names and sentences cut into the oaken panels of the small room at the top of the staircase turret, and on the stone walls in the small dungeon in the basement of Morton's Gateway, and these have been pointed out as evidence of the confinement of Lollards here, but the character of the writing, the Latin sentences (of which, by the way, it is to be regretted that Mr. Cave-Brown has not given some specimens or facsimiles), and the sacred monograms indicate an education and cultus very different from that usually ascribed to the Lollards; and if it be true that the shapes of the letters belong to the seventeenth century rather than to the fifteenth,—a point not difficult to set at rest if the inscriptions were before us,—there can be no doubt that these effusions must belong not to the Lollards, persecuted by a fanatic church, but to Royalists, who suffered here for conscience sake.

The remaining feature of interest which yet remains for us to notice briefly is the chapel, the restoration of which has been voted, on the motion of Earl Stanhope, only a few days ago, to be completed by way of national memorial to the late Archbishop of Canterbury. On the occasion of the proposition being made, at an influential meeting held in the Egyptian Hall of the Mansion House, the noble earl stated that as regarded "the restoration of this chapel, it was a work of love which had commended itself to the late archbishop, and on which he had engaged in remembrance of a lost wife and a lost son. It was a work," he said, "which had been dear to the late primate, and it was a work which, on that account, they now sought to complete." The date of the chapel, as indicated by the western doorway and lancet-windows, may be fairly attributed to the middle of the thirteenth century, probably almost contemporaneous with the nave of the Temple Church, with which it closely corresponds in character. But it is difficult to say that this is the original chapel erected on the spot, the crypt, with its boldly-groined arches, being doubtless of earlier date. The record of early consecrations at Lambeth may perhaps refer to the parish church, or to the Bishop of Rochester's chapel at Carlisle House, but not to the Palace chapel. In this crypt it was that in 1536 Anne Boleyn was summoned before Cranmer the day after her condemnation, under circumstances too well known to need repetition here. The entrance doorway of the chapel, which forms the third illustration of this notice, is of striking character, and of somewhat unusual construction. It led from a raised terrace running along the west end. Here a semicircular, or rather a slightly pointed, arch, with deep and massive mouldings belonging to the Early English period of architecture, embraces two smaller trefoiled or cusped arches, each of which was



The Great Hall, now the Library, Lambeth Palace.



Entrance Doorway to Chapel, Lambeth Palace.

closed by a heavy oaken door. The outer jambs consist of a series of four columns gradually receding towards these doors, and their capitals and bases, bonding the whole into the main wall of the buildings, are each cut out of a solid block of Purbeck marble. The central pillar between the two doors is composed of a cluster of three Purbeck shafts in the same style. The chapel's dimensions are 72 ft. in length by 25 ft. in breadth, divided into four bays, each lighted by three lancet windows, splayed and enriched with shafts of Purbeck marble; the western bay divided off by a screen, to form an ante-chapel; the east end lighted by a graduated row of five lancets with Purbeck shafts. A corresponding group of lights originally occupied the western end. The various changes which this thirteenth-century edifice has undergone have been carefully recorded by Mr. Cave-Brown, among which we may refer to the stopping up of the west window by the erection of Chicheley's Tower, and the introduction of stained glass by Cardinal Archbishop Morton, repaired in 1634 by Laud, and demolished by his Puritan enemies, who, like Prynne, spied the introduction of a crucifix in what was simply the restoration of the scene of the Crucifixion, in which he drew upon the subjects of the illustrations found in a book entitled "Imagines Vitæ, Passionis, et Mortis N. D. Jesu Christi," printed by Boetius a Bolswert in 1623. The associations connected with the chapel are, as might naturally be supposed, numerous and varied. They range in Mr. Cave-Brown's pleasantly and elegantly written work from the arraignment of John Wickliffe, before Archbishop Sudbury in 1378, and the consecration of Matthew Parker at the commencement of Queen Elizabeth's reign, the life of Parker, the dashing of the stained glass out of the windows by Cranmer, the memorials of the ill-fated Laud, Sancroft's vain attempt to organise an independent church inaugurated by his "Nonjuror" Communion, the sacrilegious destruction of Parker's tomb by the Puritans, Juxon's reparation of the fabric, Howley's renovation of the roof and other parts, to the introduction of new stained glass executed by Messrs. Clayton & Bell, "which hardly the age or taste of Morton himself could have excelled." We must here close our notice of this work, which will be found by those who take an opportunity of perusing it to be a worthy exposition of a worthy theme, and embracing in a fairly moderate compass a vast collection of archæological, historical, and biographical facts connected with the home of our archbishops and the centre of the whole Anglican communion.

THE POSITION OF THE CHOIR AND ORGANS IN CHURCHES.*

The importance of music as an accompaniment to the service of the Almighty has been acknowledged in every age and by every form of religious worship with which history has made us acquainted; and to realise the extraordinary attention which this branch of sacred art received at the hands of the people of old, we have only to open the Holy Scriptures and read the account given in the Second Book of Chronicles of the dedication of Solomon's Temple, in which we are told that there were present, amongst others, "the Levites which were the singers, all of them of Asaph, of Heman, of Jeduthun, with their sons and their brethren, being arrayed in white linen, having cymbals and psalteries and harps, stood at the east end of the altar, and with them an hundred and twenty priests sounding with trumpets." In the earliest days of Christianity we also read of "singing hymns," and all through the Middle Ages the same importance continued to be given to music in connexion with the services of the Church. Charlemagne, who, we should have thought, had quite enough business upon his hands to occupy all his time, yet considered it his duty to become acquainted with the discussions going on as to the correct number of the Gregorian "modes" or tones to be used in church music; and Robert, king of France, absolutely conducted the choir of his royal chapel, arrayed in his coronation robes!

Although the Eastern Church also cultivated music, yet there was a great divergence of practice; the Western Church admitting the use of instrumental accompaniment, and the Eastern Church strictly prohibiting it. However, it should be noted that the use of instrumental accompaniments is not, and never was, universal even in the West, and it is a well-known fact that neither organ nor orchestra has ever been admitted into the Pope's own chapel, the Sistine, nothing but pure vocal music being allowed. I believe also that the Cistercian and several other religious orders are forbidden by their rules to have anything but vocal music in their churches. Until some twenty-five years back instrumental accompaniments were forbidden in the diocese of Lyons, and the Roman Church still prohibits the use even of the organ at high mass on the Sundays of Lent and Advent.

Long before the Reformation, most large churches in England possessed one or more organs. Durham Cathedral in the fourteenth century had as many as five. The Reformation in England does not seem to have had any perceptible effect upon church music, and in most cases the organs remained. The case was very different, however, with the Revolution. The Puritans seem to have vented their spite upon organs more than on any other article of church furniture except alone the altar, and a very lively account of their proceedings at Peterborough is given in "Mercurius Rusticus," but which is too long to quote here.

To the German Lutherans, however, must be allowed the credit of having developed the organ into the magnificent instrument which it has now become, and the immortal genius of John Sebastian Bach has given a literature to the instrument such as is possessed by no other, and is scarcely surpassed by the orchestra itself.

Ecclesiastical music had fallen into a very low condition in this country some forty years back, and those who are old enough can well recollect the state of things which then existed. The cathedral choirs were, of course, an exception, but even in cathedrals the organs were totally inadequate, few of them possessing a properly-arranged pedal-board, and all of them tempered according to the wretched old system, by which music could only be played, in about three keys, and if written in any other it had to be transposed. These instruments, however, often had a fine effect of tone, from their position upon the choir-screen. The organs in parochial churches were, as a rule, dismal affairs. It is true that a few organs by Father Smith, Renatus Harris, &c., were to be found in some of the City churches; but even these would be looked upon as totally inadequate for modern requirements, although they undoubtedly possessed a delicacy of tone that was very charming as far as it went. The choirs in parochial churches scarcely deserved the name, and in village churches the music was often ridiculous. Organs were almost unknown, and the terrific instruments of torture, the "seraphin," the barrel-organ, and the "self-acting grinder," were amongst the favourite substitutes. The shocking tricks which these instruments played often caused consternation amongst the worshippers. I knew of a "self-acting grinder" which had the disagreeable habit of occasionally treating the congregation to the whole of its twelve tunes, one after another, if by accident the man in charge did not make a rush at it and hit a certain knob or button just at the right minute. And a friend of mine related to me a very remarkable scene at which he was present, and which happened at a village church in Buckinghamshire many years ago. A hand-grinding organ was the hero in this case. The "professional" performer upon the instrument happened to be absent, and an amateur undertook to serve for him. When the hymn was given out he took hold of the handle and ground and ground away, but nothing came of it all but a wheezing sound. In a state of intense alarm the unfortunate performer rushed to the front of the gallery and cried out, "Oh, yer reverence, this 'ere organ has gone and busted itself!"

The old village orchestras, which may possibly have been of value in earlier times, had died out or dwindled away until they had become worse than useless. I recollect a very old clerk in a church near Norwich, who used to lead the singing with a cracked clarionet, and I remember his telling me that many years ago there was a full band, of which he was the only survivor. As, however, he told me this nearly thirty years back, and he was then over eighty, probably the band had been given up sixty or seventy years ago.

The very remarkable revival of ecclesiastical music in this country during the past thirty or forty years, and the wonderful development of the organ during the same period, have of necessity had an effect upon our ecclesiastical architecture and the arrangement of churches and chapels; for, wonderful as has been the improvement of the musical arrangements in Anglican churches, it has been equally remarkable amongst Congregationalists and Dissenters generally. In years gone by a hymn bawled in unison was considered sufficiently artistic in places where now one will hear first-rate choral singing, accompanied by a very excellent organ. Oratorios and organ recitals are also greatly favoured by our Nonconformist fellow-countrymen, who are doing much for the development of musical taste in connexion with religious worship.

In the Roman Catholic churches of Germany a somewhat remarkable movement has taken place in connexion with ecclesiastical music. It is the abandonment of the orchestra and the orchestral style of composition, of which Mozart and Haydn were such notable masters; and the revival of the earlier and severer or vocal style which is exemplified by the magnificent compositions of Palestrina, de Lasso, and Soriano. The disappearance of the orchestra is leading to increased importance being given to the organ. Pugin complained some thirty years back that when the choir struck up in Cologne Cathedral, with its orchestral accompaniments, the columns and arches of the building seemed to disappear, and to become replaced by the pit, boxes, and stage of the Italian Opera. He would find no cause for that complaint now, as the operatic singing is replaced by the severest church compositions, and the orchestra has been abolished, and is about to be replaced by the largest church-organ ever erected. This movement has now spread so far in Germany that in addition to the cathedral of Cologne it has been adopted in those of Ratisbon, Mayence, Aix-la-Chapelle, Münster, Eichstadt, Treves, Leichtmeritz, &c.

I have been obliged to dwell upon these musical facts at some length because they serve to show that the organ is every day becoming a more and more important adjunct to religious services, and during the last thirty years the progress which has been made in organ-building, and the enormous improvement which has taken place in everything connected with that instrument is a remarkable fact in the history of music. Those who compare the organs erected half a century back with the magnificent instruments constructed by our leading English firms at the present time are simply astounded at the ingenious inventions and contrivances which have been introduced to overcome difficulties which rendered the older organs generally almost unplayable, and always most fatiguing to the performer. It must not, however, be forgotten that the more perfect the organ is the larger its bulk becomes, and the greater becomes the difficulty of the architect in finding a suitable place for it in a church or chapel.

In Mediæval times, and, in fact, as a general rule, until some thirty or forty years back, the organ gave an architect little trouble. As long as it was inclosed in a case some 10 ft. by 5 ft., and about 16 ft. high, it could be placed almost anywhere, and it did not demand consideration in planning a church; but when the same thing becomes a structure 20 ft. square and 30 ft. high it can no longer be ignored, and provision must be made for it or *it* will become a serious disfigurement to the building. The difficulty must be boldly grappled with. It is simply useless for an architect to complain of the size of an organ or to suggest that it should be made smaller, so as to occupy less space; he might just as well complain of the size of a dining-table when he is designing a dining-room. The thing is wanted, and must be provided for, and the architect must discover some means of meeting the difficulty. I acknowledge that it is often a serious difficulty, but there is not the slightest chance of its vanishing or even becoming modified, as in all probability organs will get larger and larger as time goes on. All attempts at decreasing their size have hitherto proved complete failures.

There are, of course, several things to be taken into consideration in selecting the position for an organ. The first, and most important, is that the instrument should be placed where it will be heard to the best advantage. The

* A paper by Mr. H. W. Brewer, read before the Architectural Association on the 2nd inst., as elsewhere mentioned.

second is that it should be in such a situation that it may be serviceable both for the choir and also for congregational singing. The third, that it should be placed where it will be secure from injury arising from damp, excessive draughts, variations of heat and cold, and, especially, leaky roofs: the gutter of a roof should never, under any circumstances, be carried over an organ; yet, in two new churches which I have lately seen the organ is placed under the valley between two roofs. In another church, recently restored at great expense, I noticed a few weeks since that the gutter over the organ was insufficient; the consequence was that the open diapasons were receiving a regular *douche*, and the water was running out of the lips of the pipes! I pointed this out to the sexton who was showing me over the church, and he said, "Well, sir, our organist *do* complain. A few Sundays back the water came down on his head during morning service; but what can be done? Our parson has spent a deal of money over that roof!" I suggested that at any rate the organ ought to be removed. Lastly, an organ must be placed in such a position that it is, if not an ornament to the building, at least no disfigurement to it.

Now, there are not many positions which a large organ can occupy in a church so as to fulfil all these conditions, and it is not surprising that it should have created a new feature in church architecture, — the organ-chamber, — which seems to be popular amongst Anglican clergy, as it is to be found in very many new churches, and has been added to not a few ancient ones, sometimes, I am bound to say, not to their improvement. It is, in fact, greatly to be doubted whether it is always advisable to remove an organ from the western gallery where it has formerly stood, to place it in a kind of black-hole at the side of the chancel. This is often done under the idea that the position is more in accordance with ancient usage; but in point of fact, while there is plenty of Mediæval authority for the western choir and organ gallery, there is none that I know of for an organ-chamber, which is an essentially modern feature in church architecture. Ancient organs in western galleries occur at Amiens Cathedral, the Cathedral of Constance, St. Mary's, Lübeck, St. Anne's, Augsburg, and St. Ulrich's, Augsburg; and although the organs have disappeared or have been rebuilt, ancient western organ-lofts are to be seen at St. Stephen's, Vienna, Ulm, Liège, St. Mary's, Würzburg, Ochsenfürth, the Carmelite Church at Boppard, St. Pantaleon at Cologne, &c. The last-named example, however, is so singular in its arrangement that it may have been removed from some other position.

The reason for placing the organ in an organ-chamber is that it may be near the choir, who are now usually placed in the chancel. Whether a choir of laymen was, in the Middle Ages, commonly placed in the chancel seems doubtful. That the chancel was nothing like so universal a position for the singers as is generally supposed seems proved by the arrangement of many ancient churches; for instance, in the old Abbey Church of Cornelimünster, near Aix-la-Chapelle, the choir, with its stalls and complete ritual arrangement is to be seen in the western gallery. The same is the case in one of the earlier of the abbey churches, that of Seligenthal, near Landshüt, where the front of the choir gallery is adorned with a series of beautiful old pictures, and the interior fitted with regular choir-stalls. The same arrangement is to be noticed at the Abbey of St. Maximin at Trèves, though unfortunately here the whole of this interesting portion of the church is much modernised. At the minster church at Roermond, the arrangement of the choir was very singular; it was divided into two parts, each of which occupied one of the triforia of the nave. Each triforium choir terminated to the east in a small apse, bracketed out into the transept, containing an altar, both of which still exist. The original high altar also exists, not in the great apse, but in a smaller apse projecting from its eastern extremity. Mr. Cuypers, who has very carefully restored this church, believes the position to be original. There is a rather later western organ-gallery, but the whole is thirteenth-century work. The curious church called the Alte Pfarrkirche, at Ratisbon, contains a singularly small chancel, only about 10 ft. square, but has a very deep choir gallery at the west end. The stalls have been removed, but the marks of where they were fixed can still be traced; the date is thirteenth century. At Coburg, there was evidently a western choir in a gallery, with a little apse built out over the principal doorway; the arrangement is very picturesque externally. At Limburg-on-the-Lahn, the great triforium, which is vaulted and furnished with several altars, is called the "männerchor"; whether it really served the purposes of a choir is a question which it is not possible to settle, but the name would seem to suggest it.

Notwithstanding the fury which has of late years been exercised against western organs and choir galleries, there is much to be said in their favour, and it would perhaps be well to hesitate before removing them, especially in old churches. The west end of a church is an excellent situation for a large organ, both musically and as regards its appearance. The splendid examples at Lübeck and Bois-le-Duc, and St. Anne's, Augsburg, serve to show what a fine feature can be made of an organ in this position. Musically speaking, also, the western gallery is a good position for a choir, and the arrangement lends itself very well to congregational singing. Much good carving and excellent work has been destroyed by the wholesale removal of west-end organ-galleries. I cannot help also regretting the destruction of the numerous fine Renaissance organ-cases which have disappeared, together with the western organ-galleries.

The organs in cathedral churches, in England at any rate, were generally placed upon the chancel or rood-screen, and it is impossible to suggest a better situation for the instrument, as every single favourable condition is here complied with. The organ has plenty of space about it, and it is consequently sure to sound well. It is away from any walls which could convey its sound out of the building; it is excellent for choir work, and also for congregational purposes; it is more safe from damp and draughts than in any other part of the building, and less liable to variations of temperature. The position has also the sanction of antiquity, as it is recorded that there were organs upon the rood-screens of Durham, Peterborough, York, and Winchester cathedrals, long before the Reformation. In Continental churches a few organs still exist in this position. The Cathedral of Bruges, and that of St. Gomarre at Lierre, are cases in point, though, singularly, in the latter church the organ is sunk into the screen in such a way as to be invisible from the nave of the church. The removal of organs from choir-screens has been greatly in favour of late years, but I trust to live to see them all replaced in their former position. It seems that King Charles I. inaugurated this movement by ordering the removal of the organ in York Minster because it prevented the great east window being seen from the nave. It was, however, subsequently replaced.

When the organ is placed upon the choir-screen, one of two things seem to suggest themselves: either the congregation should be excluded from the choir, or the singers should be placed in the organ-gallery. The present plan of mixing up the congregation and singers in the choir-stalls of the English cathedrals has many great objections. In the first place, it is not edifying to look down the throat of a man just opposite who is singing a solo, nor is it advisable to recognise too distinctly any individual singer in a church. One may have heard him sing music of a very different character, under very different circumstances, which it is undesirable to associate with his present performance, and yet the mind cannot help making this association, to the entire destruction of all solemn thoughts and religious feelings. It is also a great advantage to every choir to have a conductor, and not to trust too implicitly to the organist. Where music in the style of Palestrina is sung unaccompanied, a conductor becomes absolutely necessary. Now a conductor is strangely out of place in the middle of a congregation.

The destruction of choir-screens, both here and on the Continent, is to be regretted. Not only are these screens great ornaments to churches, but they are of considerable use for musical purposes. The magnificent rood-screens at Münster and Bois-le-Duc were, when I first recollect them, used positively as choir-screens, and the effect was remarkably fine. Both have now, unfortunately, been removed. I am told that the screens at Tournay and Bruges are threatened with the same fate, chiefly because they are not Gothic! Some years back the choir of Norwich Cathedral sang from the screen, and I fancy there must be ancient authority for this usage. In France the rood-screen is called "*jubé*," and I cannot help associating this name with the first word of the Complin service, "*Jube domne benedicere*." Possibly the Complin service may have been sung from the rood-loft, and hence the name "*jubé*," as given to this feature of church architecture. In Germany the rood-screen is called by a different term in almost every church. At Münster it was called "Apostelngang,"—I fancy, from the statues of the Apostles which adorned it. At Halberstadt it is called "Bishofstuhl" or "ambon"; whether it really served as a bishop's throne or no it is impossible to say. At Hildesheim it is called "Letner," a word closely akin to our word *lectern*,—probably because the Gospel was read from it. It should be noted that, although the rood-screen has generally been destroyed in France, yet the Gospel is always read from the place where it formerly stood. In some old descriptions of churches I have found the words "*pulpitum*," "*paradisus*," used to signify the rood-screen.

Another position for the choir is to the rear of the altar. It is certainly the most ancient of all positions, as may be seen by the arrangement of the basilican churches. It is an excellent position from every point of view, and remarkably convenient, especially in apsidal churches. The great difficulty, however, is the organ. In French churches, where this arrangement is not uncommon, there are generally two organs, —one a small instrument for the choir, and the other placed in the nave of the church for voluntaries and congregational purposes. The disadvantage of this is, of course, its expense, as it necessitates two organs and two organists. I am aware that there is an invention by means of which the same organist can play both organs at once by the application of electricity. It would be very desirable that this invention should succeed, but owing to the expense, or some mechanical difficulties, it has not met with the success which one could wish. I trust, however, that it will not be lost sight of, for, if it could be made thoroughly practicable it would solve many difficulties, and it may turn out to be of the greatest possible value, both from an architectural and musical point of view.

The choir of Ratisbon Cathedral, which is justly celebrated all over Europe for its efficiency, consists of two separate bodies of voices, one composed of clergy, theological students, &c., who are placed in the stalls in front of the altar, and sing the plain chant; and the other of professional singers, who sing the harmonised music, and are stationed in the apse, behind the high altar. The organ is immediately behind the reredos; it is a small but singularly good instrument, so far as it goes. Above the stalls, on either side of the choir, are stone galleries bracketed out, which are reserved for the use of the clergy of distinction who are unconnected with the cathedral; this seems to me to be a very excellent idea,—one which might well be adopted in other places,—because it obviates a difficulty. Strangers ought never to be admitted into the stalls of a cathedral under any condition whatever; yet it is desirable to have some place for foreign ecclesiastics visiting the church. While I was at Ratisbon I noticed that one of these galleries was occupied by an Armenian bishop and his attendants. I must here call attention to a somewhat remarkable but very successful experiment which was made at this cathedral some years back. The plan of the cathedral is remarkably symmetrical, and when it was restored, numerous positions for the professional choir and the organ were suggested. Both were removed from place to place to discover where they would be most effective. The organ, which is, as I have said, a small instrument, was found to be totally insufficient everywhere, except when placed in the apse, where, owing to some extraordinary acoustic properties of the building, it has the effect of a large and powerful instrument. It was also discovered that the same effect was produced by the choir, so that a body of some twenty voices was found to produce the effect of a very large choir; it was, however, found necessary to play and sing the music very much slower than it would be ordinarily taken; a false note or a breakdown would, of course, be multiplied fourfold, and what would be the result of a cypher on the organ I tremble to think. Such things, however, do not happen with the Ratisbon choir, and I do not think that anything

could surpass the superb unaccompanied music of Palestrina as rendered by this choir and in this cathedral; it seems to wind round and about the lofty columns and in and out of the stately arches in a way that baffles all description. I went to the church over and over again before I could discover where these grand waves of harmony proceeded from. This is the only case I know of in which the choir and organ have been placed and arranged with a view exclusively to the acoustic properties of the building, and yet one would naturally have expected to find such a proceeding rather the rule than the exception. The arrangement of organ and choir behind the high altar is not uncommon in France, and wherever I have heard it, the musical effect is remarkably good.

In cruciform churches one of the transepts is an admirable position for the organ. A very fine and effective instrument has been erected in the south transept of Worcester Cathedral.

The aisles of a church are not a good situation for organs without they are like those in the German churches,—remarkably lofty. Ancient organs in this position are to be found at St. Afra, Augsburg; at St. Stephen's, Vienna; at Nordlingen, in Suabia; at Ingolstadt, in Bavaria; and at the Cathedral of Erfurth. The organ-lofts in each of these cases are very charmingly-designed; all these churches, however, possess an organ at the west end in addition to that situated in the aisles. There is a gallery at the west end of the north aisle of Winchester Cathedral which was probably formerly an organ-loft, though we know that the principal organ of that church stood on the rood-loft. Another very favourable ancient position for the organ was in a gallery bracketed out from the triforium of the nave. The ancient organs at Chartres, Freiburg, and Strasburg are in this position, and in all probability the so-called minstrels' gallery at Exeter was nothing more than an organ-loft. We know also that, in addition to four organs in different parts of the church, Durham Cathedral had an organ corbelled out from the triforium of the nave. Although it is a fairly-good position for a moderate-sized organ, yet it has several drawbacks; the organ is generally too high up to be quite satisfactory, either for accompaniment or as a solo instrument. Undoubtedly an organ sounds better when raised above the level of the heads of the congregation, but some of its tones must be lost when it is raised some 50 ft. or 60 ft above the pavement.

Old organs were very frequently placed over the choir-stalls. That of the old Cathedral of St. Paul was in this situation, and the Cathedral of Milan and many Spanish and Italian churches are examples in point. Unless, however, the choir projects west of the transepts, so that the organ can stand under one of the arches of the crossing, there is scarcely sufficient space for a modern organ of large dimensions, and it has led to the very objectionable practice of cutting the organ in half, and placing one half on one side of the choir and the other half on the opposite side, the two being connected by trackers underneath the floor. It is useful, however, sometimes, to have a small organ over the stalls when there is a large organ in another part of the church. This is the case at Worcester Cathedral.

We sometimes, though very rarely, find old organs placed on the ground to the east of the stalls, and it is to be remarked that the only pre-Reformation organ-case existing in England, that of New Radnor Church, is in this position. Occasionally the organ is placed on a gallery at the back of the altar. Handel's organ at Whitechurch is in this situation; both organ-case and choir-gallery were designed by Wren. In some of the Lutheran churches in Germany the organ is over the altar. It is so at St. Anne's, Augsburg, but there the altar is the intruder, as the fine old organ holds its original position at the west end of the church, and a modern altar is placed under it. I think it was at Ludwigsburg I saw a singular three-decker arrangement,—not pulpit, reading-desk, and clerk's desk, as one sometimes sees in England,—but an altar below, a pulpit immediately above the altar, and an organ above the pulpit.

It is now customary to place the organ in a chamber at the side of the chancel. I find that this arrangement is almost universally condemned by musicians, and especially by organists. A correspondence upon the subject has recently taken place in the *Musical Standard*, and the veto was strongly against these structures. A very eminent organist lately told me that it was about as bad a position as could possibly be found for an organ, and for his part he would as soon see the organ placed out on the opposite side of the street. I will here relate the objections to organ-chambers which I have heard advanced. (I am not now giving you my own opinion, but that of those who are far more able to judge of the matter.) It is advanced that an organ, like all other musical instruments, requires to be placed in an open and isolated position, and that it should never be inclosed or surrounded, except by its own case. We know that when a good pianist wants his instrument to sound well, he draws it away from the wall, and opens the top, so that there shall be nothing to intervene between the instrument and his audience. And it is even more important that an organ should be unencumbered by surrounding objects than a piano, because the organ consists of at least two parts or subdivisions, the most important of which is called "the great organ," and the less important "the swell organ." Now the characteristics of "the great organ" should be power, grandeur, and distinctness of tone, and the "swell" should be more subdued, sweet, and gentle, with a contrivance for producing variety as to *piano* and *forte*. The contrast between the various portions of an organ form one of its greatest merits as an instrument, and these contrasts are effected by certain mechanical means. The "great organ," for instance, demands a clear space to give forth its majestic tone, the "swell" requires to be inclosed, but to be able, when wanted, to break away from this inclosure and give forth a fine *crescendo*. This is effected by a contrivance somewhat resembling Venetian blinds. If there is a choir-organ it should be clear, delicate, and very sweet in tone. Now, when the whole thing is shut up in a box,—and an organ-chamber is really little else, much of this wonderful contrast is gone, because the very conditions demanded by the instrument are unfulfilled. But some people may say, "Oh, I like the subdued tone of the organ, and cannot bear to hear it when it is loud." An unfortunate organist wrote to the *Musical Standard* a few days back that he was absolutely forbidden by the clergyman to play anything but soft voluntaries on the instrument, and was ordered not to play Bach's fugues because the same clerical authority considered them "undevotional"! Now to such people as this what I should say is, "Why on earth go to the expense of a powerful organ, when, for 8*l.*, you can get a harmonium which will be better suited to your taste, or want of taste?" It is surely folly to pay for grandeur of tone and power, and then shut them up in a box where they cannot be heard. Yet this is very frequently done. I have often heard really good organs, crammed into organ-chambers, which have, from their unfortunate position, had little more effect than a harmonium. Sometimes, to make matters worse, the organ-chamber will be enclosed by low arches and screens of wood or stone, — all forming a carefully-constructed sound-trap or gag. The fact is that when the organ is placed in an organ-chamber, the great organ" is reduced to becoming a "swell organ," without the power of producing *diminuendo*, or *crescendo*. As a rule, also, organ-chambers are far too small to hold an efficient instrument, and the various parts have to be crowded together, and this is always bad. Mr. E. Turpin, the eminent organist, writing in the *Musical Standard*, gives 20 ft. by 20 ft. by 20 ft. as the smallest sounding-space for a church organ; yet how few organ-chambers are of these dimensions. Another defect in organ-chambers is the fact that they are nearly always damp. Now, damp is sure ruin to an organ. Then, also, an organ is difficult to get at when blocked up in a chamber. It is most important that every part of an organ should be easy of access, otherwise it may be absolutely necessary to take down nearly the whole of an organ to remedy some trivial defect which an organist himself could easily rectify if he could obtain access to that part of the instrument where the defect lies. The great organ at Bois-le-Duc is admirably arranged in this respect, being furnished with a staircase and galleries inside.

From an artistic point of view much has been lost by the organ-chamber, which is nearly always an ugly adjunct to a church. Directly organs are relegated to the chamber they no longer come under the attention of the architect, and that singularly-beautiful article of church furniture, the organ-case, is abandoned. But as long as the organ occupies an important position in the building, the case must be carefully designed; and when one sees how magnificently the Mediæval and Renaissance men treated that architectural feature, one cannot help wondering why it so rarely receives any attention at the present time. There are, I am glad to say, some few exceptions, and fine cases have been erected at Worcester, Hoare Cross, and Manchester, and have been designed for St. Margaret's, Westminster, and St. Martin's, Brighton. It is, however, very strange that, as a rule, the only portion of an organ which it is attempted to decorate are the pipes. This is certainly a work of supererogation, because the pipes of an organ are sufficiently handsome in their natural condition; whereas the deal-posts and match-boarding, which generally do duty for a case, would certainly be none the worse for what our Yankee cousins call "a lick of paint." If people are very rich and anxious to spend money upon an organ, they should have the pipes embossed. One paints iron to prevent rust, but it seems repugnant to one's feeling to paint tin. I do not, however, propose to detain you by remarks upon the artistic treatment of organ-cases, because this subject is dealt with in a very complete manner by Mr. A. G. Hill, who, in his work upon the organ, about to be published,—has illustrated and described all the most important examples at present existing in Germany, Holland, Belgium, France, England, and some few even in Italy and Spain. Most of these are reproduced from Mr. Hill's own sketches. By rare good luck Mr. Hill has also become possessed of many curious engravings of old organ-cases now destroyed. To the artistic value of the work he has been able to add much practical information gathered from personal experience as a partner in the well-known firm of Hill & Sons,—which is, I believe, the oldest firm of organ-builders in England.

I now come to the question, "What is the best position for an organ in a church?" And in consulting several eminent organists, I have nearly always received the following reply to the question:—"Either some central position as much isolated as possible, or a western gallery." Now, the objection to a western gallery is, that although it is admirable for sound, people, and especially the Anglican clergy, are opposed to having the choir so far removed from the altar. But I venture to think that the central position might be managed. It certainly suggests a choir-screen of some kind or other; and why should not the choir-screen be constructed in the form of a solid arch or bridge crossing the eastern bay of the nave? This need not occupy any space upon the ground-floor of the church, because the nave benches might be continued under it to its eastern extremity, or the choir might be carried on to its western extremity. If the first plan were adopted the organist would sit in the gallery above the arch; but if the latter were carried out he would play from the west end of the choir-stalls, under the arch. I have ventured to show how this arrangement might be carried out.* It may be objected that this scheme gives very great prominence to the organ, but I would ask, Why should not an organ occupy a very prominent position in a church? It generally costs more than all the rest of the church furniture put together. It is, as I have shown, becoming every day a more and more important adjunct to divine worship. It is capable of the highest artistic treatment and architectural development. Why, then, should it not be brought boldly forward and placed in a situation worthy of the king of instruments? In the Middle Ages the organ was regarded with the most extraordinary reverence, and we find St. Peter Damian, in his exquisite hymn "De Gloria Paradisi," enumerates the tones of the organ amongst the joys of heaven. Now, it so thoroughly describes what an earthly choir ought to be that I venture to quote it:—

> "Novas semper harmonias,
> Vox melodа concrepat;
> Et in jubilum prolata
> Mulcent aures organa."
>
> ("Lovely voices make a concert,
> Ever new and ever clear;
> And in never-ending festal
> Organs soothe the ravish'd ear.")

[The discussion which followed the reading of this paper is reported on p. 193 of this number of the *Builder*.]

* Mr. Brewer's drawing embodying this suggestion is reproduced as one of our illustrations.

THE EDEN THEATRE, PARIS.

THE new Eden Theatre consists of a vast pile erected in the Hindoo style, very freely treated, on the same lines, and by the same architect, as the Eden Theatre at Brussels, covering altogether more than an acre of ground. It occupies the site of the town house of M. Henri Schneider of Creuzot, for some time President of the Chamber of Deputies under Napoleon III.; and its principal façade, containing the public entrances, faces on to the Rue Auber, within sight of the new Opera House. So central a position was necessarily expensive, and it is stated that the land alone cost 240,000*l.*, while, as the buildings cost a further sum of 160,000*l.*, the gross outlay amounted to the enormous sum of 400,000*l.* Not a little of the expense was due to the contractor's difficulty in finding a sufficient foundation. When the ground was excavated he came across that underground stream known as the "Grange-Batelière," which haunts this part of Paris, and which had already caused great expense and trouble during the construction of the Opera House and other buildings in the neighbourhood.

The theatre is erected solely for the exhibition of the ballet and spectacular effects on a grand scale, and for providing extensive lounge and promenading-room for those to whom such amusement is sufficient. In plan and general arrangements it is most unlike other theatres, and consists only of two tiers. On the ground-floor is a spacious entrance-hall, extending the full width of the main front, having at each end broad staircases giving access to the upper floor, and with doors opposite the entrances leading directly into the *parterre*. This entrance-hall has its roof supported by two rows of massive stone columns, of a grotesque shape, giving the effect of the pillared halls of the Southern Hindoo style. The whole of the *parterre* is devoted to the *fauteuils d'orchestre*, and is surrounded by small boxes, to which access is gained from the broad enclosing corridors. On each side of the house and under the *foyers* of the upper floor are extensive retiring and cloak rooms, pillared like the entrance-hall.

Passing from the front up the staircases, built of light brown Pyrenean marble, each of which cost 3,000*l.*, we find ourselves in the great central *foyer* in a blaze of light and gorgeousness which perhaps has never before been realised. This *foyer* is about 100 ft. by 50 ft., covered with a dome in the centre painted by Clairin, and having at the side a lofty arcade opening into the corridors of the auditorium. The floor of this *foyer*, which, like that of the corridors, is formed of marble mosaic, is raised above the other floors of this tier, and thus enables those who sit at the refreshment-tables or promenade in it to see much of the performance at the same time. The auditorium, which is an imperfect octagon, the side of the proscenium being the largest, is surmounted by a flat circular dome, also painted by Clairin, with grotesque figures of acrobats and dancers, which, though clever and brilliant in itself, is incongruous, and forms the only drawback to the archæological completeness of the building. From the centre of the dome depends a huge and fantastic gas-chandelier, weighing some seven tons, made up of stained glass and brightly-painted reflectors and hangings. The dome is carried from the angles of the octagon by colossal caryatides, chocolate-tinted and nearly nude, supported by corbels formed of elephants' heads. Each side of the octagon, except the proscenium side, is pierced by an arcade of three arches standing on massive bulbous-shaped columns, and cusped and inclosed in square labels, and surmounted by a bold cornice corbelled well out and running continuously round the hall. The arcade stands upon a lofty plinth, which forms the inclosure of the corridors, and thus shows the whole of its beautiful and striking proportions, giving an appearance of strength and vastness to the auditorium impossible where the principal architectural features are hidden away among seats and people, and covered up by hangings and box fronts. Around the octagon on three sides runs a broad corridor, arcaded on each side to correspond with the arches of the house, which, with the space left by the angles of the octagon, affords ample room for those who only desire to promenade. On each side of this corridor are two *foyers* about the same size as the front one. That on the prompt side, known as the Indian Court, is decorated to match the rest of the house, and has the similar arcades repeated round it, but it is lighted by the arc electric lights; whilst that on the other side is provided with a glass roof, and, being fitted up with fountains, rockeries, and choice exotics, forms the veritable garden. The sides of these two *foyers* facing each other are covered with enormous sheets of looking-glass, with the result that the view from one to the other across the auditorium produces the appearance of a building of illimitable extent and of innumerable columns, rivalling the vision of Vathek in the hall of Eblis. The variations also in the colouring produced by gas and the electricity are curious, as the alternating spaces appear to be either brilliant with artificial light or bathed in the softest moonlight. The whole of the interior of the building, save only the entrance-hall, glows with the richest colouring. Except in the figured ceilings by Clairin, the colours employed are mainly primitives, the columns and arcades being nearly all painted a brick-dust red, fluted and picked out with gold. The deepest tones are supplied by the huge chocolate caryatides and the black elephant heads, while the masses of exotic foliage scattered through the *foyers*, and the brilliant tinted costumes of the attendants and the visitors, make up altogether a rich and ever-changing harmony of colouring rarely equalled.

The theatre being built solely for *spectacle* makes the question of its acoustic properties of comparatively small value, but should the management ever wish to devote it to the purposes of a lyric theatre, it is likely that it would prove a failure. As it is, the music of the band, which is a large and loud one, is frequently blurred by the echoes with which the dome appears to be alive; and a voice would be drowned by the continuous hum which reverberates through the *foyers* and surrounding corridors.

In the matter of its exits and staircases this, the last large theatre built, would scarcely satisfy the requirements of our London authorities. The Préfecture of the Police of Paris have calculated that the house will allow of over four thousand people to enter and circulate with ease at one time; but the bulk of these people would be on the upper floor, where only the lounging-room is found, while to reach or leave this only two staircases are provided, each of which, for more than half its length, consists only of a single flight. Moreover, these flights face each other, and all the people leaving either from above or below are brought into the centre of the entrance-hall to go out by a few comparatively narrow exits fitted with doors that open inwards. The exit from the stage is still worse. Where there are at times as many as seven hundred people employed at once behind the curtain, besides horses and other animals who have their stables in a basement, it seems incredible that the only way out provided for the stage is into a small courtyard, which is common to other houses, and through a narrow archway into a by-street, — the Rue Caumartin. Although in the principal façade, towards the Rue Auber, the details employed within the building are used as correctly, the result is less pleasing and less successful. By daylight the towers at each end of the front look picturesque, though altogether it looks small and bizarre; but at night, when all is lighted up, the deeply-coloured stained glass with which all the windows are filled conveys some idea of, and well advertises, the gorgeousness to be found within.

Remembering the large sums which have been spent on the building and its site, and the enormous expenditure required to keep it open, one may well ask,—Will it pay? But looking at it only as an architectural effort, we cannot but regard it as one of the boldest as well as one of the most successful attempts of our time to revive and adapt one of the richest, but one of the most obsolete, of the ancient styles.*

J. TAVENOR PERRY.

* We will give some sketches of the building in our next.

Stained Glass: Lympne Church, Kent.—Two stained-glass windows, one representing St. Stephen addressing the Council, the other his Martyrdom, have just been erected in the chancel of the above ancient church, of which St. Stephen is the name Saint. They flank a central Crucifixion east window, all being from the studio of the same artists, viz., Messrs. Powell Bros., of Leeds. The glass and designs are after the thirteenth-century style.

BUILDINGS FOR TECHNICAL EDUCATION.

ROYAL INSTITUTE OF BRITISH ARCHITECTS.

AT the ordinary general meeting of this Institute, held on Monday evening last, Mr. E. I'Anson, vice-president, occupied the chair.

The Royal Gold Medal, 1883.—It was announced that the Council, after careful consideration, had resolved, subject to the approval of the general body of members, to recommend to her Majesty the name of Mr. Francis Cranmer Penrose as that of the recipient of this year's Royal Gold Medal. Mr. Penrose was one of the past vice-presidents of the Institute, he was surveyor to the Fabric of St. Paul's Cathedral, and he was the author of "An Investigation of the Principles of Athenian Architecture," being a result of the careful survey of buildings in Athens conducted chiefly with reference to optical refinements. That important work was published so long ago as 1851, and was the result of investigations carried on in Athens some four or five years earlier. It was chiefly on account of the great merits of that work that the Council had resolved to recommend Mr. Penrose as the recipient of the medal.

The Pugin Studentship.—For this studentship there were fourteen competitors. The Council had awarded it to Mr. W. A. Pite, of Bloomsbury-square. The Sharpe prize was awarded to Mr. J. G. Sankey, of Fitzroy-square, who was adjudged to be second in merit. In the same competition a certificate of honour and 5*l.* 5s. were awarded to Mr. H. H. Kemp, of Kilburn-square; and a certificate of honour to Mr. C. A. Bassett-Smith, of Alexander-road, St. John's Wood.

The Godwin Bursary, it was announced, had been awarded by the Council to Mr. Hugh McLachlan, of 45, Fenchurch-street, who had signified his intention of travelling in North Germany. There were four other competitors.

Mr. E. C. Robins's paper (or, rather, an abstract of it) on "The Special Buildings required for Applied Science and Art Instruction, and for the Development of Technical Education generally," was then read by Professor Armstrong, in the absence of Mr. Robins through indisposition. The paper commenced with some general remarks on the rapid growth of interest in scientific research, and in the provisions made all over the civilised world for applied science teaching, the author observing that the study of the natural sciences hitherto relegated to the "modern side" was rapidly being included in the curriculum of every liberal education; that the application of the principles of physical science to the development of mental activity as well as to industrial enterprise would in all probability be the distinguishing peculiarity of the latter half of the nineteenth century. This great revolution in the systematic education of the period, to which attention had been drawn by Professor Huxley and confirmed by Professor Matthew Arnold, pointed to a corresponding change in the design of the buildings required for its development, and thus gave the *raison d'être* for the subject under discussion. Mr. Robins said that his paper, read at the Society of Arts last May, on "English and Foreign Technical Education,"* was an introduction to the present one relating to buildings required for its future development. In that lecture he gave no illustrations of the buildings or their fittings; he now proposed to enter upon the examination of English and foreign examples, and to draw attention to the peculiarities of the arrangements required. The establishment by the present Government of the Royal Commission on Technical Education, and the spirit displayed by the City and Guilds of London and by the public generally, led him to think that the present was an appropriate time for specially introducing the subject to the consideration of the Royal Institute of British Architects, the services of whose members would be required to meet the coming demand for suitable buildings. The author defined technical education as being a knowledge of the practical application of scientific principles to practical objects and purposes, and as being no less necessary to the professional man than to the manufacturer and artisan. Being somewhat of an enthusiast on the subject, he was anxious to enlist the sympathy and co-operation of the members of the Institute in furthering the success of the movement now in progress for the

* See *Builder*, vol. xlii., p. 683.

extension of technical education in this country, and they could do that by giving their consideration to the questions involved in the provision of the best possible,—i.e., the most suitable,—buildings and fittings for the purpose. Some three or four years ago, when occupying the chair as Prime Warden of the Dyers' Company, he induced that company to take part in the promotion of the City and Guilds of London Institute for the Advancement of Technical Education, which was now engaged in the erection of buildings and in other work the ultimate capital expenditure on which would not fall far short of 150,000*l.*, and the maintenance of which would require an annual income of 30,000*l.* or 40,000*l.* As a member of the Executive Committee of the City Guilds' Institute, he had accompanied some well-known professors to Germany to inspect the latest examples of buildings devoted to the teaching of science, and he proposed to give the result of his studies in so far as the limited time and space at the disposal of the Institute would permit. To this end he divided his paper into two general divisions, viz.:—First, the particular accommodation required for some of the leading subjects and the systematic general arrangement of the plan. Secondly, the various fittings and apparatus applicable to the distinct uses of each. No such attempt having as yet been made, he hoped to make the matter clear by fulness of illustration. He proceeded to observe that, of course, all technical education did not require special accommodation; the ordinary class-rooms attached to school-buildings might be appropriated to certain kinds of technical or applied science instruction, provided they were efficiently lighted and ventilated. But there were many subjects which must be taught in specially-designed buildings, for example,—chemistry and physics, biology and physiology, botany and forestry, mechanics and engineering, anatomy, architecture, and the fine arts generally, involving the provision of laboratories, lecture and work rooms, drawing and modelling rooms, &c., separately grouped together in a certain order and contiguity, specially floored, drained, lighted, heated, ventilated, and arranged for particular furniture, fittings, and apparatus, not to speak of the specific trade schools for teaching weaving, dyeing, &c. Mr. Robins referred to the remarkable impetus observable abroad towards the construction of such building, and reviewed the general principles underlying their admirable planning, noting also their defects, and deduced some general rules for the guidance of future designers. He then proceeded to describe several *Foreign Buildings*, illustrations of which were exhibited, namely:—1. Bonn and Berlin Chemical Laboratories; 2. Munich ditto; 3. Aachen ditto; 4. Gräz ditto; 5. Physiological Laboratory at Berlin; 6. Physical and Chemical ditto, Chemnitz; 7. Physical Laboratory at Würzburg; 8. Technical High School, Hanover; 9. Fine Art and Building School, Charlottenburg; 10. The Great University, Strasburg; 11. Technical College, Japan;* 12. Royal Technical High School, Stockholm; 13. Technological School, Gottenburg; 14. Chemical Laboratory, Pest. Of the *English Buildings* described by Mr. Robins were the following:—1. The Central Institution of the City and Guilds of London Technical Institute, South Kensington; 2. The Finsbury Technical College; 3. University College, London; 4. Roscoe's Chemical Laboratories, Owens College, Manchester; 5. The Manchester Grammar School Chemical Laboratories; 6. Josiah Mason Science College, Birmingham;† 7. The Yorkshire Applied Science College, Leeds; 8. The Bristol Trade and Mining School of the Society of Merchant Venturers. In the course of his observations (from which, owing to the great length of the paper, we can only cull a sentence here and there), Mr. Robins remarked that the general principles underlying the design, or, rather, the planning of buildings intended to be used for purposes of technical education, had not, so far as he knew, been formulated, nor had any attempt been made in that direction, no doubt owing to the vastness of the subject. The Chemical Laboratories of Bonn and Berlin were the earliest important buildings of their kind erected on the Continent, but they were failures in some respects. One of the great imperfections of the Berlin Laboratory is that a long series of rooms in which the students perform work requiring great care and delicacy,—as, for instance, in the balance-rooms, where weighing operations of great nicety have to be performed,—are actually made to serve as thoroughfares from one part of the building to the other, there being no corridor. That was obviously a very serious defect in planning. The building was erected in 1863, and very full information concerning it was to be found in the Thirteenth Report of the Science and Art Department. The Bonn Laboratory was defective in similar respects. On the other hand, the new laboratory at Munich might be almost accepted as the model of what a large chemical laboratory should be. With regard to the warming and ventilation of these buildings, at Berlin and Bonn there were no special arrangements for ventilation. The ventilation of the rooms in the laboratory at Munich was effected by means of a fan placed in the base of a shaft into which extraction-flues from all the rooms opened, the air being thus pulled, or sucked, out of the rooms. Air is admitted to the rooms through gratings, being previously warmed in winter by being made to pass over steam-heating chests. With regard to special ventilation, a number of stink-closets are placed in the windows, the object of placing them in these positions being that of getting a good light. Each of these stink-closets had a large stoneware flue leading from it, and carried up in the wall until it reached a large flue built just under the roof, where there was another fan for the purpose of exhausting the air and fumes from the stink-closets. This arrangement, however, proved to be very unsatisfactory in action, for if any of the doors of the stink-closets were open the two fans were engaged in pulling against each other. So great was the inconvenience experienced from this cause that the plan of exhausting the foul air of the room by a fan was abandoned, but the fan for the exhaustion of the stink-closets was retained. At a laboratory in Geneva a similar arrangement of two fans was adopted, but it subsequently had to be modified in the same way as at Munich. Two of the most successful of chemical laboratories on the Continent were those of Aachen and Gräz. The arrangement of the rooms in such buildings necessarily depended not only on the site, but on the special requirement of the locality in which they are situated. The buildings at Aachen and Gräz were instances of successful systems of ventilation. The system adopted at Aachen was this:—There was a central heating-chamber filled with steam coils, and the air was forced through this chamber and delivered through openings into the colonnades and rooms of the building. An ingenious arrangement of thermometers in connexion with electric alarm-bells, gave warning to the man in charge of the heating-apparatus when the required temperature in any given part of the building was being exceeded, and he was able to modify it. There was also a system of hygrometers, which gave warning in a similar way when the air was too dry, to remedy which steam was impelled into the heating-chambers to give the required degree of moisture. At Gräz the system of ventilation and warming was very similar to what was being adopted in the buildings being erected in London by the City and Guilds of London Institute. By means of a large fan, air was drawn into the buildings and forced into the various rooms; but at Gräz, as the buildings were somewhat extended, instead of having a central heating-chamber, heating-chests were placed in several positions about the building, and the air was forced through them before being delivered into the various rooms, extraction-openings being provided by means of flues which are built in the walls. Passing on to notice the arrangements which had been adopted in the Finsbury Technical College, Cowper-street, City-road, Mr. Robins pointed out that the system of planning adopted by the architect (Mr. E. N. Clifton) was a very simple one, involving no great distances from one part of the building to another, and, therefore, Messrs. Bacon, who had carried out the heating arrangements of the college, had followed a plan very similar in its main details to that at Aachen, the air being forced by a fan through a heating-chamber, and thence through flues into all the rooms, corresponding outlets being provided for the purposes of extraction. In the Central College of the Institute, now being erected from the plans of Mr. Waterhouse, A.R.A., at South Kensington, a somewhat different system was being adopted, although somewhat similar to that adopted at Gräz, the air being forced by means of a fan through heating-boxes placed at the base of the corridor wall, whence the air passed up through flues into the various rooms, finding its way out through corresponding openings, placed, in most cases, opposite to the inlets. At Owens College, Manchester,* a large shaft was made use of for exhausting the air from the rooms. In the author's building at Bristol,—the Merchant Venturers' School,†—the ventilation was effected by means of a fan, and heating-boxes were provided, but there, instead of the air being forced into the building by the fan, air was admitted through openings near the windows and passed over heating-boxes in winter time, the fan being employed for exhaust purposes, and sucking the air out of the rooms through openings in the floors. In the plans of the Cowper-street building it would be seen that in addition to the ventilation-chamber there was a large shaft. That shaft, however, had nothing whatever to do with the general ventilation of the building, but, in addition to carrying off the flue gases from the boiler furnaces, it was used to effect the ventilation of the chemical laboratory, into which the warm or cold air (as the case might be, according to the season) was forced through openings along the wall. There was an elaborate system of extraction-flues extending under the whole of the floor, and these flues were in communication with a series of downcast shafts projecting just above the surfaces of the working benches, and placed 4 ft. apart. Over the benches was a continuous hood of such a form as to prevent chemical effluvia from passing up beyond the influence of the down-cast extraction-shafts, which were ultimately led into the shaft before mentioned. There was thus, on the one hand, a "push" of air into the laboratory, by means of the fan, and a "pull" of air out of it by means of the shaft before mentioned. Proceeding to sum up the conclusions of the paper, the author observed that while there was a great similarity in the German laboratories after Bonn and Berlin,—the only differences being in minor details,—in this country, on the other hand, we had departed to a considerable extent from the arrangements which were in vogue in Continental countries twenty or thirty years ago, and were acquiring, in fact, a style of our own in the planning of such buildings. In Continental laboratories elaborate means were taken to keep the students of different classes apart, but in none of the English laboratories was it so. In Owens College, Manchester, the chemical laboratory, which might be regarded as the first English laboratory of any importance, — and in the planning of which Mr. Waterhouse acted upon suggestions made by Professor Roscoe, — might be regarded as simply two rooms, side by side, separated by glazed walls and with windows and glazed closets between them, the junior students being on one side of the partition, and the senior students on the other. It should be remembered, however, that the comparative simplicity of arrangement which was suited to an English chemical laboratory was due to the fact that in England it was difficult to get a student of chemistry to devote more than a year to the subject, while in Germany the students stayed for periods of five, six, and seven years, and therefore needed more complete accommodation. The laboratory at the Cowper-street College was practically divided into two, so that the arrangement was virtually the same as at Owens College. A somewhat similar arrangement was also adopted for Mr. Waterhouse's laboratory at the Leeds College, and also at the Central Institute. In conclusion, reference was made to a number of other buildings, many of which were illustrated by the drawings (upwards of 100 in number) hung on the walls of the meeting-room.

The Chairman, in inviting discussion, said that the paper was so full of details that it was very difficult to know where to begin the discussion, but every one would admit the importance of the subject with which it dealt. Perhaps Sir Frederick Bramwell could favour the meeting with a few remarks.

Sir F. Bramwell said, with regard to the question of ventilation, that the great problem was to get sufficient fresh air into a building without inconveniencing the people who were

* For plans, sections, and description of this building see *Builder*, vol. xxxviii., pp. 149, 176, 177, 484.

† Illustrated and described in the *Builder*, vol. xxxix., pp. 439, 144, 145.

* Illustrated in *Builder*, vol. xxix. (1871), view and plan, pp. 86, 87.

† Illustrated in *Builder*, vol. xlii., pp. 518, 520.

in it. By mechanical means it was no doubt possible to get in a sufficiency of air, but if it were got in without any special provision being made for its reception, the people near the inlets would suffer great inconvenience, and more especially would this be the case in summer time, when the air that would be sent in would be cooler than that in the room. He knew that if air impinged on a person at the rate of more than 1½ ft. per second, or, in round numbers, a mile an hour, the person could not but feel uncomfortable. In order to keep down the velocity of the flow of sufficient air into a room in which many people were assembled it was necessary to spread the orifices over such an extent of space as to virtually necessitate the provision of double walls. One of the buildings which Mr. Phipson had ventilated was the meeting-room of the Institution of Civil Engineers, and there the result was thoroughly satisfactory. The air was forced in at the rate of 1,000 cubic feet per hour for each person present, but the velocity was not so great as to make any one in the least degree uncomfortable. In order to obtain that result, however, the size of the room had been sacrificed to a very considerable extent,—probably to the extent of 1 ft. 6 in. all round the room, making a great difference in the area. If people were prepared to encounter similar expense and deprivation of area they could get perfect ventilation, but it could not be obtained otherwise, so far as he knew. Where the inlets for fresh air were limited in number, as they almost always were, the persons in the vicinity of them would stop them up if they experienced discomfort from them, and that had been done in the hall of the Society of Arts, where the chairman had exerted his authority by having the openings behind his chair covered over with brown paper. People said, "It may be very healthy that we should have fresh air, but it is very unhealthy to have rheumatism." The great problem in ventilating all buildings was how to get enough air into a room without anybody knowing it.

The Chairman asked what provision had been made for the air to get out of the hall of the Institution of Civil Engineers.

Sir F. Bramwell said it got out as Providence pleased. Many architects, he was sorry to say, simply made holes in a ceiling to let the air out, but they made no provision for inlets: consequently when the door was opened those in its vicinity suffered very great inconvenience. If the air was sent into a room by a fan, under pressure, and so creating a *plenum*, it was a work of supererogation to put any exhaust openings. On the other hand, if the air were introduced into a room by means of suction, Heaven help those who were near the doors and windows!

Dr. C. W. Siemens observed that the numerous plans which Mr. Robins had succeeded in getting together were most instructive, as showing what had been done and was being done in the provision of buildings for technical education, and especially as marking the progress which had been made in the arrangement of chemical laboratories. In some of the plans of polytechnic schools abroad, the arrangements were perhaps a little too elaborate. He thoroughly approved and appreciated the plan which had been followed in English laboratories of not too rigidly separating one class of students from another, and he quite agreed with the author in his definition of technical education as the teaching of the science underlying an art or manufacture. That view was now becoming more and more adopted, but some of the earlier polytechnic schools abroad had erred on the side of attempting to turn out students completely instructed in a trade. With regard to the warming of buildings, he was old-fashioned enough to wish to see some radiant heat introduced into the buildings which had been described, for he believed no room could be thoroughly healthy without radiant heat.

Mr. Philip Magnus, in the course of a long speech, pointed out the differences between the polytechnic schools and the numerous schools for industrial education which existed on the Continent, and observed that within the last twenty years a very great change had taken place in systems of education for industrial purposes. Mr. Robins's paper, as read, had said nothing about the requirements necessary in buildings for the teaching of physics, mechanical science, and other sciences, — requirements which were very different from those needed in chemical laboratories, although all these requirements had, of course, to be met, and would, it was to be hoped, be satisfactorily met, in the new building now being erected at Kensington for the City and Guilds of London Institute, in which building, by the bye, Dr. Siemens's desire for radiant heat would be gratified, for there was to be an open fireplace in every room.

Mr. Charles Barry, in moving a vote of thanks to Mr. Robins, coupled with an expression of regret at his absence through illness, said the paper was not only interesting and valuable in itself, but it had been the means of eliciting valuable information from some of their distinguished visitors. Mr. Robins's paper was one more step taken in the direction in which almost every educated man's thoughts in this country were travelling now, viz., how best to improve and beautify the manufactures of this country, not by making the manufacturers and workmen mere machines, but by enabling them first to know the principles and then to apply them in practice. The movement in furtherance of improvement in this respect had now taken firm root in this country, and Mr. Robins's paper was timely as leading architects to give due consideration to the class of buildings which would be required all over the country if the movement spread. He quite agreed with Dr. Siemens that there was a danger of overdoing it, and of providing buildings which were too elaborate; what they should seek to arrive at was, What was the minimum of elaboration that was necessary? With much simpler appliances than were now procurable it should be remembered that England had produced Faraday,—not but what he believed that Faraday, had he been living now, would have heartily supported the movement which was now in progress for the spread of technical education.

Professor Perry, in seconding the vote of thanks, said that Mr. Robins's paper, when it came to be published *in extenso*, would be found to be very valuable, and much more complete than would seem from the fragments which had been read that evening. Mr. Robins had given very great attention to the subject, and his paper would be found to deal with buildings suited not only to the chemist, but to the physicist, the mechanical engineer, and to the professors of other sciences. Reference had been made to the complicated nature of some of the buildings of which plans were exhibited, but that complication was more apparent than real, arising as it did out of the largeness of some of the buildings which they illustrated.

Mr. C. F. Hayward, in supporting the motion, gave a few details of the chemical laboratories and science schools which he erected at Harrow School a few years ago, in reference to which he was indebted to some advice very kindly given to him by Professor Tyndall. As an example of the simpler kind of buildings which had been desiderated by Dr. Siemens and Mr. Barry, they might be useful for purposes of comparison, and he should be glad to exhibit his plans on any future occasion when the subject might be revived, as no doubt it would be.*

The Chairman was about to put the vote of thanks, when Professor Roger Smith moved, and Mr. Rickman seconded, the adjournment of the discussion. It appearing, however, difficult to find another night for the subject during the present session, the motion was withdrawn, and the vote of thanks having been passed to Mr. Robins and to Professor Armstrong for reading the paper, the meeting was brought to a close.

Steam Mills, near Cinderford. — New schools erected here for the Forest of Dean United District School Board have been opened. They have been designed by Mr. Alfred Smith, architect, Mitcheldean, to accommodate 417 children,—boys, girls, and infants. They are Gothic in style, the walls being constructed with grey Forest of Dean rubble stone with wrought dressings. The buildings are heated throughout with hot water, this work having been done by Mr. Leary, of Parkrow, Bristol. The contractors were Messrs. Coleman Bros., of Chathill, near Gloucester. The cost of the buildings has been 2,865*l*. Mr. Wm. Jones has been the clerk of works.

* Among other buildings of the kind, we may mention two which have been illustrated in the *Builder*, viz.: The Clarendon Laboratory, Oxford, Mr. T. N. Deane, architect, view and plan, vol. xxvii. (1869), pp. 366, 367; and the Laboratory at Eton College, Mr. W. Wilkinson, architect, view and plan, vol. xxviii. (1870), pp. 166, 167.

ULM CATHEDRAL AND ITS RESTORATION.

At a time when in artistic circles in England no small interest has been roused by the report of the condition of one of our noblest monuments of ecclesiastical architecture, and when an appeal is being made to the public to defray the necessary expenses that will be incurred by the demolition and restoration of the tower of Peterborough Cathedral, there reaches us from Germany the news of the growing interest that is there being expressed in the scheme at length fairly on foot for the completion of Ulm Minster, the largest Protestant Church in the world. Now that the last stone has capped the western tower of Cologne Cathedral and a great national work has been accomplished, the long sadly-embarrassed works of the termination of the great cathedral at Ulm have been promised the interest and co-operation of the Government: the German Emperor has authorised the formation of an important lottery, the proceeds of which are to defray the necessary expenses of a work which, as a national undertaking, is of only secondary importance to that of Cologne. It can well be understood how favourably such a scheme has been received in Protestant Germany.

Not long since we announced in these columns the decision of a committee of distinguished architects respecting the feasibility of the project, and now it is hoped that before the century expires the great tower of Ulm Cathedral will proudly rise into the air. There is something characteristic in this pride taken by the Germans in the noble creations of their past,—a pride which we in England may well envy our neighbours. Rich as is our country in its treasured memorials, we almost doubt whether there exists with us that same national feeling with regard to their beauty as is noticeable on the Continent. Was not a recent American writer on our country justified in his surprise at finding many intelligent Londoners who had never even visited Canterbury Cathedral, the great centre of our religious life, the oldest of our churches, and lying at but a journey of an hour or so from the capital?

Ulm Cathedral, one of the famous Gothic minsters of Germany, has for centuries remained like so many other Continental churches, incompleted, while the religious zeal and intolerance of the past have only further assisted the destructive action of time. Ulm, the home of a wealthy *bourgeoisie*, in the enjoyment of a singular degree of freedom, was, in the Middle Ages, one of the richest cities of Europe. "*Ulmer geld regiert die Welt*," said the proverb which coupled the name of the city with those of Venice, Nuremberg Augsburg, and Strasburg. That civic pride which has ever been one of the most powerful aids to the development of art led to the determination on the part of the burghers to possess a great cathedral, though it would seem, as so often happens, that the existing result of this praiseworthy conception far exceeded the original plan. A century after the first stone of the west front of Cologne Cathedral had been laid, Burgomaster Krapt, in 1377, laid the foundations of the Ulm Minster, and for many years the works steadily progressed, an army of stone-cutters, masons, and other hands being employed, the expenses defrayed out of town dues and other municipal taxes. In 1392, mention is made in the records of a master, Ulrich von Ensingen, engaged to be *Kirchenmeister*. It has been suggested that the Ulrich von Fissingen who, in 1394, was called to Milan to give his valuable advice in respect to the cathedral works, was no other than the above-mentioned architect. Five years later we find him engaged on the Strasburg Cathedral, where he died in 1419. To Ulrich von Ensingen has been attributed the change of the original plan of Ulm Cathedral, and the enlargement of the conception such as it stands in the present day.

Throughout the whole of the fifteenth century the works progressed rapidly, the beautiful choir-stalls of Jörg Syrlin,—casts of which may be seen at the South Kensington Museum,—as also several of the painted windows by Hans Wild, the wonderful *ciborium*, and a number of wall-paintings, all belong to the active period when Ulm was a brilliant artistic centre. Ulm, let it not be forgotten, is the home of the artistic family of the Schön, of Zeitblom, and Martin Schaffner, the founder of the Swabian school of painting, which, with that of Augsburg, promised, in the glowing days of the Renais

sance, so bright a future for the history of German art, a future, however, singularly eclipsed with the death of Dürer and of Holbein.*

With the fifteenth century ceased the active progress of the cathedral works. Wars and commercial ruin had sadly robbed Ulm of its former wealth; the religious ardour which had raised in Mediæval days such temples as still excite the admiration of the world was, if not dead, greatly changed in its character; a new spirit had arisen, the Renaissance with its distaste to "barbaric Gothic," its new aims, and its powerful allies, the printing-press and the Reformation. The Reformation particularly affected Ulm, which early in the movement deserted the faith of its fathers, and with that fanatic zeal and intolerance which characterised, as, indeed, it still does to some extent, a section of the Protestants, a large number of beautiful works of art were destroyed throughout the city, rich in Roman Catholic relics. The cathedral, itself sadly mutilated, remains almost alone now to tell of the days of Ulm's Mediæval prosperity. Later centuries did little to complete the great Minster. Germany was too sadly torn by the horrors of war to devote its time and hard-earned pence to details so eminently the work of peaceful and prosperous years, and so with slight additions the cathedral came down to our times, its great tower rising like that at Mechlin, square and squat, awaiting the final touch which will now, at length, be put to it. With the early years of this century what interior pictorial beauty still remained was further obliterated under a generous coat of "clean wholesome whitewash," specially intended to cover from public gaze the series of wall-paintings which were accused of superstitious and barbaric ugliness. When only three or so years back the whitewash was removed, several interesting wall-paintings of the fifteenth century were brought to light, and now form no small feature in the interior decorative effect.

The restoration of Ulm Cathedral cannot be said to date from yesterday. Primarily it may be traced to the first projects set on foot for completing Cologne Cathedral. As far back as 1841 a society was formed in Ulm, with the King of Wurtemberg at its head, and the chief aim of which has now been for hard on forty years to patch up the sadly mutilated old monument. Prof. Grüneisen's little work on "The Art-Life of Ulm in the Middle Ages," to which we have referred, was one of the first publications of the Society, which, by 1814, had gathered sufficient funds to undertake the work of restoration. In 1814, under the direction of Prof. Mauch, of the Stuttgart Polytechnicum, and Baumeister Thrän, operations were commenced, and the more urgent repairs taken in in hand. Thrän died in 1870, and was succeeded in 1870, and was succeeded in his post by his pupil Scebold, who, however, died only a year later, his place being filled by Ludwig Schen, a pupil of the Gothic master, Egle. Considerably over half a million of florins had been expended, largely contributed to by the inhabitants of Ulm, but funds were still sadly wanting. A lottery was organised, and the restoration of the interior was commenced. In 1877 the 500th anniversary of the foundation of the cathedral was commemorated, and three years later, at the Congress of Architects, held at Wiesbaden, it was unanimously resolved that the completion of Ulm Cathedral should succeed that of Cologne Cathedral. Early last year the German Emperor gave his assent to the formation of a national lottery for the purpose. The architect Schen had, however, died in 1880 a martyr to his devotion to the work, and Professor Beyer, another of Egle's Gothic school, succeeded him in his post as Baumeister. As was reported in these columns, a committee of eminent architects, among them Oberbaurath Adler of Berlin, Professor Bauschinger of Munich, Oberbaurath von Egle and Prof. Laisgle of Stuttgart, Oberbaurath Funk of Cologne, Oberbaurath von Ferstl and Oberbaurath von Schmidt of Vienna, consulted on the feasibility of completing the huge tower, gave their entire assent to the project, and now the work may be said to be fairly on its road towards completion. Poets are prophets. Goethe a hundred years ago pictured the day when the birds would shelter themselves in the great tower of the cathedral, "God's tree" rising high into the air for eternity *für die Ewigkeit*. Even in its maimed and incomplete condition, the huge cathedral stands proudly like a giant above the houses of the picturesque old town, for Ulm, if not as quaint as Nuremberg or Schaffhausen, is still singularly an honest burgher town of the Middle Ages.

Architecturally, Ulm Cathedral has more than once been described in these pages; in its ground-plan it may be classed as belonging more especially to the purely German Gothic system of a nave and side aisle, each terminated by a separate polygonal choir,—a plan differing, it will be remembered from the older and simpler type of Cologne or Freiburg, which are regarded as being built more peculiarly according to the French rules. In the different types of the basilica and the *Hallenkirche*, the one with its obligatory clearstory, the other without, it is to the former that Ulm belongs, yet differing again from the Strasburg type with its saddle-back roof in having a highly-pitched roof (known to the Germans as a *Pultdach*), obliging a series of flying buttresses connecting the central nave with its aisles, a feature which adds no small element of picturesqueness to the general effect. The original plan was further altered in the sixteenth century by the duplication of each side aisle by a series of slender columns, the cathedral thus possessing in reality five aisles, producing, as may be imagined in so large a structure, an effect of great impressiveness. The dimensions of Ulm Cathedral are indeed only exceeded by those of Cologne.* Exteriorly the ogive portal, cruelly as it has been mutilated, is still an object of great beauty, combining in its details some earlier work of the thirteenth century, introduced from the original parish church which the cathedral superseded. Interiorly, though criticism may light upon the late Gothic character of the many details, it is impossible to deny the imposing character of the general effect. Scattered in various directions are many of the original interior decorations which have happily escaped the mutilations of the past. Foremost among these stand the superb series of forty-eight choir-stalls, the work of Jörg Syrlin, executed, as the inscription notes, between 1469 and 1474. In the history of Renaissance art this work holds a high place, stamped as it is with the classic spirit which so pervaded the great revival. Classic philosophy and mythology and Biblical history find united their expression in the subtly carved heads of Cicero, Pythagoras, Seneca, and Quintilian, in the allegory of the coming of Christ, mingled with the figures of the Sybils and the great Prophets of the Old Testament. Little wonder is it that tradition should have attached to the name of the artist a legend,—resembling that told of many other famous artists,—that the Benedictine monks of Blaubeuren, in whose convent Syrlin has left some of his best work, should have put out his eyes, so that he should not produce for any other convent such admirable creations. The South Kensington Museum, as we have already remarked, possesses an interesting cast of Syrlin's choir-stalls in Ulm Cathedral. The stone pulpit by the second pillar in the nave is a scarcely less decorative work, the cover carved by the younger Syrlin. To the left of the choir stands the *ciborium*, rising 90 ft. into the air, a masterpiece of sculpture,—tradition has stated it to be of "molten stone,"—long believed to be by Adam Kraft, of Nuremberg; but the work of the so-called "master of Weingarten," who in 1469 executed the work for the pious Engel Zaringerin. Mention of the fifteenth-century painted windows of Hans Wild should not be forgotten; nor the font, erroneously attributed to Syrlin, and only contemporary with him,—it bears the date 1470. It shows, however, the skilful and suggestive use made by the late Gothic artists of heraldry for decorative purposes.

The restorers interiorly have been actively at work, the vestibule of the nave with its modern stained-glass windows, is an eminently convincing proof, while the great organ, built in 1856, is always shown to visitors with pride as the largest in Germany,—it contains 100 stops. Exteriorly, the work of restoration has been carried even further, in spite of the deficient funds at the disposal of the architects. Now, however, the work will be taken up with renewed spirit, and if there are some who may regret the changes, the honest burghers of Ulm, and with them Germany at large, will be proud to show their great cathedral completed. Rumours have reached us from Strasburg, where the cathedral also remains spireless, that more than one good citizen is opposed to the change of the old pile and the forms which have been so familiar for many a generation. Doubtless there will be many in Ulm to express the same feelings, as there were in Cologne, but when national pride steps in, private predilections, however cherished and worthy of respect, must give way. Ulm Cathedral must be completed, and with the funds which will soon be placed in the hands of the authorities the work will progress merrily. Once more a picturesque pile of airy scaffolding will break the horizon of the Swabian landscape as it did in the busy Mediæval days when Ulm was very different to the quiet provincial town it now has become, when its armies of workmen tramped through the streets to and from their work, and the noise of many-hammered trades was hushed to silence as the *angelus* peeled over the roofs of one of the great and wealthy cities of Mediæval Europe.*

We give a view of the choir, and shall add some other illustrations hereafter.

* The interesting little book "Ulms Kunstleben in Mittelalter," by Prof. Grüneisen, one of the warmest promoters of the Society, founded now forty years ago, for the restoration of the cathedral, is a work to be referred to by those interested in the history of the "primitive" schools of German art.

* The area of Cologne Cathedral is 6,200 square mètres; of Ulm, 5,100; of Strasburg, 4,100; of St. Stephen's, at Vienna, 3,200; of Freiburg, 2,960; of Ratisbon, 2,400. The height of the nave at Cologne is 44 mètres; at Ulm, 42; at Ratisbon, 33; at Strasburg, 30. The breadth of the nave at Ulm, 15 mètres; at Cologne, little over 13; as also at Strasburg. The west tower of the completed Ulm Cathedral (according to Boblinger's plan) will rise to a height of 151 mètres (495 ft.); while those at Cologne are only 148 mètres high. The Ulm tower at present is only 334 ft. high.

NEW WINDOW IN LEDBURY CHURCH, HEREFORDSHIRE.

In the "Webb Memorial Window" recently set up here, the first and second Advent of our Lord are shown together,—one for the contemplation of the worshipper on entering, the other on his departure. The first coming is heralded by the preaching of St. John the Baptist, "Prepare ye the way of the Lord." This is the first subject at the bottom of the window on the left hand. The second subject is the Archangel Gabriel announcing to the Blessed Virgin Mary that she is to be the mother of the Saviour, and that He should be born of her. The third subject shows our Lord's birth or first coming. Above this is the portion of the window shown in our illustration, the second coming and the following is the text at the base of the subject:—

"But in those days, after that tribulation, the sun shall be darkened, and the moon shall not give her light,

And the stars of heaven shall fall, and the powers that are in heaven shall be shaken.

And then shall they see the Son of Man coming in the clouds with great power and glory.

And then shall He send His angels, and shall gather together His elect from the four winds, from the uttermost part of the earth to the uttermost part of heaven."—St. Mark xiii. 24-27.

In the top of the window our Lord is shown coming surrounded by seraphim; below Him are shown His mother who bore him, as Mercy; behind her is the lily; on the other side is St. John the Baptist, as Justice, with the sword,—She the preacher of purity, He of repentance. In the centre is our Lord's cross (the sign of the Son of Man) borne by angels, whilst beneath is St. Michael with the balance, and the angels with trumpets. Standing on the earth, which this heavenly host is about to visit, are Enoch and Elias witnessing to the world the truth of holy prophecy. Below the window is a brass with the following inscription:—"This window, which illustrates the first and second advent of our Lord, is erected to the glory of God, and in memory of Thomas Webb, of Ledbury, Banker, Justice of the Peace, and Deputy-Lieutenant for the County of Hereford, who died on the 18th day of May, A.D. 1837, aged 61 years; and of Anne, his wife, who died on the 4th day of August, A.D. 1881, aged 102 years. 'Blessed are the dead which die in the Lord, that they may rest from their labours.'—Rev. xiv. 13."

The work was produced by Messrs. Lavers, Westlake, & Co., of Endell-street, Bloomsbury, from the design of one of the firm, Mr. N. H. J Westlake, F.S.A.

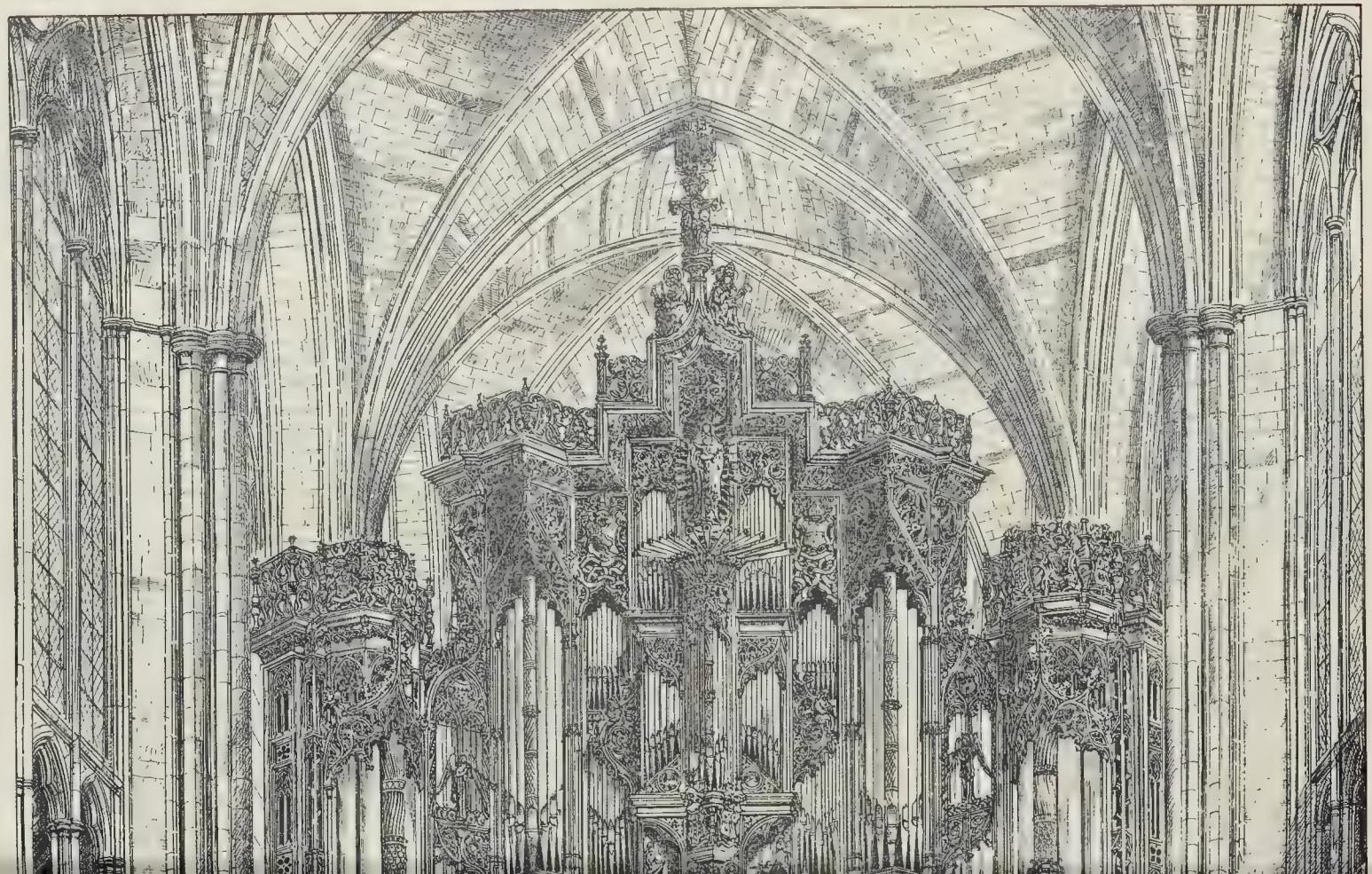
* We recommend to those interested in the subject of Ulm Cathedral, Herr Pressel's work "Ulm und sein Münster," and also his interesting account of the cathedral which appeared, fully illustrated, in the Leipzig *Illustrirte Zeitung* of Jan. 6, of this year.



"The Second Advent"

design for the upper portion of the West Window in Ledbury Church.

(*Executed by Lavers, Westlake, & Co.*).





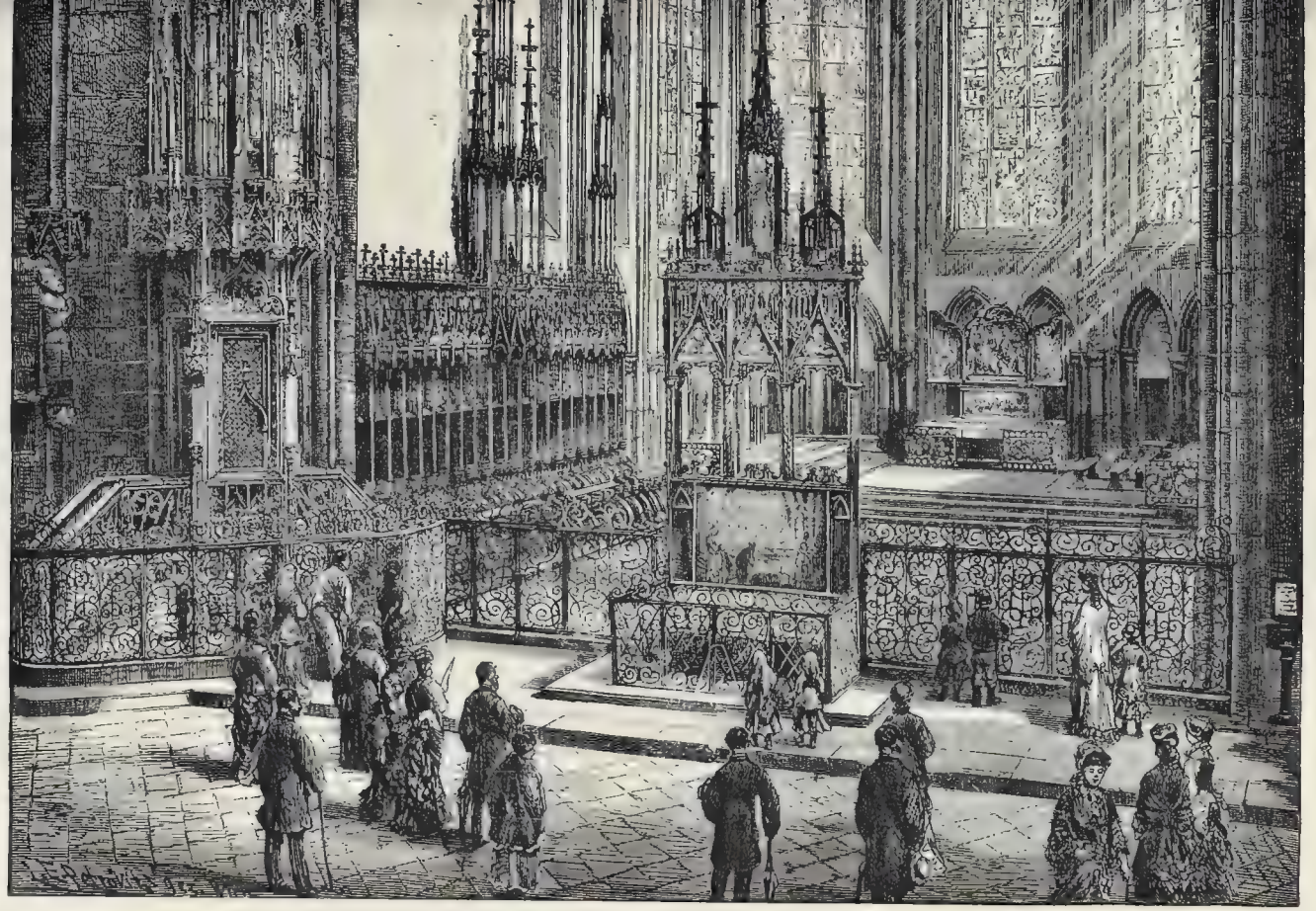
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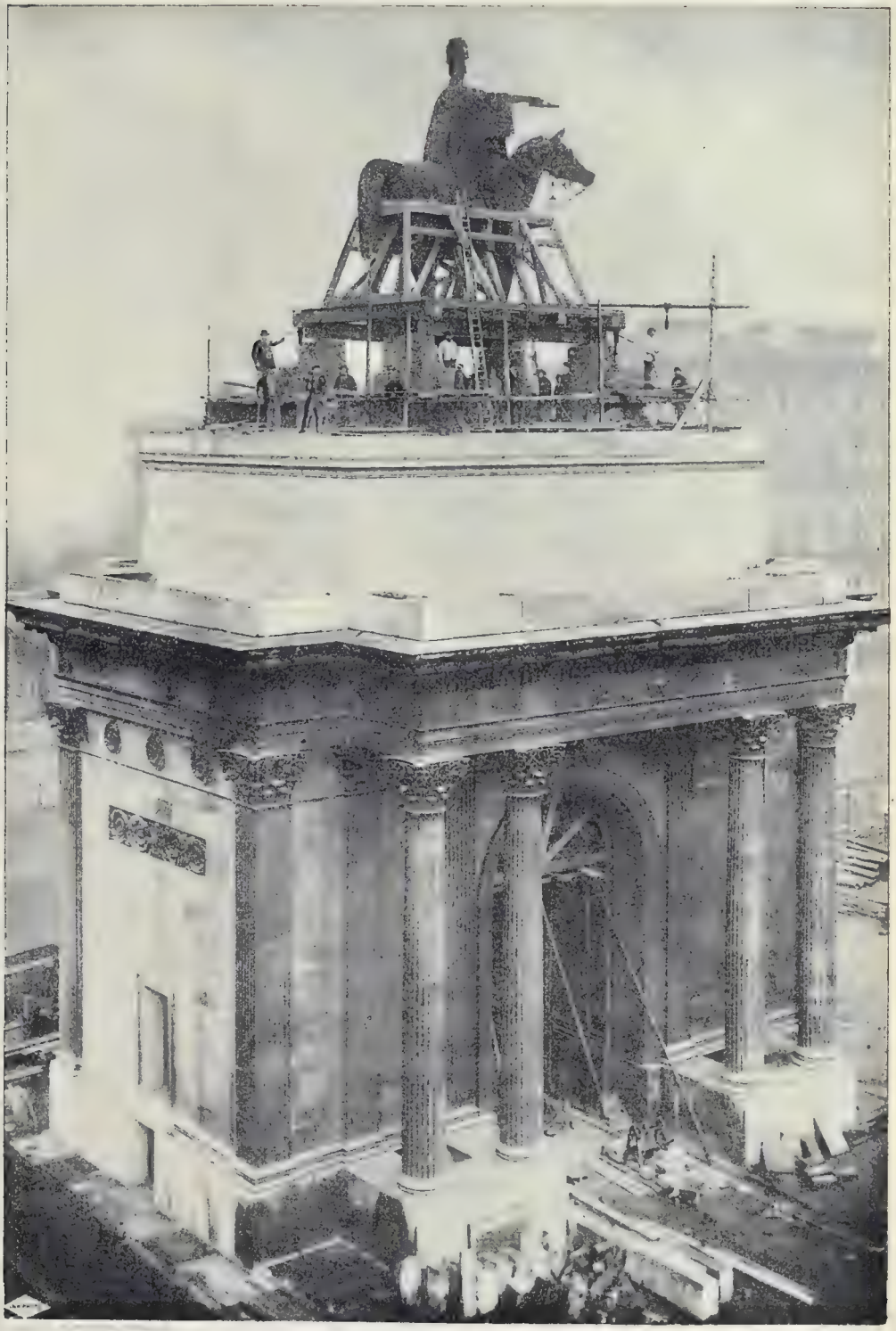
DESIGN FOR ORGAN.

To Illustrate Paper read by Mr. H. W. Brewer.





ULM CATHEDRAL: THE CHOIR WITH THE "SACRAMENTHÄUSCHEN."



THE WELLINGTON ARCH, HYDE PARK CORNER.

Showing the Arrangements made for Lowering the Equestrian Statue

THE TRIUMPHAL ARCH AND WELLINGTON STATUE, HYDE PARK CORNER.

THE late Mr. Decimus Burton was, in the year 1825, commissioned to carry out the Hyde Park improvements, which comprised the laying out of the roads and the design and erection of façade and triumphal arch at Hyde Park Corner. The arch was intended to form the principal entrance to Buckingham Palace, but the alterations subsequently effected in the approaches left the arch in what appeared to be a comparatively unmeaning, although a still effective, position. We fear that so much as this cannot be said for the position in which the arch is to be rebuilt, almost at right angles with its present position.* Happily, however, what it loses by change of position it will gain by being quit of the incubus of the colossal equestrian statue of the Duke of Wellington, which was erected upon the archway in 1846, notwithstanding the protests of Mr. Burton and of all persons of taste. We were among the first to raise an objection to this proceeding, the promoters of which should have been deterred from their ludicrous enterprise by the appearance of the wooden effigy which was experimentally set up on the arch in 1839. The statue, it has been officially intimated, is not to be re-erected on the top of the arch.

The illustration which we give this week shows the Archway viewed from the south-west, with the preparations for the lowering of the statue. This operation was commenced on the 24th ult., as already described in some detail by us (see *Builder* for Jan. 27, 1883, p. 122). For convenience sake, however, we reproduce some of the particulars then given. The pedestal on which the statue stood was first of all removed, but before this was done, at each of the four angles, and resting upon the substructure of the masonry abutments of the arch, a temporary pier of brickwork, 6 ft. 6 in. by 3 ft. 6 in., set in Portland cement, and about the same height as the pedestal, was erected. Upon these piers a pair of wrought-iron girders, 24 ft. long, was placed, one on each side of and parallel with the horse. These longitudinal girders are connected at each end by a transverse girder, 20 ft. long, the whole being well bolted together. At the points of crossing the girders are very rigidly bolted together and stayed with massive angle-iron brackets and braces, the bolts being 1 in. thick. This was the more necessary, inasmuch as when the statue is being lifted by the hydraulic jacks, the longer girders are really suspended to the shorter ones, for it is against the projecting ends of the latter, as hereafter stated, that the jacks exert their lifting power. The longer girders have a total depth of 16 in., with a web of ⅜ in. plate, the flanges consisting of 5 in. by 5 in. by ½ in. angle-irons. The transverse girders are 15 in. deep, having ⅜ in. web, and 4 in. by 4 in. by ½ in. angle-irons. This rectangular framework of girders serves as a basis on which rest numerous balks of timber, 12 in. square, some placed transversely, and others longitudinally. Between these timbers and the belly of the horse is a massive trussing of timber, holding the group in position, assisted by shores raking downwards and outwards from the top of the cradle-like structure in which the animal seems to be standing to timber balks secured to the tops to the iron girders. The following are some of the dimensions of the timbers: transverse and longitudinal balks resting on iron girders, 12 in. by 12 in.; timbers used in trussing, 8 in. by 8 in., well strapped and bolted together; curb surrounding body of horse at stirrup level, 12 in. by 12 in.; raking struts, 6 in. by 6 in. These timbers were all introduced and built up before the pedestal was removed, the whole weight of the group being carried by them and the iron girders, which, in turn, are supported by the temporary brick piers already mentioned. The ends of the transverse iron girders project some 2 ft. or 3 ft. beyond the ends of the longitudinal girders, and underneath each of the projecting ends is one of Tangye's hydraulic jacks, each, of course, having for its bearing the solid walls of the substructure of the archway, and each capable of sustaining a weight of 20 tons. It will readily be understood from what we have said that, first of all the temporary brick piers were removed, and now the masonry below them is being gradually removed, the statue quietly following in its downward course,—the demolition of the interior portion of the archway and the lowering of the statue advancing, in fact, *pari passu*, so that when, as it is hoped, the statue reaches the ground in safety, the interior of the archway will have disappeared. The statue weighs nearly 40 tons. Its height is 26 ft. 6 in. from horse's feet to top of hat; length from nose to tail of horse, 25 ft. 3 in.; height from feet to underside of belly, 8 ft. It has now descended quite out of sight, and is inclosed by the external masonry of the archway. Altogether it has lowered, up to the time of writing, about 31 ft. The contractors are obliged to stop the lowering operations at this point, in order to get out the soffit of the main arch, and as there is a great deal of work in this it requires some care, on account of its having to be re-erected. Probably it will take some ten days or a fortnight before the statue can reach the ground. The works are being carried out by Messrs. John Mowlem & Co., under the superintendence of Mr. F. T. Reade, A.-M.I.C.E.

Our illustration is a reproduction of an excellent photograph by Messrs. Bedford Lemere & Co., 147, Strand.

* For plan, showing the new arrangement, see *Builder*, vol. xlii., p. 486.

THE ROYAL COURTS OF JUSTICE.

THE CONTRACTORS' CLAIM FOR "EXTRAS."

AT a general meeting of the creditors of Messrs. Bull & Sons, the contractors for the erection of the new Law Courts, held at the Cannon-street Hotel on Monday last, Mr. Dunhill (of the firm of Craven, Dunhill, & Co.) in the chair, Mr. Broad, the receiver, submitted a statement of the debtors' affairs, showing total debts, 81,496*l.* as against total assets, 104,669*l.*, —exclusive, as we understand it, of the claim upon the Government in respect of extra works in consequence of variations from the original contract, in accordance with instructions from the late Mr. Street, amounting to no less than 120,000*l.*

Mr. Brown (of Messrs. Linklaters), called upon by the chairman to give the meeting some information as to this claim, made some extraordinary statements concerning the relations which subsisted between the architect and the contractors. We can find space for only a portion of Mr. Brown's remarks. He said that the Law Courts contract was, as Mr. Broad had told them, the key to the whole of the estate. The date of the contract was February 7th, 1874, and the amount of Messrs. Bull's tender was 719,797*l.* It had been generally stated, and he believed it was true,—that Messrs. Bull's name was originally struck out by Mr. Street, but was restored by one of the officials of the Office of Works, and their tender was accepted. After the tender was sent in the figure was reduced, some items being struck out that were included in the original bills of quantities. Roughly speaking, it was a contract for 700,000*l.*, but some of the very matters struck out were subsequently re-introduced into the contract, and formed part of this very claim for extras. He was informed by Messrs. Bull, and he had no reason to believe to the contrary, there was not a single item in the contract in which the prices had exceeded the original estimate. Then, as to the second question, the specification had not been adhered to, but from the moment the contract was signed, Mr. Street devoted ingenuity to alter it in every way. There had been thousands of alterations, some affecting the largest items in the contract. Universal experience showed that when a large building contract was altered from end to end it was impossible for an employer to object to having to pay a considerable bill for extras, and, further, such alterations largely increased the expense to which the builder was put. The actual expense should not have exceeded 585,000*l.*, but the books, which from beginning to end had been carefully kept, showed that upon the works and materials there had been expended in actual cash, 723,000*l.*; upon plant, 26,700*l.*, less the knock-down value, 3,000*l.*, which totalled the actual cost to Messrs. Bull to 746,700*l.*, as against th 580,000*l.* which ought to have been a fair outlay upon the contract, or 160,000*l.* more. That excluded all payments for financing, or interest of any kind whatever. If to that was added what the contract price should have been on such an expenditure, allowing 35,000*l.* for financing interest and contractors' profit of 14 per cent.,—in all, 139,538*l.*, the price would be brought to 886,000*l.* Now, as a matter of fact, they had received from the Government up to the present time only 724,000*l.*; they had retentions in their hands of 10,000*l.*, making 734,000*l.* This would leave a balance in favour of Messrs. Bull & Sons at the present moment of 152,000*l.* still to be received. In the statement it was put at 120,000*l.*, which was assuming they got a profit of less than 10 per cent. upon a contract of that description. Now, as offering some further test of these figures, if they took into account the expense for extras which had undoubtedly been incurred, they not having been contemplated when the original tenders were sent in, and add it to the average amount of the tenders made by the eighteen other firms who competed, they would find it would come to very much like the sum he had mentioned as a fair price to be paid for the work. Now as to the third question, whether they had been fairly treated, notwithstanding the enormous alterations he had made, and the expense he had incurred in consequence, Mr. Street had stated that he was only prepared to certify for 10,000*l.* for extras over the whole contract. Now, he (Mr. Brown) ventured to say that, looking at the contract, it was impossible that a building of such magnitude could be carried out with only 10,000*l.* spent in such a way upon it; the statement was utterly absurd, and it was preposterous that any public official should pretend to be misled by it. First of all, there were certain ascertained extras practically agreed to within certain limits, amounting in themselves to 11,000*l.*; and there were day works which had been done from time to time, and were never disputed by the architect until eighteen months after, although, if there was any question, it was to be raised in seven days,—these were therefore practically undisputed,—amounting to 25,000*l.* Next, there was an item in connexion with what were called joggles. The tender was made upon the assumption that the stonework was to be joggled, but the Government, to cut down the price, struck it out of the contract. As soon, however, as Messrs. Bull began to do the work, they were required to put joggles, but they went on with their contract as they had been going, whereupon Mr. Street sent his man, saying he would throw down the work with crowbars, and having forced Messrs. Bull to put joggles in, he refused to pass it as an extra, it being now thrown in their teeth that no written order was given them for it. The item alone came to 17,000*l.* Then there were certain groined arches throughout the building, and the character of the work on these had been radically altered, and made very much more expensive. The sum of 2,500*l.* had been claimed in respect of that, and he thought there was very little doubt it could be established. Then there was an item for rubbing the stonework throughout the building. Mr. Street insisted on its being done at a certain time, contrary to representations that were made to him, and the consequence was it had to be rubbed over again, the claim for this being estimated at something like 10,000*l.* There was a claim in regard to the last block amounting to 2,500*l.* The amount of the claims within ascertainable limits was 67,000*l.*, and he would now give an item which they could not put a figure on for the moment. Those who had been in the Law Courts would have seen that along each corridor there were channels in the stone work, to hold hot-water pipes and so on. The corridors were many miles in length, and the stone channels which the contractors had to make were not included in the original contract. That item alone would amount to many thousands of pounds. Then, too, there was a very large claim for the obstruction and delay of the work caused by the work of other contractors without any consideration for Messrs. Bull's convenience. Then there was an item in respect of roofs and ceilings. In the contract drawings, one design was given for the whole of the roofs of the eighteen different courts. The contract, however, was no sooner signed than Mr. Street insisted that the roof of each court should be of different design, and thus cast a great additional expense upon the contractors, but he had refused to certify for one farthing, although it had necessitated new patterns, &c.

It was resolved that the affairs of the debtors be liquidated by arrangement and not in bankruptcy, and Mr. W. H. Davis and Mr. Broad were appointed joint trustees to the estate, with Messrs. Oliver, Dunhill, Dominy, and Reid as a committee of inspection.

OF ARCHITECTURE AND DECORATION.*

"Truth in opposition to the world."

"Truth is uniform an l narrow, erroreudlessly diversified; in the field of truth the mind is passive, in that of error she expands and displays all her boundless faculties, all her beautiful and interesting extravagances and absurdities."

It matters little the style of architecture selected or adapted for modern buildings provided that utility, guided by reason, be allowed to prevail. Architecture and building are essentially necessary for the bodily protection of mankind from the influence of the weather, and decoration connected with the fine arts is desirable for softening the mind so as to subdue and regulate otherwise ungovernable passions. It is therefore a grave mistake to endeavour to substitute decoration for the more useful and important details of architecture.

All objects of imitation, like the materials of human knowledge, are a common stock, which experience furnishes to all men. And it is in the operations of the mind upon them that the glory of science consists. The fondest admirer of ancient art would never pretend that Palladio had copied Vitruvius merely from his working with the same materials of wood, stone, or marble, which this great master had employed before him. But were the general design of these two architects the same in any buildings; were their works conducted in the same style, and their ornaments finished in the same taste, every one would be apt to pronounce on first sight that the one was borrowed from the other. Voltaire truly said that "originality is nothing but judicious imitation."

Although it is most desirable to admit the public to museums, galleries of art, exhibiting architecture, sculpture, painting, flower-gardens, and other repositories of the animal, vegetable, mineral, and art kingdoms, still without educated masters to describe and elucidate the various leading points connected with form and colour, the exhibits to a great extent will be, as they now are, lost upon the uneducated and uncivilised multitude. I recollect having read somewhere or other that at the time when Stuart and Revett and the Dilettanti Society issued their beautiful works on Grecian architecture, a desire was expressed to visit Athens and its temples, buildings, and works of art, and a pilgrimage was made for a personal visit to the scene of such beautiful works. Imagine the disgust and disappointment experienced by the tourists exclaiming upon their return, that there was not anything to be seen but *débris* and unintelligible ruins and fragments. Another visit was consequently made to the Classic scene, and after the beauties had been pointed out to the tourists, and their minds educated or expanded to understand and appreciate the objects in question, the result was, of course, eminently successful, and a due and proper appreciation was obtained. Obviously it requires that all specimens, whether of nature or art, should be lucidly set forth by teachers properly educated for the purpose, otherwise the public will not realise the intrinsic value and importance of what they see.

Scientific teachers are not sufficiently remunerated, and they have a great dislike to popular knowledge. They would not now follow in the footsteps of the "Society for the Diffusion of Useful Knowledge," which about sixty years ago rendered eminent service with a view to popularise knowledge, and its efforts have never been surpassed.

The teachings of Joseph Gwilt and Owen Jones to the effect that colour is of more importance than mouldings, and that mouldings may be dispensed with, are now exercising a pernicious influence. The result is that in lieu of moulded cornices, dados, panels, &c., decorated papers are now substituted. Colour when judiciously used to increase the light and shade of architectural details is most valuable.

In a lecture given in aid of the Society for the Protection of Ancient Buildings, in the South Kensington Museum, on "Decorative Art," on April 5th, 1882, Pompeian paintings were alluded to; the only guide, observed the lecturer, "was that detestable Pompeian Court at the Crystal Palace, where the grossest colours were shown"; and that Mr. Jones's book was the only one which gave anything like a consistent history of the illustration of decorative art, "but for all that he [the lecturer] would like to have that book at the bottom of the sea."

* By Mr. W. Pettit Griffith, F.S.A. Read before the Liverpool Architectural Society on the 7th instant.

Although not concurring with Owen Jones in substituting colour for form, I cannot agree with the lecturer (a Royal Academician) in severely condemning works produced for the education of the people. The absence of correct taste displayed in the several Fine Art Courts of the Crystal Palace is likely to do much less injury than the good which the courts themselves will effect by setting the example of increased architectural embellishment. Neither can I endorse the lecturer's conclusion, that to propound general principles was not of much use, and that for good taste there were no rules.

It may be true that there is no just standard by which we may estimate the contour of beauty excepting that forcible and convincing impression which always follows the perception of an admirable object. Yet no real progress can be made in true taste without the most assiduous study of those rules which, whether "springing originally from the cold formalities of mathematical science, or proceeding from the inspired brain of an original inventor, have undoubtedly constituted through all time the guardians of sublime ideas and the nurses of quickening genius."

It is more easy to destroy and declaim than to invent or create, and it must perplex art students to be told that for good taste there are no rules. Mr. Mundella, also, at the West London School of Art, in December, 1882, seems to have forgotten that perfection is of slow growth, the more especially when he stated that "it appeared to him in 1851, and he held the same opinion still, that if all the British art work of the first half of the present century, in its wall-papers, its decorations, its hangings, and its very heavy furniture, had been collected in one vast pile and burned up, the world would not have been any the worse for it."

In 1872, see the "Grammar of Architecture," in the *Builder*, attention was directed to the importance of mouldings, and reference was made to Sir W. Chambers, who accused our greatest architects with having too much neglected the detail, it being the duty of an architect to attend to the minutest object, as well as to the most considerable. By so doing, he says, a practitioner may distinguish himself from the common herd of architects. The most masterly disposition, incorrectly executed, can only be considered as a sketch in painting, or as an excellent piece of music performed by country fiddlers.

The study of architecture requires to be carefully and nicely handled, and it must not be overlooked that the mouldings form the very grammar of the art; without them all buildings would be senseless masses.

It is of more importance just now than at any other period, that the proper use of good mouldings should be encouraged, as powerful temptations are offered to force the employment of colour, in lieu of form, upon the architecture of the day. The rage for decoration and colour has completely subverted all reason and common sense, so essentially necessary for the proper construction and utility of practical architecture.

Architecture at the Society of Antiquaries and the Royal Academy, if not actually ignored, has been, as is well known, neither fairly acknowledged nor represented. The former society, eminently useful in aiding literature, has more respect,—

> "for monuments that have forgotten
> Their very record."—Byron.

than for the useful and beautiful teachings of architecture. By architectural archæology,

> "Ye shall be taught by ruin to revive
> The Grecian forms at least from their decay,
> And Roman souls at last again shall live
> In Roman works wrought by Italian hands;
> And temples, loftier than the old temples, give
> New wonders to the world."

Architecture, as fostered at the Royal Academy, is scarcely practical, and may be compared to,—

> "some free design,
> Where breathing Nature lives in every line;
> Chaste and subdued the modest lights decay,
> Steal into shades, and mildly melt away."—Collins.

thus leaving no lasting lesson to enable the young architect to gain his living, by rendering himself practically useful to mankind.

Much has been written, from time to time, on the subject of shams in architecture and decoration. Each generation has to be educated, and perhaps it would be unreasonable to expect that the rising architect should be required to make himself acquainted with all that has been written or said in the matter. To the senior members of the profession these grievances are, of course, well known; but the public, who rarely observe or think without guidance, are entirely misled. It will, consequently, not be unprofitable, either to the young architect or the public, to direct attention to the want of common sense, often exhibited in many of the works of the present period. . . . .

There is not anything more common and humiliating to an educated eye than the universal modern system of supporting roofless gables, pinnacles, arches, statues, and chimney-shafts, with iron rods and bars. Had this miserable and mechanical system been pursued by our ancestors, there would not have been handed down to us even the time-worn, yet beautiful, remains of architecture, now the admiration of all intellectual observers.

The introduction of gablets on the sides of churches, town-halls, and other buildings to convey the light to the central parts of the interior was practicable and serviceable, but the modern system of employing gables for the sake of ornament, or appearance, or of breaking a monotonous horizontal line, leaving the apex of the windows on a line with, or below, the gutter-plate, is truly ridiculous.

With the introduction of the valley or V-roofs, originated another sham of a dangerous character. Independently of the weight of the roof, cast upon the partitions, walls, and floors, producing fractures and instability, the carrying up the screen walls, parapets, or inclosures, to form horizontal fronts, with no sustaining roofs, has led to serious consequences.

On December 18, 1881, a terrific gust of wind, swept across in a direct line from St. Pancras Church, in Euston-road, to the Grecian Theatre, in the City-road, and taking that as its direct course was felt with equal violence for a quarter of a mile on either side. In River-street and Green-terrace, Clerkenwell, where valley roofs abound, the screen walls or parapets, with portions of the roofs above alluded to, were blown into the road below.

To avoid similar calamities, all valley roofs should be finished with gables, so that the wind can uninterruptably pass through. It would, however, be quite as economical, and more safe, to have span or curved roofs, and thereby avoid all settlements in the structures, and at the same time affording a security against high winds and tempests.

> "This is my method, though I sometimes stray
> From Euclid's rigid rules to fancy's way."

It would be well to avoid tall chimneys on lofty buildings, often erected to produce a picturesque effect. Houses in a valley or on a low level, sometimes, of course, require the chimneys to be elevated.

Another miserable and dangerous innovation is a flat ceiling, ribbed and panelled with pendants, executed in plaster, with a paper cornice, instead of the wooden ceiling, formed with properly moulded ribs divided into compartments, and supported by a moulded cornice round the walls.

Of inconsistent shams, the recent so-called *restorations* of some of Wren's Classic London churches afford examples. Decorating columns in the centre of the shafts, with painted flat-moulded bands, is unreal and absurd. Paving the floors of the nave and aisles with wooden blocks similar to stable-paving, set in herring-bone fashion, will also not answer; although it is urged that matting will not be wanted. No washing will make these floors decent; the old-fashioned paving tiles were in every respect preferable for wear and appearance, even if unornamented.

The repeal of the window-tax, or tax upon light, health, and morality, produced a revolution in the architectural character of windows, by encouraging plate glass and increased light generally. A retrograde fashion or movement is now in vogue, encouraged by Government half-educated incapables, of contracting window openings, and glazing them with small lead quarry lights, with painted, stained, and cathedral glass. In a sanitary point of view, no residence, however *picturesque*, can be considered healthy, that is deficient of light and air. Hence the folly of re-introducing the productions of the days of Queen Anne:—

> "All smatterers are more brisk and pert
> Than those that understand an art;
> As little sparkles shine more bright
> Than glowing coals that give them light."—Butler.

What a blessing it is that Nature, when she invented, manufactured, and patented her

authors, contrived to make critics out of the chips that were left.

Twisted columns, though affording very pleasing curves to the uneducated eye, are universally acknowledged to be less beautiful than the common and regular columns. In the case of furniture, however, fancy or taste can be exercised with more freedom; still a seasonable admonition may be given to those who design the furniture of our time, to relinquish their vain hopes of *originality*, and turn themselves to a stricter imitation of the best models. But to stimulate their endeavours to this practice, the public taste should be reduced, by sober criticism, to a just standard.

The domestic furniture of our ancestors consisted of Mediæval tapestry, somewhat similar to the needlework hangings described in Homer. The art of weaving tapestry, which had been previously manufactured by the needle only, was first introduced into Europe by the Flemings. Planché says that "the fashion of hanging the walls of cathedrals and churches with tapestry, on great festivals, prevailed so much in the eleventh century, that it was denounced as a vanity by the Cluniese order of monks, notwithstanding it had received the sanction of a St. Gervais, abbot of St. Rignier, who had some remarkably fine tapestries made for that especial purpose."

The ark of the tabernacle, 490 years before Christ, affords an illustration of the early use of tapestry or hangings of fine-twined linen, wrought with needlework, the colours selected being blue, purple, and scarlet. The hangings were suspended by silver hooks, on pillars of brass or wood, overlaid with gold, and filleted with silver, and set in large sockets of brass. The only entrance was at the east end, and the tabernacle was at the west end. Following the Hebrew example, the early Christian Churches placed the holy table at the west end, and not at the east. This, no doubt, was considered important, as in the "Morrow of the Mathematicks," printed at the Three Bibles, on London Bridge, 1710, we are informed that Hebrew is the language we shall speak in heaven,—the original language of all others,—and that High Dutch is as ancient as the building of Babel.

About 1,000 years before Christ tapestry was used for bed-furniture (see Proverbs vii. 16),—"I have decked my bed with coverings of tapestry, with carved works, with fine linen of Egypt."

Tapestry was introduced into Europe by the Crusaders, the English and Flemish being the first who distinguished themselves in making it.

In the twelfth and thirteenth centuries the art progressed rapidly, in consequence of the increasing demand for a material which clothed the cold, comfortless stone walls of the castles and mansions of the nobility, and not only gave warmth and cheerfulness to the chamber, but frequently illustrated the actions of its owner or his chivalrous ancestors.

During the thirteenth and fourteenth centuries, there can be but little doubt that the looms of Flanders and France produced tapestries of greater richness of colour, and much improved character of design. Heraldry began to lend its powerful assistance to effects both of outline and colour, and "balls of worsted," of green, blue, and other grounds, covered with the armorial shields or badges of the nobles and knights of Christendom, are to be found specified as valuable furniture or affectionate bequests in hundreds of documents of that period.

The invention of paper-hangings, which dates about the beginning of the seventeenth century, probably tended to check the demand for the more costly article of tapestry.

Of the "Influence of Fashion in Architecture" (see the *Builder*, vol. xxi., p. 38), the power exercised by fashions has a wider range than architecture; permit me to mention dress,—too nice a subject, indeed, for an architect to pretend to any skill in it. When man walks he plants his whole foot on the ground, and is termed a "plantigrade"; a lady who walks on her toes and raises the heel from the ground, is known as a "digitigrade." This, in combination with the "Grecian bend," presents a humped back. Wren, in the "Parentalia," says, "The women, as they make here [Paris], the language and fashions, and meddle with politics and philosophy, so they sway also in architecture: works of filgrand and little knacks are in vogue."

Although the origin of fashions was to conceal deformities,—such as long coats to hide the ill-made legs of Charles VII. of France, and shoes with very long points, fully 2 ft. in length, to conceal a large excrescence on one of Henry Plantagenet's feet,—still it is to be deplored that the beautiful forms of the more perfect should be hidden and good taste destroyed. The Court, in all ages and in every country, have been the modellers of fashions; so that all the ridicule, of which these are so susceptible, must fall on them, and not upon their servile imitators the public.

Our ancestors in the furniture of their houses were, in the upholsterer's department, even so late as the latter part of the sixteenth century, provided with but rude accommodation; but their tapestry bed-furniture, and the magnificence of their plate, far surpassed similar articles in modern times. Carpets were rarely used, and in the description of an interview with Queen Elizabeth at the Palace of Placentia, at Greenwich, in 1598, which appears in the travels of Paul Hentzner, a German, it is stated:—"We were admitted by an order Mr. Rogers had procured from the Lord Chamberlain, into the presence-chamber, hung with tapestry, and the floor, after the English fashion, strewed with hay [rushes], through which the Queen commonly passes in her way to the chapel."

The Society of Arts, in 1754, gave the first exhibition of designs for decorative purposes. The example was not followed in France till September, 1798.

In 1852, the Government formed, in the once town residence of the Duke of Marlborough, a temporary exhibition, termed by art-critics a "Museum of Horrors," as the objects illustrated indicated what to avoid, and not examples to be imitated, such as "horrible carpets, hideous tapestry, wall papers shocking by their ugliness, revolting stained glass, and wretched ironwork, all embodying bad form or bad colour."

The Great Exhibition of 1851 opened up fresh and more important stores of art, both useful and ornamental. The example set by this exhibition has been, not only repeated in this country, but all civilised countries throughout the world.

Every country has its own style of decoration, which may be best gathered in its native soil, and every age must, therefore, be allowed its proper character and commendation.

In 1878 a competition was instituted by the Council of the Society of Arts, as trustees of the sum of 400*l.*, presented to them by the Owen Jones Memorial Committee, being the balance of the subscription to that fund, upon trust, to expend the interest thereof in prizes to "Students of the Schools of Art who, in annual competition, produce the best designs for household furniture, carpets, wall-papers, and hangings, damask chintzes, and regulated by the principles laid down by Owen Jones."

In all public and private buildings the size or proportion of each room has to be determined prior to the selection of suitable decorations. A duly-proportioned room, inharmoniously decorated, is more agreeable to the eye than an ill-proportioned room tastefully ornamented. By internal proportions is meant the disposition of the three dimensions of length, breadth, and height, which is necessary to render a room or apartment beautiful or pleasing in its form. Sir W. Chambers says that the proportions of rooms depend, in a great measure, on their use and actual dimensions.

Architectural dados round dining-rooms, studies, &c., consisted of a base or skirting, dado, and cornice or chair-rail. The unmeaning introduction of ornamental-paper dados, omitting the moulded cornice or chair-rail, and substituting a paper border, completely mars the architectural character of rooms. This is to be regretted, as an imitation marble dado, with a border top and bottom, could be with propriety and good effect introduced between the base or skirting and the properly moulded cornice or chair-rail.

It is well to point out inconsistencies, as, in an age of tinsel, sage and pithy reflection is a novelty.

> "Each petty critic can objections raise,
> The greatest skill is knowing when to praise."

It should also be noted that,—

> "Change grows too changeable, without being new."
> Byron.

Paper cornices or borders may be acceptable and appropriate for cabins on board a ship; they, however, have a poverty-stricken appearance when used in the rooms of dwelling-houses. In a sanitary point of view walls should be lined with polished marble, enamelled slate, glazed bricks and tiles, or varnished woodwork; in fact, all non-absorbents are to be preferred to papers, and these, when used, ought to be made washable by being varnished.

It is, by far, more natural, less artificial, and more durable, to line the interior of buildings with marbles, as in the Pantheon, at Rome, than to resort to painting, especially in our climate. Besides, polished marble copiously reflects the rays of light; all kinds of polished wood in ornamental furniture likewise are beautiful for the same reason.

Hesiod, 944 years B.C., in his "Shield of Hercules," says,—

> "O'er his breast he fitted close
> The corslet variegated, beautiful,
> Of shining gold."

Hanging long rows of china plates, and placing crockery on shelves and ledges, may be very convenient in a kitchen and necessary for collectors, but very offensive to an educated eye, even if the colours be harmonious, because they are deficient in mind, and are no better, if so instructive, as the walls of savages hung with the scalps of their victims or enemies, which to them are equivalent to historical paintings, of which they know nothing.

It is equally absurd to tint or paper rooms to set off to advantage the complexion of the company, as no two faces have the same colour the like as regards ventilation,—the air which is refreshing to one person is a draught to another. The atmosphere of the room ought to be agreeable to all, without an undue heat or draught.

It has been observed that when you enter a room, it should present to the eye a harmonious whole, so that no one part in particular claims attention. Thus:—

> "Colour and form alike their powers engage
> In trophies of the proud baronial age;
> Azure and crimson, green and gold, unite,
> Friezes and chapiters, in glory dight,
> Blaze with imposing splendour o'er the sight;
> Enamell'd flowers their graceful foliage twine,
> And pictured mouldings thread the golden vine;
> Fair in their form, and glorious in their hue,
> They blend harmonious, and the mind subdue."

There is a prevalent fault in using stuffy decoration. It has been well observed that there is a "sort of skill displayed in the conjunction of dull-greens, dull-browns, dull-reds, and dull-blacks that produces the effect on one of breathing used-up air; the instant you come into a room decorated in this wise you gasp for a breath."

With respect to hanging paintings and water-colour drawings, there is no great diversity of opinion as to the tints of the walls suitable for their reception.

For a pavilion Byron says:—

> "From my mansion in the cloud,
> Which the breath of twilight builds,
> And the summer's sunset gilds
> With the azure and vermilion,
> Which is mix'd for my pavilion."

All rooms are, more or less, enlivened by flowers, particularly drawing-rooms; care should, however, be taken and the judgment exercised in grouping them, so as to harmonise or contrast one with another. This should be confided,—

> "To no mean hand, and asks the touch of taste,
> Here also grateful mixture of well-match'd
> And sorted hues (each giving each relief),
> And by contrasted beauty shining more is needful."
> Cowper.

Mr. J. D. Crace complains of the furniture in the drawing-room being "always restored to its proper place; no books but the 'elegantly-bound' are allowed to repose on the table, newspapers are swept away, the only signs of writing are an impossible ink-stand and blotter placed where no one could see them." Mr. Crace seems to forget that the drawing-room is neither a reading-room nor a library, but a conversational reception-room.

As the education of the people advances, ecclesiastical vestments and church decorations will, or ought to, become of minor importance, that is, if the Rector of Billingford, in Norfolk,* is to be credited. He says: "I look upon these habiliments or trappings as an inoffensive mode, employed solely to give religion and its professors a proper consequence in the eyes of the unthinking vulgar."

Disraeli confirms this when he says the Catholic religion has ever considered the pomp of the clerical habit as not the slightest part of

* Tindal's Excursions in Literature and Criticism, 1791.

its religious ceremonies; their devotion is addressed to the eye of the people. Although pure and undefiled religion ought to be guided by reason; still, as Dr. Johnson remarks, "fine clothes are good only as they supply the want of other means of procuring respect."

Sturm, in his "Reflections," says we are still young in knowledge, and very ignorant of the true and pure tenets of religion, which still labours to throw off the shackles of ceremony and the yoke of superstition, with which the ignorance, the presumption, and the audacity of man has obscured her simplicity and sullied her purity.

In natural productions, uniformity, regularity, symmetry, &c., well known to be agreeable to the eye, are solely based upon utility; hence the absurdity of any attempt to separate the ornamental features from the constructive. Akenside was of this opinion when he asked,—

> "Can beauty dwell
> Where health and active use are wanting?"

Finally it will be seen that in architecture and decoration, notwithstanding there are certain laws, rules, or principles necessary to be followed, much has to be left to the discriminate or educated and practical eye, to decide upon the various points to be observed in each case, prior to a successful verdict being obtained as to the best result, and ultimately the old adage will have to be appealed to, viz.:—

> "'Tis use alone that sanctifies expense,
> And splendour borrows all her rays from sense."

THE CONSTRUCTION OF THEATRES.*

The construction of the modern theatre, in the rapid increase of these buildings which we have witnessed within the last few years, presents many points of the greatest interest to a society like the one I have the honour of addressing, inasmuch as though the finished aspect of a theatre is due in great measure to the work of the architect and decorator, yet the shell of the building has now to be designed, in order effectually to meet its requirements, with the utmost attention to the latest principles of science as exemplified in the most advanced engineering skill of the present day.

It has been said that theatres are the only important buildings of modern times designed wholly without reference to precedent, and this proposition being admitted, it follows that, in one respect at all events, the subject is suited to the consideration alike of architect and engineer; the former, to work successfully, follows precedent for the most part, while the latter is ever seeking new inventions, and making use of new combinations of materials. Good building, and therefore in a wide sense good architecture, is the result of the united efforts of the engineer and architect. It is not given to one man to be a successful follower alike of both callings, and few better subjects than a theatre could be chosen for members of both professions to meet on friendly footing and together design the building, the one to exhibit "the beauty of fitness" to its utmost degree, and the other to complete the edifice and enchant the senses, making that "music of the eye," which has been aptly applied to noble architecture.

Now, the subject being a large one, I must necessarily divide it in some form, and confine my remarks more particularly to the construction of the auditorium. The exterior of a theatre is a wide subject, and, being purely architectural, I do not purpose touching it, and as to the stage generally, to describe its construction would occupy a whole evening alone. We have, then, to consider the best mode of constructing a theatre in the present day, and more especially for this country. A few years ago it was said "that foreign theatres are of no possible consequence to Englishmen." An English theatre is nearly always built on a close and confined site. The architect's difficulties are increased by want of funds as well as want of space. On the Continent the State assists the work, and the site is commonly open and well selected. Their audiences go thither under very different impressions, and the habits of foreign nations differ so materially from our own that it by no means follows that what is wanted abroad is therefore required here. Admitting this, yet I should like to run through a short *résumé* of the principal ancient and existing theatres, as it may lead us the better to understand the consideration we have in view.

We are all familiar with the form of the Ancient Greek and Roman theatres, and we all know how excellent that form is both for seeing and hearing. As to the latter, Saunders (1790) relates how at Verona the custom was to erect a stage on summer evenings in the arena of the old amphitheatre, and as spectator he sat on the top row of seats and heard distinctly the voice of the actor at the distance, in a direct line, of about 160 ft. (In the Albert Hall the distance from the speaker to the back of the picture gallery is 186 ft., and the width across 232 ft.) To assist the sound over these vast tiers of seats the Romans placed in cavities at settled intervals under the seats musical vases answering to the different notes in music, which strengthened and spread the sound to every part. The effect of these vases has been doubted, but surely so practical and scientific a people would never have repeated their use from time to time had they not been effective. The seats in these theatres rose in the form of an amphitheatre to the extent of a semicircle, the whole of the orchestra likewise formed a semicircle, the diameter of which formed the front line of the stage. In these buildings the auditors hear principally by direct natural radiation of the voice. The stepped semicircle of seats stopped against a lofty wall with a deep and wide central recess in it which formed the scene. The stage elevated to a considerable height occupied a space in front of this central scene, and the Greeks differed from the Romans in projecting their orchestra at a lower level in front of the stage into the arena. The lofty enclosing wall round and above the topmost row of seats,—often with a range of columns against the inner face,—kept the sound within bounds and formed the support for the velarium. Saunders was so much taken by the circular form that he published a plan showing the seats all arranged round two-thirds or more of a circle, but it does not appear to have met with approbation, as I am not aware of its having been carried out.

The ancient forms suited very well for daylight performances in fine weather and dry climates, but a different state of things at once arose when the erection of a permanent theatre was determined upon. The oldest permanent theatre still standing is that of the Teatro Olympico at Vicenza, built by Palladio, according to the principles of Vitruvius, in the latter half of the sixteenth century, and in 1639, Richelieu built the original theatre of the Palais Royal, which was long considered the type and model to be followed in the design of such structures. In the same year a theatre was erected in Venice with two tiers of boxes arranged circularly round a pit, sloping backwards as at present, thus really inventing the present form of theatre; and in 1675, Fontana first introduced the horseshoe form in a theatre at Rome, known as the Tordinoni.

The theatre at Bordeaux is said to be the most magnificent of its class in Europe; it was commenced in 1773, and occupied seven years in building. In the auditorium a Corinthian order was introduced, running the height of three tiers of boxes, and however grand its classical effect may be, the interruption of sight by the columns is a defect which cannot be repeated in the present day.

No mention of theatres would be complete without a word or two on the great La Scala at Milan, completed in 1776, thus more than a century old, and still, perhaps, the best lyric theatre in existence, as well as the largest. From the curtain to the back of the boxes is a distance of 105 ft., but the stage projects some 19 ft. in front of the curtain, with stage boxes on either side. The width across the back of the boxes is 87 ft., 71 ft. 5 in. between the fronts, 96 ft. from the curtain to the box front, and 69 ft. high from pit floor to ceiling. The width of curtain is 49 ft., and the depth of stage 77 ft. There are seven tiers of boxes similar in extent and height, and the grandeur of its internal appearance is due, no doubt, to this extreme simplicity of arrangement. Its acoustic properties are good, but the upper tiers near the stage must be extremely inconvenient. Across the passage round the boxes is a small *salon*, or cabinet, belonging to the box adjacent where supper can be served. It was from Italy that the fashion of closed boxes came, as there the audience receive visitors or play cards during the evening.

San Carlo at Naples, built in 1816, on the site of an older building which had been burned, is another grand theatre: its dimensions are only a foot or two less either way than the Scala. The width of curtain is, however, more, being 53 ft. The stage projects a similar distance, and underneath this projection is placed the orchestra. The pit of San Carlo seats 742. Its internal appearance differs considerably from La Scala, as there are six ranges of boxes and they are wider on plan, thus lessening the accommodation and reducing the scale to the eye.

We can admit the magnificence of these edifices from the point of view that the audience come together to see each other as much as the play, but only a limited number can see the stage well or the acting at all. There are no balconies, no receding of the circles in the upper stages, and no inclination of the fronts towards the stage; in a word, no effort has been made to give all alike an equally good view. All these improvements have been reserved for our own time. As to the receding of the upper tiers, Saunders was the first to call attention to it in 1790, and he, though very sound in many of his deductions, gives a curious reason for its adoption. He says, "The receding of the upper gallery has always been found of utility on account of the noise and clamour continually raised there by an English audience."

We had nothing to compare with the great Italian theatres until Novosielski rebuilt the Opera House in the Haymarket in 1790. Mr. Warington Taylor, writing in 1864, remarked it was the very best theatre in the world for sound, and, he adds, it was certainly built without any scientific principles of acoustics. In shape it was like a drum, and the wall of the auditorium was flat. There were no projecting ornaments of any kind, the outside of the boxes was flat and even, and the ceiling was perfectly smooth, without any ornamentation in relief, and the form that of a slight dome. The pit tier fitted tight on to the floor. In this short description we have, I think, the whole secret of good sound. Sound expands equally every way, and all bodies attract sound, and sound is absorbed by all soft and dull surfaces within reach. Water has a remarkable way of attracting or conveying sound, and an authentic and curious instance is recorded of its action in a theatre. At the Argentino Theatre in Rome some minor alterations were once made, and the workmen stopped and diverted a stream of water which flowed under the building from the stage through the auditorium. The acoustic properties of the house, which were good before, were ruined, and the stream of water had to be permitted to run again in its old course.

The good seeing of the audience practically limits the size of a theatre; the form is conducive to good hearing, and therefore as long as the direct force of the voice is depended on we cannot get far wrong; the increase of the sound may be safely left to itself, and our attention should be given to prevent reflexion from the voice, to shut out external sounds, and how best to trap off the conversation or sound of one part of the audience so that it shall not disturb the rest. There should be no vacant spaces without the circle, the brick wall ought always to be at the back of the boxes, though, for safety against fire, another may be required across the corridor. If there is a partition at the back of the boxes good hearing can scarcely be expected. It does not appear, however, that openings in the wall round the boxes are detrimental to the sound, for an instance is on record as to the theatre at Lisbon which was considered one of the best in Europe, yet after a short time they found the sound was lost. The cause was discovered to be in consequence of certain passages at the backs of the boxes having been stopped up, and when they were re-opened the sound returned. Let the fronts of the boxes be as simple and free from hangings and curtains as possible. All ornament in relief is fatal to sound; it stops its progress and true course.

M. Garnier, when about to erect the Opera House in Paris, visited most of the theatres of note in Europe, and he found so many different and contradictory acoustic qualities and non-qualities that he came to the conclusion it was impossible to reconcile the numerous theories, that the science was yet in its infancy, and the result uncertain. To this conclusion we may partially assent, but "the science in its

* Civil and Mechanical Engineers' Society. An ordinary meeting was held on Thursday, February 1st, the President, Mr. R. Harkness Twigg, M.I.C.E., in the chair, when Mr. Augustus W. Tanner, A.R.I.B.A., read the following paper.

infancy" I take exception to. Is it not rather we, who from time to time lose sight of the science by reason of our persistent opposition to all its principles? The Greeks knew the principles and built to suit them. We, I think, know them too, but we try to force the principles into our buildings.

At the present time there is great activity in theatre building, and in the alteration of existing theatres, consequent, in great measure, on the recently promulgated regulations of the Metropolitan Board of Works. It would be needless for me to trouble you with any of the clauses contained in the Regulations, or likewise with any of Captain Shaw's excellent suggestions. They have all been published, and no architect would dream of building a theatre without first consulting them before committing his design to paper. These regulations have, however, caused a complete revolution in the construction of theatres. Theatres have become more intensely practical. Common sense and attention to the absolute wants of the place are the main points to bear in view in making a design. If true before, it is doubly true now that a theatre has become a pure piece of practical arrangement which the greater portion of the world never see or care to understand. If it was useless before, it is certainly of no use now, for any one entrusted with the design of a theatre to spend time and money in running all over the Continent to study examples. The artist who is elated with the importance of his commission must descend from flights of fancy to the study of rules and by-laws, to which all his design must be made subservient. Now, before we go on, I must for a moment read what Saunders wrote on this very subject of safety from fire so long ago as 1790, remarks which are excellent, though, I think, never made law: "Theatres should be surrounded by a thick wall all round the stage and auditorium. Over the curtain an arch may be turned, on which the wall may be continued up quite through the roof so as to prevent all connexion of the timbers. The passages communicating with the boxes should all be arched, and have an easy access to spacious stone staircases that would, in case of fire, enable the audience to depart without the least hazard; and though it is necessary to confine the entrances to few in number, yet there ought to be many large doors hung on the outside ready to be thrown open at the conclusion of the performance, and upon any sudden alarm. Partition walls should be carried quite through the roof in as many places of the building as opportunities afford, and no one would neglect to render it insulated where possible." Had these words been more regarded within the last century, perhaps fires would have been less destructive, though, after our recent experiences, one begins to wonder whether any construction can really be devised to offer effectual resistance to the flames. The elaborate regulations are, after all, but the natural progressive outcome, as it were, of Saunders's remarks.

The great points to bear in mind in planning are,—transfer all operations possible in the working of a theatre to a separate building, fireproof construction throughout, solid division walls between the various parts of the building, convenience of access, an extra exit-door to every entrance and contiguous to it, all doors to open outwards, the exit-doorways to be the greatest width of the whole passage, absence of steps in corridors, use inclined gradients of 1 in 10 in preference, hand-rails 3 in. from walls, no corridor or staircase less than 4 ft. 6 in. wide, an additional 6 in. for every 100 persons to be accommodated, increase the width of corridors when other passages meet them by the width of each added passage, protection of structural ironwork, no workshops either above or below the auditorium, 3 ft. passages at the back of all the circles, separate and distinct entrances and exits from the various parts of the house, a proportional area of 250 square feet for every 100 persons throughout the lobbies, passages, and landings. In parenthesis, I may say one Continental country requires a provision of two exits for 300 persons, and three for 500. Strong wooden barriers in all spacious corridors breaking up a possible crush and separating the people into fifties; strong divisions in all staircases, 6 ft. wide and over. Exposed stone for floors and corridors is a bad material; it should be supported throughout, and bedded on concrete. Fire-bricks, laid in fire-cement, is the best fireproof material for floors and staircases; and when all is built in accordance with the rules, let the manager's fireman be a real fire-brigade servant, not an ornamental appendage only. These regulations thus cursorily gone over should be borne in mind when studying examples of works in progress. A theatre badly built is the worst and most dangerous of all buildings; but, save the expense, there can be no possble difficulty whatever in making it perfectly safe, even with kitchens and smoking-rooms on the premises.

A few days after the Wood-street fire, you may have read a letter in the newspapers as to perforating box-girders and charging them with water. Captain Shaw, in 1876, promulgated this idea, for he describes how perforated pipes could be fixed in his work on "Fires in Theatres." Mr. Boucicault, in 1867, in writing a letter to the *Builder*, advocated the use of a system of pierced pipes on the under-side of the joists in the gridiron floor, such pipes to be attached to the constant main of the water service. The idea is not a new one, but when duly worked out and applied to the building, the water might fall at the wrong time and place without touching the fire, or a large amount of uncalled for damage might be caused by the apparatus being used on a false alarm. When Drury Lane was burned down, in 1809, there were, in the upper part of the house, two immense reservoirs, of capacity sufficient to inundate the house; whether they were empty, forgotten, or were not to be reached, they failed in their purpose. A large iron curtain had also been set up between the auditorium and the stage. A few months previously to the fire it was found to be too rusty for use, and was removed. The huge tank in the roof of her Majesty's Opera House in the Haymarket remained *in situ*, and was a conspicuous object long after the destruction of this building by fire on December 6th, 1867. The watchmen on the spot declared they attempted to use the supply of water to quench the fire at the first outbreak. The cause of this fire was never known; some said it was due to the over-heating of a flue. The *Builder* suggests it might have been caused by a spark which smouldered and spread till heat was generated sufficient to produce flame, for the last incident that took place on the stage was the descent of *Don Giovanni*, amidst fire and smoke, to regions below. The wood lining throughout the house caused its rapid destruction; it burned fiercely, and was destroyed within an hour. The staircases were also of wood. Professor Roger Smith, writing after the fire, says, "That all the interior faces of the building,—those against which the vibrating mass of air impinged,—were of resonant material, *i.e.*, of dry wood, in as long lengths as possible, and fixed at as few points as possible, and to this construction were mainly due the very remarkable acoustic qualities. Nor is there, so far as I am aware," the Professor adds, "any possibility of securing this advantage with incombustible materials."

Fergusson makes some excellent remarks on the ideal form for an auditorium of a theatre. As to the horizontal section or plan; each tier in the centre is kept perpendicularly over the one below, and each tier of side boxes or stalls is thrown back towards the wings till the uppermost tier becomes a semicircle. The whole audience sit more directly facing the stage, and the volume of sound becomes considerably increased throughout the whole house by its freer expansion immediately on leaving the stage. I know this plan is scarcely likely ever to be carried out on account of the valuable space lost to the management in the angular-shaped compartments on either side next to the proscenium wall. Still, I give it as the idea to be aimed at. In determining the longitudinal section, the inclination usually given to the stage is ½ in. to every foot. The drop from the front of the stage to the floor of the orchestra is 4 ft. 6 in. Produce the inclination of the stage to about the back of the pit, and the slope of the pit floor is a line from that point to the floor of the orchestra. This method, like all rules, must be modified to suit the wants of each individual plan. The slope of the upper tiers is obtained by a line drawn from the same point, touching the edge of each step in the floors of the several circles and gallery.

We now come to the description of a theatre in course of construction and rapidly advancing towards completion, and for this I am indebted to the great courtesy and kindness of the architect, Mr. Thomas Verity. The Pandora Theatre, in Leicester-square, built on the site of Savile House, will prove to be one of the most remarkable spectacular theatres built in our own day. It is designed for the service of music, for the ballet, and for scenic effects. It presents many interesting and entirely novel points of construction. The whole design and plan of this building are bold and grand from its great and imposing dimensions. The auditorium is arranged to seat 3,000 persons, besides a large space for promenade. The entrances and exits are admirably planned for comfort and safety. Besides the ample and commodious approach from Leicester-square there are fireproof extra entrances and corridors on the level of Lisle-street, and giving access from that thoroughfare. Spacious stone staircases communicate with these corridors from every tier. The auditorium measures 60 ft. from the proscenium curtain to the front of the grand tier boxes, and is 60 ft. in height from the stall-floor to the ceiling, and contains three tiers above the stalls. The greatest transverse diameter is 58 ft. between the fronts of the boxes on the first tier circle. There is a dress-circle or balcony projecting, however, in front of the boxes, and the clear dimension between the fronts of this circle is 50 ft. This balcony is constructed after the Parisian fashion, without the objectionable columns for support being fixed on the outer edge of the same. A similar plan was adopted in the New Opera-house in the Haymarket. The columns are here (in the Pandora) successfully placed as many as five rows back on the plan. The greatest projection of the cantilever girders supporting the circles is 12 ft. 4½ in., in the centre of the auditorium, from the columns or fulcrums, gradually lessening round the sides to a projection of 4 ft. 2 in. from the columns next the proscenium wall. These wrought-iron cantilever girders carried by the cast-iron columns are of the most studied and unique design. You will see, by referring to the working drawings of these girders, that the cantilever principle is here carried to the greatest perfection. Every piece of iron, I have been assured by Mr. Ordish, who designed them under Mr. Verity's direction, has been calculated to the greatest and most exact nicety. The plates are ½ in. thick. Over the columns where lies the greatest strain, the strength is added in the most scientific way. L-irons, 6 in. square, are bolted upright in pairs on either side of the plates, packing-pieces are carefully introduced next the cap and base of the columns respectively, and cast-iron blocks are bolted through the L-irons at intervals; the transverse girders going round the circles meet here, and the upright portion of the cantilever between the base of the cast-iron column above and the cap below, becomes a continuous portion of the columns. The columns or fulcrums for these noble cantilever girders are placed on plan about 13 ft. from the surrounding wall of the building, bringing the total width of the auditorium up to the grand dimension of 86 ft. To the transverse girders above mentioned are bolted at average intervals of about 6 ft. lighter rolled-iron joists, radiating towards the centre of the house. Between the columns and the wall the floors of all the tiers throughout are constructed of Messrs. Dennett's patent fire-resisting concrete. There are no hollow spaces between ceiling and floor. The floor is finished for the most part with the same material to a fine surface. The absence of any space for heated air to accumulate, should fire unfortunately occur, renders these floors completely fireproof, in every sense of the word. Rings of wrought-iron extend from point to point round every circle at the extremities of the cantilevers. The projecting portions beyond the columns are not constructed throughout of fireproof materials. The half-inch scale section throughout all the tiers shows the columns above columns and the cantilever girders running through. On the gallery level you will observe that the columns from that floor to the roof project over the columns below a distance of 3 ft. 6 in., and are supported by the girders which run from the wall over the lower columns. The upper columns are principally for decorative purposes, and are to be covered with Jackson's canvas plaster, a fire-resisting material of excellent quality which has stood the test now of thirty years' use. These upper columns also impart a certain amount of rigidity to the whole structure from floor to ceiling. There are many special cases in this wonderful iron structure which had to be met by special arrangements, as for instance the varying rake of the slope of the stepped gallery, in some cases the raking girders run

from the top of the wall or just under feet of trusses to the foot of gallery; in others they stop the feet of the trusses, and so transfer the weight of the latter to the wall. All these interesting points in detail could be far better described by the engineer who designed them. The whole of this work is now fixed complete, and there it stands as tight as a drum, and perfect in every respect. Under the iron roof, which is covered with boarding and zinc, it is proposed to have a velarium similar to that in use at the Royal Albert Hall, the design of the roof of which building Mr. Verity had a great deal to do with. This will no doubt give an exceedingly handsome effect, and prove very beneficial to the acoustic properties of the house. These acoustic properties have been thoroughly considered throughout all the arrangements. The walls at the backs of the circles and boxes will be lined all round with match-boarding. The whole of the woodwork throughout the building will be thoroughly saturated with Astrop's cyanite, a new material rendering the wood to a certain degree impervious to the effect of fire, inasmuch as, though it may be consumed, the wood will not support combustion. One wash of this material suffices, and it supersedes the use of asbestos, which requires four or five coats to prove effective, and then, if exposed to a sharp blow, is liable to flake off and leave the wood exposed. The canvas and cloths, too, when not painted in distemper, will also be saturated with Astrop's cyanite, for it is equally applicable to such substances. The auditorium is four floors in height,—the pit and stalls on the floor, the balcony tier, the dress-circle tier and promenade, and the gallery tier. The promenade at the back of the dress circle above the balcony is of a uniform width of 14 ft. The whole of the ceilings, box-fronts, and decorations in the auditorium will be executed in Messrs Jackson's patent canvas plaster. The width of the stage opening is 33 ft., and the height 35 ft. The depth of the stage is 54 ft. The curtain at Drury Lane is 32 ft. wide, and the depth of stage 48 ft I believe the largest cloths in England are at Covent Garden,—there they measure 70 ft. by 50 ft.

At the Pandora there is great width on the stage behind the proscenium wall, a point of considerable importance in planning the stage. The stage does not project into the house, this form as well as the stage-boxes being now inadmissible. The balcony tier slopes from the centre on either side towards the proscenium, following nearly the same line as the floor of the pit; the total inclination measures about 2 ft. 2 in. At the Alexandra Theatre, Liverpool, Ed. Salomons, architect, the inclination is 1 ft. 9 in. The greatest inclination known is that adopted in St. Petersburg, where the fall is equal to the depth of the box fronts. The planning of this magnificent theatre (Pandora) presents many points of the greatest interest, the way in which the circles gradually recede over one another and round towards the wings will be conducive to the attainment of a good view of the stage by the whole of the audience, and this feature will also add in appearance to the size of the house. It may be regarded as a grand architectural effort in the right direction, making the building more fitted for its purpose than any before erected, and entirely opposed to the well-known received classical examples. The magnitude of the works necessary in carrying out the foundations, and what I may term the first structural parts of the building, were enormous, and would take too long to describe fully here. The excavation below the stage is 40 ft. below the level of Lisle-street; the floor of the stage is 20 ft. below, and taking advantage of the rise in the ground from south to north, the first circle is on a level with Lisle-street. The whole centre part of the structure above the stage is supported on four very heavy cast-iron stanchions three stages in height, the metal at the thinnest section being 1¼ in. thick. These form a square on the level of the gridiron floor, measuring 50 ft. from north to south and 37 ft. 6 in. from east to west. Solid brick piers have been built around them. The total height from the foundations is 50 ft. On either side these stanchions support two enormous wrought-iron single-web girders, each spanning 50 ft., 52 ft. long, and 6 ft. high, weighing over 15 tons each,—stronger than any railway girders of like span; and at the end next the auditorium is a monster girder, about 4 ft. deep and weighing 7 tons, supported in like manner by the stanchions. These girders carry the whole weight of the scenery battens, borders, flies, and all appurtenances, as well as the wrought-iron roof trusses and roof over the centre of the stage, to the ties of which are fixed the gridiron floor. The side girders support also the wall of the ballet-room on the east, and the wall of the rooms for the "supers" on the west side of the stage, and their share of the weights of the floors and roofs to these rooms. These rooms are on the same level as the gridiron floor. The weight of the scenery is computed at 2 cwt. per foot super. over the whole space of the stage. This is a weight which has sometimes not been realised fully in previous constructions over stages, and important theatres have repeatedly had the upper supports of the stage strengthened after completion, at great expense, in consequence of oversight in this respect. An immense timber staging 50 ft. from the ground was constructed, and these huge girders were all taken up in single plates and angle irons with the rivet-holes prepared. On this stage they were then riveted and manufactured. The wrought-iron roof trusses were hoisted up in lengths and the junctions made on the timber staging. Messrs. Dennett & Ingle were the contractors for this work, perhaps the largest and heaviest piece of constructive ironwork before placed in any one building in London. The whole was supplied, manufactured, and fixed,—the large and deep plates and shaped webs for cantilevers having to be specially rolled,—within four months of the date of order. It is purposed to light the auditorium of this theatre by a combination of the Lane-Fox incandescent electric lights, each surrounded by a ring of small gas jets in glass lanterns of special design.

Having now brought before you a notice of one of the large theatres in course of construction where ironwork has been extensively used, let us look at the matter from another point of view altogether. One of our greatest theatrical architects, Mr. Charles John Phipps, has very kindly favoured me with an epitome of some of the more prominent practical methods which he adopts in the scheme of a theatre. And let me at once preface these remarks by saying that I think Mr. Phipps's plans of construction exceedingly sound, good, and simple. They are consistently followed out by him as he has explained to me, and used as they are by one so high in authority and of such vast experience in the theatrical branch of the profession, they merit our most careful study. Mr. Phipps, as you are aware, was one of the important witnesses before the Select Committee on Metropolitan Fire Brigade in 1877.

Now Mr. Phipps lays it down as a principle to be aimed at in the planning of a theatre that no constructive ironwork and no stone staircases should be used. This principle is carried out almost entirely in the Savoy, and others of his works. In the Savoy the only iron used are light iron columns to support the circles: these columns are set back considerably from the fronts, and there are iron stanchions in the division-wall at the back of the circle; these are entirely protected by fire-resisting material. The floors and staircases throughout are constructed of concrete made of one part Portland cement and four or five parts broken and ground bricks, with a finished surface of the same material, or floated in cement. The division-walls at the back of the circles, and the walls of the passages, which extend all round the circles, are built of the same material. It should be remembered that a material to be fire-resisting should be made entirely of substances which have already been subject to the action of fire and heat in their preparation. Tiles and fire-bricks may be used for floors and stairs. The Dennett concrete,—the matrix for which is formed by a special preparation of gypsum, the remainder of the composition being mainly of broken brick, is unchanged by the action of fire. Mr. Phipps was one of the earliest to adopt the erection of a solid brick-wall from cellar to roof, and 3 ft. above the latter, between the auditorium and the stage. Eighteen years ago in the Nottingham Theatre he built the first solid proscenium wall in the country. Instead of an iron girder to bridge the proscenium opening he advocates the use of a wooden beam as large as can be got. This beam has a bearing of several feet on the piers; over the beam is turned an arch of four, five, or six rings, as required; skewbacks are cut in the beam to receive each ring, a strong stone template is bedded over the centre of the arch, a wrought-iron rod bolted through this stone and the beam, and the spandrel then filled in with brickwork. The beam is covered with an inch of good plastering, and it is certain that no fire, however fierce, would destroy this timber, for before it could possibly be burned through, or even calcined more than an inch, the fire would have exhausted itself. This construction he habitually uses, and it was followed out in the alterations at Drury Lane, where the span of opening is 36 ft. and the beam 1 ft. 8 in. square, and where, I may add, the wall, some 80 ft. high, between the stage and auditorium, was built without stopping the performances a single night, the men working only till five o'clock daily. Mr. Phipps successfully advocated the use of concrete dividing doors between the several risks of the building in place of iron. These doors are light and work excellently; they can be made no more than 1¾-in. thick. Concrete as a fire-resisting material for windows and doors has, by the way, never yet received its proper share of attention. It can be made and moulded by Mr. Lascelles, Messrs. Dennett, and others, as fine and delicate as woodwork, and is really as fireproof as the coarser material used in floors. The word risks is used in an insurance sense, and it is extremely important in designing a theatre to divide it into several risks. Besides the proscenium wall, which alone will materially lessen the expense of insurance, the dressing-rooms should be separated from other parts of the house by solid walls and concrete doors, and the corridors, entrances, and saloons may be made to form another risk.

As to metal curtains for the proscenium opening and special reservoirs, all our theatre builders agree in thinking these things of little real service. I have previously shown how small in actual practice is their value when the crisis comes; but if a curtain must be provided, then it should be worked down from the prompt-box, not from the flies, and the same position should be adopted for the working of any special appliances; for in a panic or real alarm few men would have the courage to ascend aloft. In Paris, the adoption of a metal curtain between the stage and auditorium is enforced by the rules dated April 12th, 1877. It is not in special appliances the safety of the public is secured, but in generally sound construction. Instead of iron columns, wooden pillars should be used, even if required for the support of staircases, as well as under the stage-floor, where their advantage is obvious, from the movable nature of all matters connected with the stage. The constructive ironwork used in the Gaiety Theatre is entirely enclosed with fire-resisting concrete; in the Princess's and Sadler's Wells, as well as at the Savoy, there is practically none. I have heard the latter theatre highly praised by persons of position for its excellent planning and lighting. The Savoy was the first theatre where the electric light was used, and it is lighted throughout by means of Incandescent Swan lights, 1,200 in number, the clear-glass lights being enclosed in ground glass globes, which soften and diffuse the light. Bruce's theatre, when complete, Mr. Phipps purposes lighting in a similar manner. The lighting by gas from above a glass ceiling, at the Théâtre Lyrique and the Théâtre de Châtelet, at Paris (opened about the year 1861), had to be abandoned, on account of the immense additional quantity of gas consumed by such method. The radiation of the circles and their inclination towards the stage is admirably arranged in the Savoy, and the acoustic properties of the house are excellent. The auditorium is lined with wood, and the floors of the balconies and gallery are of wood. The use of solid wood-block floors for these parts of the house would certainly ruin the sound, and as there are substances to cover or saturate wood with, to prevent its supporting combustion, no increase in danger need now be apprehended from its limited use. Of the reconstructed Haymarket Theatre,—one of Mr. Phipps's most successful works,—I need say nothing, as it is well known to us all.

I have purposely avoided any description of the German summer and winter auditorium, or of the recent American theatre, known as Madison's, with its movable stage, the principle of which may be briefly explained as consisting of two separate and distinct stages, one visible to the audience, one below that of exactly similar dimensions, and a void space above of the same size as the visible stage, so that while the acting of one scene in the visible stage is going on, the

scene-shifters are preparing the stage below for the next act; the whole affair then rises, bringing the lower stage into position; and for the following scene the shifting is done above, and the apparatus then falls. It is, I think, in this theatre also where an orchestra-box is erected above the curtain, the utility of which I fail to unfathom. All these innovations may be dismissed as not very likely to be introduced into this country; and to conclude, as to the best form for an auditorium, I lean to a development of that followed out in the Théâtre Historique and the Théâtre Lyrique at Paris, *i.e.*, an ellipse with its major axis at right angles to that of the stage. By this disposition the whole of the audience are brought nearer the stage, and they all more equally get a good view. As to sound, this form is excellent, as the Théâtre Lyrique is said to be one of the best for hearing. The inclination of the pit-floor and circles would be less, their receding would not be so marked, a tier in height would probably have to be abandoned owing to the comparative nearness of the circles to the proscenium; but an equal number of persons would be accommodated, as a much greater depth of circles from fronts to backs would be used in practice. The construction would present no difficulties, and the exits and entrances would be equally available to any portion of the house as in those buildings where the plan is a circle or an ellipse with its longer axis co-incident with that of the stage. I would have the boxes as few in number as possible, and confined to a small space in the auditorium. The pit-goers I would accommodate in the upper parts of the house, and devote the floor to the stalls, the first circle round the same being slightly raised above the last row of stalls, and the circles constructed on cantilevers without columns. Such a house would have a light and agreeable appearance, and I think would successfully meet the requirements of the present day.

In the discussion which followed, Mr. John Hebb, of the Metropolitan Board of Works, further enlarged upon the regulations of the Board, and wished that we could follow the example of other countries in having theatres erected on free and open sites. As to the metal proscenium curtain in Paris, Mr. Hebb remarked that he had inquired into the matter, and found that, owing to the authorities not being able to make up their mind as to the best form of curtain, the Parisian rules on that point had never been enforced, and were a dead letter.

Mr. Max Clarke made several technical remarks and inquiries as to the iron construction of the Pandora Theatre, with which he did not altogether approve. He strongly advocated the use of a wooden beam over the proscenium, opening as Mr. Tanner had explained in a diagram. Mr. Clarke then invited the opinion of the meeting as to a novel roof for a theatre he would propose, consisting of iron trusses to support the outer covering, with iron suspension rods from the trusses carrying a concrete ceiling of domical form. He advocated the use of a fireproof curtain between the stage and auditorium, provided a satisfactory one could be devised.

Mr. F. Ingle confirmed Mr. Tanner's remarks as to the iron construction of the theatres he described.

Mr. Wm. C. Street, in proposing a vote of thanks to the writer of the paper, added some valuable remarks on the acoustic properties of buildings.

Other speakers followed, one of whom spoke strongly in favour of asbestos being the most desirable covering for protecting wood from the effects of fire.

Skelton-in-Cleveland. — The handsome church now in course of erection at Skelton, near Saltburn-by-the-Sea, Yorkshire, from the designs of Messrs. Austin & Johnson, of Newcastle, and which is about completed, with the exception of the interior fittings, is to be further improved by the addition of a substantial tower, upwards of 80 ft. high, which will form a conspicuous object on the hill-side behind that well-known summer holiday resort. The cost of the tower, which approaches 3,000*l.*, will be defrayed by Mr. J. T. Wharton, of Skelton Castle, and the church fittings, which will cost upwards of 1,000*l.*, are to be provided by subscription. The chancel will be furnished with wainscot oak seats and panelling, and the rest of the church with pitch pine. The contractor for these additional works is Mr. F. Saldcleugh, of Durham, who has also built the church.

ARCHITECTURAL ASSOCIATION.

AT the ordinary fortnightly meeting of this Association, held on the 2nd inst., Mr. E. G. Hayes, president, in the chair, a vote of thanks was accorded to Mr. E. J. May, for allowing the members to visit the house just erected from his designs in Bedford Park, Chiswick (and which we described in our last, p. 139). It was announced that the next visit would take place this (Saturday) afternoon, to the new Oratory at Brompton.

Mr. H. W. Brewer then read his paper on "The Position of the Choir and Organs in Churches," which we print in another part of this number (see p. 168, *ante*).

Mr. H. H. Statham, who had been invited to take part in the discussion, wrote to say that he was prevented by another engagement from being present, but he sent the following remarks on the subject, which were read by Mr. Eales, one of the honorary secretaries:—In regard to cathedrals, I think the formerly usual position of the organ, on the screen between the nave and choir, was the best both for architectural effect and for the effect of the instrument, as long as the organ was of moderate size, and as long as the choir was practically the church, or when the choir and nave were not used simultaneously for worship. I do not think that position of the organ was at all detrimental to architectural effect, rather the contrary. There is now, however, a growing feeling in favour of uniting the choir and nave, or having only a light open screen between, which necessitates the removal of the organ from that position; and the greatly-increased size of modern organs would render it impossible to plant the whole of the organ on the choir-screen in any case. Under these circumstances, I think a cathedral organ is best placed with the lighter portion bracketed out from one wall of the choir, and the heavier portion placed in the choir aisles, behind a screen; but the pipes must be concentrated, not scattered about as if they were playing at hide and seek in the choir aisles, as they are in one cathedral I could name; that takes away all the unity of effect of the instrument. The organ itself would sound better all built up in one case in the transept, but that is too far from the choir to blend with them or keep them properly in tune. The best of all arrangements for a cathedral, would be a small organ in the choir to accompany the choristers, and a large nave organ, either at one side or at the west end, to lead congregational singing: and with the present means of electric action the two could be brought under the control of the same player. For parish churches, I think there is no question that the best position for the choir in reference to the congregation, is the usual one, standing sideways and divided for antiphonal singing. The old west-end position of the choir placed them *behind* the congregation whom they were to lead, which was unsuitable; and to place them facing the congregation at the east end, though the best position musically, would be at variance with the idea of the simultaneous worship by choir and congregation, as well as placing them with their backs to the officiating priest. That being taken as settled, there is at present no place for the organ except in the chancel aisle or organ-chamber, which, as generally constructed, is simply fatal to the effect of the organ. The organ *must* be near the singers, however, and the bad effect of the organ-chamber may be lessened by making it much higher than is usually done, and by sinking the floor so as to get the bellows and the lower part of the pedal pipes below the floor, and the wind-chest on a level with the floor. The pipes will then have more space over them, and the sound will develop and get away better. In the usual low organ-chamber, we generally hear a great noise close to the organ, a large proportion of which does not get into the church at all. I consider, however, that all the difficulty arises from the faulty plan of our churches, and that reform should begin here. The adoption of the long chancel in which the choir are placed, is not only unpractical, as being the worst possible for the effect of the choir, but is, even from the point of view of orthodox precedent, without any reason for its existence. The long choir came into use in the latter days of the Mediæval church, when the clerical body and their subordinate functionaries became very numerous, and required the lengthened choir to accommodate them all. They chanted the service, but they were shut off within a choir and behind a screen, *not* as choristers, but as *clergy*. In the present day there is no such large body of clergy connected with any church; the choir, whether paid or amateur, is a lay choir, and is properly part of the congregation, whose service of praise it is supposed to lead. But the choristers, who are no longer clergy, are packed into a long narrow chancel where they cannot be properly heard, necessitating also a most ineffective position for the organ, merely because such a position was once considered correct at a time when the clergy were themselves the choir. I cannot see that, even on the most orthodox High Church view of the matter, there is any reason for this arrangement. Let church builders return to the basilica plan, which was for centuries the accepted church plan, and which is exactly suited for our modern service,—the plan with the short chancel for the clergy and the altar, and the nave for the congregation; let them place the choir in the front portion of the nave (only seated sideways), forming, as they should, part of the congregation, and place the organ in a shallow transept adjoining them, and we should hear no more about the difficulties of placing the organ, &c. The whole difficulty arises from retaining, for a lay choir, on a mistaken idea of precedent, a form of plan intended originally to accommodate a numerous clerical body, which no longer exists.

The Chairman said the meeting had listened with very great interest to Mr. Brewer's interesting paper, and also to the supplementary remarks which Mr. Statham had been kind enough to send, and which appeared to throw some new light upon the subject. The whole question, it seemed to him (the Chairman) was to a large extent one of sentiment and ritual. Of course, looked at from an organist's point of view, the position for the instrument indicated by Mr. Brewer in his drawing was probably the best that could be chosen, although he had awarded very high praise to the position of the organ at Ratisbon, in the apse, at the rear of the altar. In the construction of an organ-chamber the object to be sought, he (the Chairman) took it, was to get as much height as possible, and to get the walls to act as sounding-boards, and probably curved surfaces would be the best. He understood Mr. Brewer to say that the plan of dividing an organ into two was objectionable, but in that they would probably not be all agreed. Did Mr. Brewer consider the arrangement of the organ at All Saints', Margaret-street, a bad one? However they might differ from him, however, they would all thank him for his paper, accompanied as it was by so many excellent and interesting drawings, for they were always glad to see his clever handiwork.

Mr. J. A. Gotch, in moving a vote of thanks to Mr. Brewer, observed that, fascinating as was Mr. Brewer's drawing showing his suggestion for the position of an organ, he should be very sorry to see all our cathedrals with the organ over the rood-screen or choir-screen. It seemed to him that one of the great effects of a grand cathedral, and one that stirred the beholder with so much awe, was the vista from west to east of the whole length of the interior. To cut the interior in half and so destroy the vista by placing the organ as suggested by Mr. Brewer would be a very great pity. But of course it was a matter of taste. No doubt the organist regarded the organ as one of the finest objects in creation, and would not have the least objection to its interference with the vista. But speaking for himself as an architect, he would rather see the whole length of the church than the finest organ that could be placed in it. It appeared to him that the west end of a church as the position for the organ had the sanction of antiquity, and was in all respects a very excellent place for the instrument, but the question was one for musical experts to decide. From an æsthetic point of view, he desired to raise his voice against obtruding the organ right into the middle of the church. He quite agreed with what had been said as to the improper positions often selected for organs. He knew a little church in Northamptonshire the chancel of which had been rebuilt as the mausoleum of a neighbouring ducal family, but quite recently there had been clapped right into the middle of it an organ, which had no merit whatever so far as the case was concerned.

Mr. W. A. Pite, in seconding the motion (in which he included the name of Mr. Statham), said he could bear testimony to what Mr.

Brewer had said of the organ in the Cathedral of Ratisbon, where the music and singing were simply superb. With regard to the position for the organ suggested by Mr. Brewer in his drawing, it was to be doubted whether the clergy in the chancel would be able to make themselves heard in the nave, owing to the obstruction which would be afforded by the organ and screen to the passage of sound. There was an organ in Westminster Abbey in the tenth century, and there seemed to have been one at Winchester, erected by Bishop Elfeg, in 951, and which Wolstan, one of the monks, thus describes :—

> Twelve pairs of bellows ranged in stately row
> Are join'd above, and fourteen more below;
> These the full force of seventy men require,
> Who ceaseless toil and plenteously perspire,
> Each siding each, till all the wind he prest
> In the close confines of the incumbent chest,
> On which four hundred pipes in order rise
> To bellow forth that blast the chest supplies.

Mr. F. Farrow, in supporting the motion, said that with regard to the position of the organ, every one who was acquainted with the needs of the instrument would agree that it should not be placed where it could not make itself properly heard. One instance in which an organ was placed in a transept occurred in a modern church at Armley, near Leeds. There the organ was a very fine instrument, and the wind was supplied by a hydraulic blowing apparatus located in a building outside. In Glasgow Cathedral it was a condition of the authorities that the organ should not be a prominent feature, and hence it was necessary that some of the pipes should be laid horizontally in the triforium. The effect, musically, was very good. Although, no doubt, the western gallery of a church was a very good position for an organ, the clergy were not likely to adopt such a position, owing to the difficulty of maintaining discipline amongst the choristers, who must, of necessity, be located near the instrument. It had been suggested that a large organ might be placed at the west end of a church, and a small one in the choir, but it was not easy to get them both to act together, and even if that could always be done, the sounds of both instruments could not possibly reach the ears of all the worshippers at precisely the same time, and the effect of this would often be unsatisfactory. Probably the best position for a church organ was that suggested by Mr. Statham, viz., a shallow transept, so that the instrument would be in a comparatively open situation, and close to the choir, without obstructing the view of the altar. An organ so placed would render it possible for the organist to bring out its full effect.

Mr. Hampden W. Pratt said that as architects they were more concerned with the question as to the best position for an organ in a church than with the question as to the best place for a cathedral organ. An arrangement which might be suitable for a cathedral would not necessarily be appropriate in a parish church. Assuming that Mr. Brewer's remarks applied rather to the needs of the Established Church than to Nonconformist churches (in which there was no difficulty in arranging the congregational singing with reference to the organ), it occurred to him (the speaker) that if the chancel were made rather wider than was usual, the organ might be placed on one side of it without projecting to such an extent as to obstruct the view of the altar. Of course if that were done it would be necessary to give the instrument a more ornamental and architecturally-effective case than was at present the rule,—a plan which would be productive of much better results than merely decorating the pipes, for most people were rather tired of seeing organs with gaudily-decorated pipes inclosed in cases of no architectural character. While he quite agreed, however, with Mr. Brewer's contention that organs should be more prominently placed, he was sorry to hear from him that the tendency was for organs to become larger and larger. If they became much larger than they were at present, how were architects to properly dispose them? Their difficulties in that respect were already sufficiently great. For his own part, he was of opinion that a great deal more money was, as a rule, spent upon organs than was necessary or justifiable, having regard to the other requirements of buildings intended for religious use. Some objection had been made in the course of the discussion to the position for an organ suggested by Mr. Brewer's drawing, but he presumed that the suggestion was only applicable to cathedral organs?

Mr. Brewer.—No, it applies to parish churches. The drawing is meant to represent the interior of a parish church 130 ft. long.

Mr. Pratt said that being the case he should object most strongly to the placing of the organ in so prominent a position, for to place it as suggested would be to almost make a god of it, an object of worship. Some of the speakers had spoken in derogation of congregational singing, but so long as that continued to form a part of public worship, architects must give due consideration to it in arranging the position of the organ. He agreed with all that had been said in condemnation of what was called the "organ-chamber," which should be abolished, and the organ placed either, as Mr. Statham suggested, in a shallow transept, or, better still, in his (the speaker's) opinion, in the chancel, which might, perhaps, advantageously be made the same width as the nave.

The motion having been put to the meeting, and carried by acclamation,—

Mr. Brewer thanked the meeting for the attention which had been given to his paper, and proceeded to reply to some of the remarks made in the course of the discussion. He observed, with regard to the scheme which had been criticised by most of the speakers, that he had simply worked it out because it had been suggested to him whether it would not be possible to place a church-organ in such a central position. He had, he thought, shown how it might be so placed with the minimum of obstruction. He was not prepared to say that, architecturally, it was the best position, but undoubtedly, from a musical point of view, it would be a good position for the instrument. He quite agreed with the observations contained in Mr. Statham's communication, except with regard to a small transept being the best position for an organ. A large organ very often occupied a space measuring 20 ft. by 20 ft., and 40 ft. high, and those dimensions would necessitate a large and lofty transept. The organ should never touch the outer or side walls, but a space should be left all round it, because, if completely enclosed on three sides, the only pipes which had a chance of properly speaking out were those on the unenclosed side, the pipes at the back being half stifled and unable to make their voices properly heard. It had been suggested that the organ, if placed upon the choir-screen, would prevent the voices of the clergy in the chancel being heard by the congregation in the nave. Well, upon that point he would only say that, extraordinary as it might appear, he never knew what the music in Westminster Abbey was really like until he happened one day to be shut in the nave while the service was going on. He had often previously noticed when in the transepts or choir that the music seemed to have a sort of muddled effect, but in the nave on the occasion referred to he could hear distinctly every word that the clergyman intoned. That seemed to prove that the placing of the organ upon the screen would not prevent the voices of the clergy in the chancel from being heard in the nave of a parish church. As to the interference with the vista, he admitted that there was something very fine in the vista along the whole length of a large church, but Mediæval architects certainly did not make the vista the paramount consideration in their interiors, otherwise why did we always find that they provided screens in their churches and cathedrals,—sometimes, as at Durham, extending right up to the roof? In most Continental churches which had not been modernised it was impossible to see entirely from one end to the other of the interior; indeed, it seemed to have been rather the intention of the Mediæval architects to divide their churches. With regard to the practice of dividing organs, he regarded it as objectionable and unwise. In the first place it added enormously to the expense, and in the second place the two parts had to be connected by what were called trackers passing beneath the floor of the church,—an arrangement which was very inconvenient, for if what was known as "cyphering" took place the floor would have to be taken up to get at the trackers. Another objection was that when an organ was divided, the two parts would in all probability be subject to different sets of draughts and atmospheric influences, and thus one part would get out of order a great deal sooner than the other. With such an arrangement, too, the action was a great deal heavier, except where the new pneumatic action was in use, but this appliance, although very ingenious, was likely to get seriously out of order when the atmosphere was damp, and the result would be that the organ would "cypher" like a Board school boy. The "pneumatic action" did very well for important organs in public buildings which could be perpetually attended to, but it was too liable to get out of order for the general run of church organs.

COMPETITIONS.

Frome Sewerage.—In November last the Frome Local Board advertised for reports and plans for the sewerage and sewage disposal of their district, and offered premiums for those which, in their opinion, were first and second in order of merit. Twelve schemes were submitted, and these have been under the consideration of a committee of the whole Board during the past month, with the result that the first prize of 20*l.* was unanimously awarded to the scheme submitted under the motto, "*Palmam qui meruit ferat*," the second prize, of 10*l.*, being given to "*Presto*." The first prize also entitles the author to be appointed engineer in the execution of the works. At the meeting of the Board, held on Friday, the 2nd inst., the envelopes containing the names of the successful competitors were opened, when it was found that the first prize had been obtained by Mr. Henry Tomlison, Mem.Inst.C.E., of Cambridge and Westminster; and the second prize by Messrs. Dudley & De Salis, of Westminster. The envelopes containing the names of the unsuccessful competitors were not opened. The Board also decided to take steps to carry out the scheme adopted at their next meeting.

"*Gohebydd*" *Memorial Chapel.*—We understand that the committee have adopted the designs prepared by Mr. St. John H. Hancock, architect, for the chapel proposed to be erected at Barrett's Grove, Stoke Newington, as a memorial to the late distinguished Welsh newspaper "Correspondent" (which is the English for the *nom de plume* he adopted), Mr. J. Griffiths. Mr. Samuel Morley, M.P., has subscribed 200*l.* towards the fund now being raised for this purpose.

THE NATIONAL ASSOCIATION OF MASTER BUILDERS OF GREAT BRITAIN.

The fifth annual meeting of this Association was held on Tuesday, the 30th ult., at Liverpool. The report and balance-sheet were read by the secretary.

The president, Mr. Stanley G. Bird, in moving the adoption of the report, said it might be thought that it was a very meagre one to present, but it contained several matters of the highest importance to the trade generally throughout the country. Firstly, he had to congratulate the meeting on the amicable relations which existed between employers and employed, which was, no doubt, in a great measure, due to the extraordinary depression in the building trade both in London and the provinces, which was a source of regret to all, and he was sorry to say that the prospects of improvement do not seem very bright. Secondly, he regretted that during the past few months Mr. Potter, by his letters in the *Times*, had tried to stir up an agitation in the trade, and had gone out of his way to make a gratuitous attack on this Association. He (the president) had answered the letters, pointing out that the motto of this Association was "Defence, not Defiance." He was happy to say that the policy of this Association was to try to prevent strikes, and he was glad that up to the present their endeavours had been eminently successful, no great strike and very few small ones having taken place during its existence. Thirdly, the question of deficient and improper quantities was most urgent. Two very important actions had lately been tried at Liverpool, and it was high time that this matter should be taken up, and he again urged on the builders the great necessity for obtaining fair and equitable conditions of contracts. The form agreed to by the Royal Institution of British Architects which had been adopted by the National Association was now in more general use, but not to the extent he could wish. The council recommended the appointment of a sub-committee to go into the whole question of quantities and form of tender, and with a view to obtaining a conference with the Royal Institute of British

Architects at an early date to settle these most important questions.

The adoption of the report was seconded by Mr. Robert Neill, of Manchester, and carried.

The President then drew the attention of the meeting to the working of the Builders' Accident Insurance Company, which was established under the auspices of the National Association, and strongly urged the trade to support the Company, which was established on strictly mutual principles. He quoted one case where the insurer had only paid six guineas premium, and the Company had paid 223*l.* in compensation, as well as the costs of an action.

The meeting proceeded to the election of officers and council. Mr. Stanley G. Bird, of London, was re-elected President, for the third time, with Messrs. R. Neill, jun., and W. H. Cowlin, as Vice-Presidents.

The next half-yearly meeting will be held at Edinburgh.

In the evening the Liverpool Builders' Association entertained the Council of the National Association and a large party of friends at dinner at the Adelphi Hotel, Mr. E. Hughes, the President, in the chair. The toast of success to the National Association was proposed by Mr. Samuel H. Holme, who pointed out the necessity for associations, and that since their establishment the relation between employers and their workmen had been more friendly, and their differences more readily adjusted. The toast of the President of the Liverpool Association was proposed by Mr. Clay, of Manchester.

VARIORUM.

"A HANDBOOK on the Electric Lighting Act, 1882," by Arthur P. Poley, B.A., and Frank Dethridge (Simpkin, Marshall, & Co.), seems likely to be of use to those authorities who are now busily engaged in considering the applications for licences and provisional orders under the Act.——An edition of Spon's "Architects', Builders', and Contractors' Pocket-book of Prices and Memoranda" has been issued for 1883, but we do not find that any additions have been made. It is a very useful little book, brimful of information.——That "Quantities and Measurements: How to calculate and take them," by Alfred Chas. Beaton, has reached a sixth edition is evidence that it is found useful by the classes for whom the author intended it. The list of prices that is given has been revised. The present edition is published by Crosby Lockwood & Co. (London, 1882), and forms part of Weale's Rudimentary Series.——If the various Diaries published for 1883, by T. J. Smith, Son, & Co., Queen-street, Cheapside, especially their Scribbling Diaries, had reached us at the time when others of the kind were before us, they would certainly have had a good word. Even now, indeed, it may not be too late to give it.——"The Garden Oracle for 1883," edited by Mr. Shirley Hibberd, F.R.H.S., contains a body of valuable statistical information on the expectation of life, the relative values of moneys, the fundamentals of land surveying, and all kinds of ground work, and a comprehensive review of every department of the English garden. A special feature is the directory for the purchasers of seeds, plants, flowers, roots, fruits, &c., in which the best sorts for various soils and purposes are set forth.——"Penmanship: a Guide to good Handwriting," by C. H. Mitchell (Pitman, 1882), supplies a want. We wish some of our correspondents would give a little time to the study of it. How thankful our compositors would be!——"The Handbook of the Jones Collection, in the South Kensington Museum," may be had of Messrs. Chapman & Hall, as well as at the Museum. It includes a number of illustrations.

Miscellanea.

The Improved Industrial Dwellings Company has issued its half-yearly report, from which it appears that the company possesses thirty-one estates in various parts of the metropolis, on which 4,029 dwellings have been erected and are in occupation, and 426 are in course of erection, making a total of 4,455 tenements. When these are completed, the number of persons residing in the company's dwellings will be upwards of 20,000.

His Highness the Khedive of Egypt, through the Consul for the Netherlands, has been pleased to confer upon Mr. James Hill, of the Thames-street Lock Depôt, the insignia of the Order of the Mejidieh.

Surveyorship.—Mr. C. J. Dawson, architect and surveyor, of Barking, Essex, has been appointed surveyor to the newly-formed Local Board for that town.

Cost of Silos.—Mr. W. A. Gibbs writes: I have now obtained three carefully-worked-out estimates for two silos like those of Mr. Mills, and they range from 309*l.* to 500*l.* and 688*l.* These are for the pits only, not for roofs and covers. The first is in soil most favourable for the construction, and where there is ample raw material for the making of concrete; the estimate is by a resident manager, and, therefore, exempt from any contractor's profit. The second estimate is given me by large contractors who have had long experience in similar structures, such as tanks, public baths, wells, and vaults. The third is from a local contractor, and includes carting up gravel for concrete from a distance of four or five miles. I hope these estimates will induce others to state what their silos have cost, or what estimates they have obtained, because this is, beyond all question, a very important part of a very important subject, and a full comparison of notes thereupon will be of great value.

Arbitration.—Mr. Banister Fletcher and Mr. James Rutherford have been appointed arbitrators in the claims of Messrs. Ventress, against the Promoters of the Stockton Bridge. The amended claim is 22,749*l.* 5s.

Revolving Divisions.—We may add to the account in our paper of the new parcels office at Waterloo Station that the revolving divisions placed therein were executed by Messrs. Salmon Barnes & Co.

TENDERS.

For decorations and repairs at No. 90, Jermyn-street, Piccadilly. Mr. Walter J. Miller, architect:—

Hill & Berridge	£290	0	0
Adams	271	0	0
Spencer & Co.	247	0	0

For alterations at No. 54, Berners-street, for Mr. Oeffelin. No quantities. Mr. E. C. Robins, architect:—

Fairchild	£1,224	0	0
Watson Bros.	1,218	0	0
Cooper	1,198	0	0
Adams	1,109	0	0
Spencer & Co.	1,045	0	0
Ansell	1,045	0	0

For building factory at Chalton-street, Somers Town, for Messrs. Conolly Bros. Messrs. Saville & Son, architects:—

Titmus	£2,333	0	0
Jackson & Todd	2,188	0	0
Kelly & Son	2,149	0	0
Nightingale	2,121	0	0
Spencer & Co.	2,073	0	0
J. Anley	2,070	0	0
Royal	2,065	0	0
Shurmur	2,043	0	0
Beale	1,998	0	0
W. Smith	1,995	0	0
Langmead & Way	1,995	0	0
Lamble	1,977	0	0

For the construction of a new river wall at the Vestry's wharf, Lot's-road, Chelsea. Mr. W. Weaver, C.E., surveyor:—

Mr. Pedrette	£896	18	9
Wilkinson Bros.	895	0	0
Mowlem & Co.	890	0	0
B. Cooke & Co.	880	0	0
Nowell & Robson	865	0	0
John Bell	827	0	0
G. Munday & Sons	748	0	0
W. Hill & Co.	716	0	0
Mr. Rowse	680	10	0
G. H. Thomas*	669	3	10

* Accepted subject to confirmation of Vestry.

For the erection of semi-detached residences in Bensome Manor-road, Thornton Heath, for Mr. A. Stedall. Mr George Edwards, architect. Quantities by Mr. Henry Lovegrove:—

	One pair.	Two pairs.	Four pairs.
Bowyer	£1,910	£3,745	£7,395
Reading	1,845	3,650	7,200
Canning & Mullins	1,855	3,630	7,100
Martin, Wells, & Co.	1,740	3,500	7,000
Stimpson & Co.	1,800	3,570	6,985
Holliday and Greenwood	1,777	3,510	6,930
Goad	1,655	3,260	6,350
Smith & Son	1,629	3,207	6,450
Scharien & Williams	1,596	3,152	6,264
Green	1,496	2,985	5,650

For alterations to Nos. 39 and 41, Brompton-road, for Mr. Webb. Mr. George Edwards, architect:—

Reading	£339	0	0
Scharien & Williams	328	0	0
Green	285	0	0
Stimpson & Co.	258	0	0

For alteration, &c., at City Wellington, Fleet-street, for Mr. J. Robinson. Mr. H. Elson, architect:—

Smith	£520	0	0
Anley	498	0	0
Groome	436	0	0
Dearing & Son (accepted)	431	0	0

For making up roadway of Harrington Gardens, South Kensington. Mr. W. Weaver, C.E., surveyor:—

Nicholls	£603	0	0
Rogers & Dickens	580	0	0
Mears	573	0	0
Howell & Robson*	561	0	0
Surveyor's estimate	530	0	0

* Accepted, subject to confirmation of Vestry.

For internal plumbing and hot-water work at new house for Mr. J. F. Wilkin, Beckenham, Kent. Mr. J. Sulman, architect:—

J. Knight, Westminster (accepted).

For erection of Board schools, Hogarth-lane, Chiswick, for the Chiswick School Board. Mr. George Saunders, architect. Quantities by Mr. F. T. W. Miller:—

A. E. Wickham	£6,233	0	0
S. Hunt	5,975	0	0
H. Smith	5,914	0	0
J. J. Bryant	5,690	0	0
T. Nye	5,489	0	0
Adamson & Sons	5,483	0	0
H. J. Whitman	5,420	0	0
Chamberlen Bros.	5,215	0	0
W. Blackburn	5,212	0	0
T. H. Kingerlee	5,190	0	0
W. Oldrey	5,177	0	0
J. Dorey	4,950	0	0
Lucas & Son	4,820	0	0
Priestley & Gurney	4,617	0	0

For pavilion, &c., for the Matlock Bath, Pavilion, and Gardens Company (Limited). Mr. J. Nuttall, architect, Matlock Bridge. Quantities by Mr. F. S. Smith, Manchester and Liverpool:—

				If plate-glass is used.		
J. Moores	£6,003	0	0	£6,332	0	0
Brown & Backhouse	6,228	0	0	6,324	0	0
W. H. & H. C. Brown	6,180	0	0	6,299	0	0
Farnworth & Son	6,062	0	0	6,182	15	6½
W. Knowles	5,882	0	0	5,992	0	7
R. Gabbutt	5,806	0	0	5,916	0	0
W. Statham	5,618	0	0	5,748	0	0
Bissett & Son	5,450	0	0	5,570	0	0
W. B. Askew	5,388	18	4	4,474	15	4
T. & W. Meadows	5,340	0	0	5,456	0	0
A. Bridge	5,330	0	0	5,448	0	0
T. Haughton	5,107	0	0	5,239	0	0
Shadwick & Co., Rotherham (accepted)	5,125	0	0	5,228	0	0

For pair of villas for Mr. E. Slack. Mr. J. Nuttall, architect, Matlock Bridge. Quantities by Mr. F. S. Smith, Manchester and Liverpool:—

S. Fox	£1,110	0	0
L. T. Wildgoose	1,094	0	0
W. B. Askew (accepted) Matlock	1,070	0	0

For rebuilding The Falcon Tavern, and two shops adjoining, for Mr. Tavener. Mr. H. I. Newton, architect, No. 27, Great George-street, Westminster. Quantities supplied:—

Burman & Sons	£7,999	0	0
Allard	7,980	0	0
Oxford	7,653	0	0
Taylor	7,377	0	0
Langmead & Way	7,330	0	0
Gibbs & Flew	7,300	0	0
Cook	7,233	0	0
Grimwood & Sons	6,993	0	0
Shurmur	6,873	0	0
Anley	6,842	0	0
Godden	6,590	0	0
Lamble	6,557	0	0
J. Beale	6,500	0	0
Pickersgill Bros. (accepted)	6,469	0	0

For the erection of an ambulance station at Deptford Hospital, New Cross-road. Messrs. Henry Jarvis & Son, architects:—

W. & H. Castle	£2,854	0	0
A. & F. Smith	2,715	0	0
Hunt & Challis	2,670	0	0
J. W. Sawyer	2,500	0	0
W. Brass	2,458	0	0
W. S. Josolyne	2,456	0	0
E. P. Mills	2,397	0	0
Rowse	2,387	0	0
Martin & Goddard	2,368	0	0
J. Marsland	2,345	0	0
W. Shepherd	2,290	0	0
W. Downs	2,258	0	0
H. L. Holloway	2,250	0	0
G. Parker	2,250	0	0
Aldridge and Jenvey	2,224	0	0
Tarrant & Son	2,176	0	0
G. W. Sly	2,176	0	0
H. W. Lorden & Son	2,175	0	0
W. & F. Croaker	2,100	0	0
Lonergan Bros.	2,096	0	0
J. Ivory	2,035	0	0
Wall Bros. (accepted)	1,998	0	0
A. J. Smith	1,990	0	0
R. L. Wood	1,845	0	0

For alterations to the Bancroft Arms, Mile End-road, for Mr. F. Garner. Mr. Edward Brown, architect, 18, Hanbury-street, Spitalfields:—

E. Lancaster	£383	0	0
S. W. Hawkings	371	0	0
Belcher & Ullmer	310	0	0
C. Marr (accepted)	294	0	0

For pewterer's work to the Tottenham Distillery, Tottenham Court-road, for Mr. Hyams. Mr. Edward Brown, architect:—

Watts & Co.	£215	0	0
T. Heath	201	3	0
W. J. Paddon (accepted)	171	10	0

Accepted for two shops and warehouse, Halifax. Mr. T. L. Fatchett, architect, Halifax. Quantities supplied:—
H. Jenkinson (Mason and Bricklayer).
Messrs. Murgatroyd (Carpenter and Joiner).
John Naylor (Plumber and Glazier).
Rushworth & Firth (Plasterer and Slater).

For providing and laying 1,200 yards fireclay socket-pipes, for under drainage at Bishopwearmouth Cemetery, and cleansing existing drains, for the Bishopwearmouth Burial Board. Quantities supplied. Mr. J. E. Prosser, architect, Sunderland:—

T. P. Shaftoe, Sunderland	£403	7	4
A. Smith, Lintz Green	384	14	6
W. Kirk, Gateshead	308	13	6
G. Moir, Sunderland	275	17	6
W. Marshall, South Shields	271	19	0
J. Tough, Sunderland	221	10	7
Connley & A. Tough, Sunderland	220	10	11½
R. Allison, Whitburn	200	5	5
G. H. Humble, Sunderland	190	3	0
J. Stokoe, Fence Houses	181	12	3
P. Gleeson, Sunderland	177	0	0
T. Dixon, Stot's Pastures, Fence Houses (accepted)	162	10	0

For paving stables, open yard, covered gateway, &c. for Mr. F. D. Collen, at 84, Paradise-street, Rotherhithe. Mr. E. Crosse, surveyor, 32, Bermondsey-square :—

	Materials.	Total quantity.	Amount.
Almond, J., Bermondsey	In granite pitchers, kerbs, trams, &c., on concrete bed	395 yards	£268 5 0
Lemon, G., Sydenham	In granite pitchers, kerbs, and trams, stable paving, bricks, &c., on concrete	,,	238 5 0
Bullers, J., Bermondsey	In granite pitchers and kerbs, stable paving, bricks, &c., on concrete	,,	164 13 0
Carey, Sons, & Co., Bermondsey	In granite pitching, kerbing, blue bricks, and part wood blocks, and all on concrete	,,	152 2 0
Chafen, S., Rotherhithe	In granite pitching, trams, kerbing, &c., and concrete bed	,,	149 5 0
Stodart & Co., Cannon-street	Seyssel asphalte and kerbing, &c., concrete added	,,	143 13 0
Wells, B., Bermondsey	In blue Staffordshire bricks, grooved for stable only, granite or York trams and kerbs, and concrete	,,	122 3 0
Wilkinson & Co., Newcastle-on-Tyne*	In improved granite, concrete paving, part 2in. and part 3in. thick, on bed of broken brick	,,	113 4 0
Holman & Co., Peckham	In limestone tar paving, 4in. thick, on bed of Lard ware, granite trams and kerbs added	,,	168 15 0

* Accepted, subject to a discount for cash.

For the erection of new, and enlargement of present, school buildings at Albany row (Lambeth Division), for the School Board for London. Mr. E. R. Robson, architect :—

Larter & Son	£9,345 10 0
Chappell	8,867 14 0
Steel	8,857 11 0
Lathey Bros.	8,280 0 0
Hart	8,078 0 0
Holson	7,983 0 0
Pritchard	7,831 0 0
Sharman	7,745 0 0
Shepherd	7,493 0 0
Higgs & Hill	7,449 0 0

For the erection of workshops and wood-chopping shed, &c., at the Brentwood Industrial School, for the School Board for London. Mr. E. R. Robson, architect :—

Robey	£1,040 0 0
F. & F. J. Wood	1,038 0 0
W. Wood	1,010 0 0
Cox	959 0 0
Atherton & Latta	938 0 0
W. Shurmur	891 0 0

For erecting villa at Pemberton Gardens, Upper Holloway. Mr. William Paice, architect :—

Eldridge	£760 0 0
Sawyer	750 0 0
Whitlet	675 0 0
J. Beales	669 0 0
J. Dye	500 0 0

For rebuilding church at Essendon, near Hatfield :—

	Old Materials.	
Gregory, Clapham Junction	£3,744	£42)
Hunt, Hoddesdon	3,785	161
Macey & Sons	3,630	70
Ekins & Son, Bengeo	3,700	200
Foster, Bedford	3,581	166
Gibbons & Co., Buntingford*	3,387	108

* Accepted.

For the formation of a new road through Bosgrove Park, Chingford, Essex. Mr. William Stair, surveyor :—

Falkner	£808 0 0
Maxwell & Son	849 0 0
Jesse Jackson	749 0 0
Rock	699 0 0

For repairs and alterations to eight houses and shops in High-street, Camden Town. Messrs. Parebrother, Ellis, Clarke, & Co., architects :—

Downs	£2,864 0 0
Johnson	1,747 0 0
Goad	1,684 0 0
King	1,680 0 0

For works in alteration to The Rose public-house, Wimpole-street, Cavendish-square, for Mr. C. J. Schwarz. Mr. Thomas Dirnan, architect :—

C. E. Birch	£470 0 0
G. Phillips	396 0 0
J. Adams	359 0 0
J. H. Johnson	297 0 0

For warming and ventilating, by their new Hydro-Caloric Apparatus, the Westminster Jews' Free Schools, Hanway-street. Mr. H. H. Collins, architect :—

J. Weeks & Co., Chelsea	£276 0 0

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The Builder.

Vol. XLIV. No. 2269. Saturday, February 17, 1883.

ILLUSTRATIONS.

Sketches of the "Eden" Theatre, Paris 210
Blackmore Park, near Great Malvern (Ground-floor Plan, 219).—Mr. David Brandon, F.S.A., Architect 212
Ulm Cathedral, in course of Restoration: Exterior of the Choir (Double-page Engraving) 214, 215
View in the Courtyard of Stables, Brick-street, Mayfair.—Mr. James Brooks, Architect 217

CONTENTS.

New Vienna and its Art 197
Light out of Dirt 198
The Classic Face 199
New Paris 199
On the Application of Colour to Architecture 201
The Restoration of Two Historic Buildings 202
Vitrified Building 203
Lycian Antiquities 203
About Building Woods 204
The New Street from Piccadilly to Bloomsbury 205
Scottish Regimental Colours 206
Memorial of Robert Burns, the Scottish Poet, in Westminster Abbey 206
The National Memorial to King Victor Emanuel 206
The Position of Organs in Churches 206
Lectures on Architecture at the Royal Academy: Iron 207
The Eden Theatre, Paris 208
Ulm Cathedral and its Restoration 208
Blackmore Park 208
New Stables, Mayfair 208
The Proper Use of Modern Classical Architecture 221
Hints to Gas Consumers 221
New Buildings in Fleet-street 222
New Theatre at Valparaiso 222
Iron Cement 222
Mechanical Industry in Russia 223
The Gas Light and Coke Company and the Electric Light 223
Dublin Sanitary Association 223
Works at Sheffield Park 223
The Burdett Buildings in Westminster-bridge-road 223
Washable Lime Colour 224
Concrete Water Pipes 224
The New York Elevated Railway 224
The Weehawken Tunnel 224
The Dome of St. Paul's 224
Garlands Asylum, Carlisle 224
The Construction of Theatres 224
Gas and Vegetation 225
Gas for Cooking Abroad 225
The New Church of the Oratory, Brompton 225
Proposed Artisans' Dwellings and Public Baths in St. Botolph's Parish, Bishopsgate 225
Westminster Abbey 226
The late Mr. C. Chaloner Ogle, Architect 226
Obituary 226
Building Patent Record 226
An Architect's Claim: Reskeith v. Rollwagen 226
Payment for Measuring Variations in Construction 226
Damp and Porous Walls 227
Lambeth Palace 227
Damp Houses at Bristol 227
Caution 227
Bankruptcy Law 227
Christ Church Cathedral, Dublin 227
Farnley School Competition 227
Building Disputes at the Bow County Court 227
The Adelphi Theatre 227
Stained Glass 227
Variorum 228
Miscellanea 228

New Vienna and its Art.

SOMETHING of what in artistic language is known as a side-light has been thrown on to the nature of the extraordinary building activity of late years in Vienna by the disastrous winding-up, within only a few days past, of one of the most important of the building societies of the Austrian capital. For six years the affairs of the Parzellirungs und Baugesellschaft have been in liquidation, but at length, with its 100 florin shares valued only at two and a half florins, the collapse of the unfortunate society was inevitable. It would indeed be a singular fact if, with such an amount of building as has been going on in Vienna for the last twenty years (but especially since the great Franco-Prussian war), with a population of a million, and a community of bankers whose places of business amount, it is said, to nearly 20,000,—it would be singular if we did not hear of some over-speculation; but Vienna at present, it must be admitted, exhibits the appearance in this respect of an exaggerated amount of building which no reasonable calculation would appear, at first sight at least, to warrant. Streets and streets of magnificent dwellings, rivalling in appearance of reality, and far exceeding in size, the largest club-houses in Pall Mall, are at present so imperfectly occupied that, with the exceptions of here and there a speculative *café* on the ground floor, the rest of the well-arranged apartments above, extending high into the air, are altogether unoccupied. Naturally the inhabitants of the older parts of the town are somewhat disposed to ridicule, in one way or another, all this hasty work, and living, as they and their ancestors have long done, within the well-protected and substantial ramparts of an old city, they look with some suspicion on the prospects, not only of injury to themselves by the rivalry without, but at the probable disasters that will overtake those who in many ways are concerned in their own interests.

Still as regards the appearance and beauty of "new Vienna," certainly the grandeur, the size, and the picturesque aspect presented by the new Rathhaus and its surrounding buildings, as they are viewed in the first place from the enormous piazza before the Votive Church, and so on by the new University and the new arcades, are such as may fairly be said to be equalled by no other city, leaving the spectator only the more in wonder, the longer he regards these great works, how in a country like Austria, how in any country indeed, can so much magnificence, so many requirements, be justified by existing circumstances or by any ever to exist. Architecturally there can be no question that the great building achievements of the last few years in Vienna must always be regarded as the greatest of modern days, when we consider that apart from the creations of private speculators themselves,—mostly of a palatial nature,—the great public buildings at present being erected on the Ring, simultaneously, and in a long line of a mile, are such colossal edifices as the new University, the Rathhaus (opposite it the huge new Burg Theatre), the House of Representatives, the Courts of Justice, and the two immense blocks which, when completed, are to receive the united contents of the national museums. The inspiration of much of all this imposing size, the effect of which impresses itself so forcibly on the stranger during his first acquaintance with Vienna, he discovers; when he has grown more familiar with the city, in the grandiose palaces of the nobility, scattered about the streets of the older parts of the town. With such examples filling the minds both of architects and employers, it was not to be expected that a new Vienna was to be outdone by the Vienna of the last century, and so not the largest palaces of Italy can vie in size with the huge blocks which have sprung up at the beck of the modern capitalist and contractor on and outside the line of the fortifications since their recent demolition. Stucco magnificence and zinc ornamentation have ruled supreme, though let us hasten to say that nothing probably can exceed the skill of the stucco-worker in Vienna, while not a word can be said against the solid brick core of the huge six and seven story blocks that have been the creation of the speculative building mania of the past few years. The traditions of the positively phenomenal stoutness of walls observable in the buildings of the old city,—strength required for purposes of protection in the days when Vienna was the bulwark of the West against Turkish agression,—have been worthily handed down to the present day, and on this score the Viennese of the near future will have no just cause for complaint against the building activity of this generation, who only too perseveringly seem to have been doing their utmost to show to the world the truth of that cynical old saw which has told us so uncompromisingly who the folks are who build the houses we occupy.

It is, indeed, difficult or impossible to be blind, amidst all this stone; and especially all this stucco, magnificence, to the appearance that it all is the result of a period of speculative industry, in which the members of the Bourse have had a larger share than any other class of less showy industries; and in contrasting the old city with the new, it is impossible that many serious changes in the sentiments of the practical Austrian will not have to take place before what is now the capital of his country will be a settled and an accomplished fact; "the sick woman," as it is said Prince Bismarck once called Austria, may take as long a time to die as "the sick man," but Austria, as surely as Turkey, is doomed, sooner or later, to become the spoil or the skilfully-nursed invalid of some stronger and more affluent friend.

In spite of the wealth of architecture that has sprung up of late years in Vienna, there is, it will be found, little architecturally that is new, to interest or instruct the lover of the grand art, little that is not to be found nearer home, or on the lines of travel more familiar and more suggestive, in those well-known cities that have so long and so abundantly supplied the whole civilised world of art with ever-satisfying and never-ending original motives. The famous modern Gothic Votive Church, the work of Ferstel, will, of course, always stand in its correct style as a worthy companion to the more picturesque cathedral,* and Semper's National Museum buildings must ever hold their own in the front ranks as the noble and learned work of a nineteenth-century student of the Renaissance, suggesting as modern German Renaissance work always does, the smaller but admirable front of Sansovino's *Libreria* at Venice; but it is to be feared that after all that may be said of the modern architect's work at Vienna, it, like its winter climate, is cold and barren, and the greater number of its street façades, like its enormous *piazze* in summer, are deficient in shadow and liveliness.

Where the art of the Viennese is displayed with the perfect look of that worldly splendour which so many of us regard as the approach to perfection, is at the theatres, the concert-halls, and especially in the *cafés*; at those places, if it were not that the entertainment supplied is almost invariably of a nature sufficiently good to command our admiration, we should be lost in wonder at the skill and the costliness and the labour involved in the production and keeping up of these very necessary places of public amusement. In what is called the "Artists' House" and the adjoining concert-room of the Musical Society, those whose duty it was to design and carry out these great halls appear positively to have exhausted their means of doing honour to the muses of the plastic arts and music. The critic, perhaps, may have cause for wonder at the great amount of trivial art displayed in both these magnificent buildings,—the vast amount of merely popular music led by the ever-favourite *bâton* of Edward Strauss in the literally gilded halls of the Musikverein; and in the adjoining Künstlerhaus, where modern pictures are displayed, the contrast between them and the splendour of the rooms is almost ludicrous, although, of course,

* Ferstel has, however, shown the versatility of his powers by his successful building of the New University in the style of the Renaissance.

just now it may be an unfortunate moment, as the exhibition is conspicuous by the absence of the works of the best known Viennese painters, such as Herr Makart, Von Angeli, and others whose names are not so familiar in England.

To the stranger, however, in Vienna, so largely is the evidence of deep artistic consideration in its various bearings brought before his eyes in the public buildings and elsewhere, that, as in the great Italian cities of the Renaissance, one would expect in Vienna, where the modern Renaissance has created such wonders, to find the whole conversation in the *cafés* and public places consisting of nice points of the science of æsthetics, and one could, without much difficulty, realise in one's mind, in the picturesque Hebrews who abound, some fresh arrival from the more Classic parts of the world, having in their possession treasures of ancient art, the exchange of which for more easily manipulated wealth they are anxious to negotiate,—men like George Eliot's Tito, well informed and familiar with the beautiful, but unscrupulous and greedy.

In point of fact, many of these gentlemen, who crowd especially the neighbourhood of the Bourse, are, in one way or another, in many more ways than they are, perhaps, aware of,—concerned in the science of æsthetics, and although that great movement does not exist abroad in the petty shape that it assumes at home, a very large proportion of the money-making classes in Vienna are enormously concerned in supplying capital and urging its exercise in the direction of at least would-be beautiful objects. It would, indeed, be a curious point to obtain an accurate statement alone of the capital concerned in the trade of furnishing and decorating the many thousands of apartments that go to form the miles of substantial streets that are being or have been built in Vienna.

In Vienna, one of the great manufacturing centres of those multitudinous objects that so many of us seem to require as adornments to our mantelpieces, our side-boards, the corners of our rooms, our halls and staircases, our cabinets,—and our lumber-rooms, and especially our china closets, are at the present moment, it is to be regretted, preternaturally large and Brobdingnagian,—just now, from the greatly enlarged size of the houses in Vienna, and indeed everywhere, the manufacturers of furniture of every description are forced to increase the scale of their wares. The potters especially, however, seem at work with designs of vases of every conceivable form, correct forms made hideous by gigantic roses and vegetables standing forth in unnatural relief, but in more cases incorrect forms modestly concealed by ill-designed ornamentation, always large, always clumsy, and of a nature to defy the most crafty and careful handmaid in the matter of dusting, only suggesting to the lover of better art, who carefully cherishes some well-designed and well-covered vase of a past age, what in the name of Apollo he could do with one or more of these gigantic vases if a friend on his birthday, his marriage, or on his conviction for some great crime, should present him with one of these objects. Oxford-street, Bond-street, the Boulevards, or Westbourne-grove can show us in a degree vases of this description, supplied not only by our great English potters, but by those of France and other parts of the world, but it is not until the traveller reaches Vienna that he beholds the work of the ornamental ceramist in its largest and most hideous proportions.

Some idea of the character (some might say want of character) of the ornamental art, especially the potter's art, displayed in Vienna, may be formed when we say that probably if a party of the inhabitants of the more æsthetic sections of our great London "villadom" were directed to the Austrian capital to hunt for household and other ornamental furniture for their picturesque quarters, they would scarcely find a single object to satisfy their simple wants beyond perhaps a well-designed and useful porcelain stove, a few brushes and brooms, and, doubtless, any quantity of Hungarian linen, and perhaps only some modern draperies retaining something of an old design or feebly indicating the influence of our modern industrial museums. The millionaires and the princes of the earth, with enormous apartments and the necessity for much useless encumorances, with a sense of pecuniary comfort unassailable by the longest tradesman's bill, such may find many objects in Vienna to please; but to the man of taste, be he prince or *bourgeois*, it is not difficult to assign a place in his estimation for the respect that is due to the bulk of the manufactured ornamental art of the whole of Austria and its industrious but money and pleasure-seeking population.

Although it is impossible not to recognise, in the art displayed in the shops of the Viennese tradesmen, the existence of an acquaintance with every period and style of art, it is after all only with the architects of Vienna and Berlin, and not the painters, the sculptors, or the potters that there can be said to exist a steadfast adherence to the best art of any time. In the work of the architect, of such artists as Semper, as Ferstel, as Schmidt, or Hansen, are evident their veneration and knowledge of the grandest creations of the noble art, and no feeling but that of the most profound respect for the work of the architect can fail to impress any one regarding, in the Ring at Vienna, that great group of national monuments consisting of the Votive Church, the University, the Rathhaus, the Houses of Parliament, the Courts of Justice, the new Burg Theatre, and the two great blocks of the future National Museum; all, it is true, unfinished, but rapidly approaching completion. Still, after all that can be said of what is to be learned from the well-planned new neighbourhood of Berlin and Vienna, the first thought and the last that inevitably strikes one is, that M. Haussmann and Louis Napoleon's Paris has suggested to the Prussians and Austrians the possibility of outdoing in size and magnificence, and in science, commercially and financially considered, even the capital of France. Certainly in Vienna the municipality, the architect, the builder, the contractor, and the host of kindred industries, must of late years have reaped a harvest richer in pecuniary results than any the world has ever yet witnessed; during the gathering-in of crops so abundant, we must not, we suppose, be disturbed by the appearance of a feverishness and the evident existence of anxiety, or by a knowledge of the certainty of the failure and disaster that must overtake the unwary, the shortsighted, and, fortunately, the whole host of the unworthy.

Vienna.

LIGHT OUT OF DIRT.

THE most perplexed problem of modern times is the disposal of that refuse which comes under the name of sewage. In the many years during which our attention has been turned to the subject, while we have always refused to regard it as presenting an insoluble difficulty, we have seen solution after solution proposed only to fail. The reason has been, no doubt, that for agricultural purposes, which have alone hitherto been studied, the valuable matter contained in sewage is not enough, under ordinary circumstances, to pay the cost of extraction. And we confess that for some time our own views have pointed rather in the direction of the positive cremation of the solid refuse of sewage, for which its own composition is such as to afford the fuel, than to other modes of disposal.

Now, however, we are told by *Der Techniker* that an hotel in Breslau is actually lighted by a gas obtained from this unexpected source by a process invented by Herr Sandberger. We are bound to say that, however unlikely this may be, we see no proof that it is impossible. Of the solid material which is said to be utilised, 92·88 per cent. is water, 4·62 per cent. is organic matter, 0·70 is mineral, and 1·80 is gaseous. The organic matter is the source of all the danger, disgust, and trouble that characterise the subject. It is, we apprehend, not very different in its chemical elements from albumen. Now, 100 volumes of albumen consist of 53·32 parts of carbon, 15·70 parts of nitrogen, 7·29 parts of hydrogen, and 23·69 parts of oxygen. This is 60 per cent. of combustible material, viz., carbon and hydrogen. The nitrogen, passive as it is alone, or in the atmosphere, becomes vehemently active in its well-known combinations with oxygen. The oxygen only requires to be set free to discharge its own active functions. To say, then, that it is impossible to utilise this 60 per cent. of hydro-carbon is not what we are prepared to do. The material is said to be put in a retort, and not only dried but distilled by heat. A light gas first comes over, followed by carbonic acid, tar, oil, and ammonia. There remains a residuum of carbon, as in the distillation of coal. There is no doubt that the elements of all these substances are to be found in the matter treated. As to whether they are thus capable of being distilled, we can only say that we apprehend that no one has tried before, but that that is no reason to assert that *Der Techniker* is attempting to hoax its readers. We have ourselves made some experiments in the direction, with the view, however, not of distilling, but of oxidising. Our results were not satisfactory, but we are much inclined to attribute this to the imperfection of the apparatus. Without, then, being over credulous, or departing from the proper stand-ground of scientific doubt, we believe that the statement of *Der Techniker* is not impossible. We need not add that if it be true, the very blackest spot in the future of civilisation may be expected to become as evanescent as the spots in the sun.

It has seemed to us important not only to analyse the organic matter contained in the basis of sewage, but to trace the formation of the vegetable protoplasm, which is the abode of both vegetable and animal life, back to the commencement. It is well known that the food of plants,—exclusive of extremely minute portions of mineral matter,—consists of carbonic acid, ammonia, and water. Now taking the analyses above given, the volumes thus stated are arrived at by the elimination of 149·93 parts of oxygen from an aggregate (whether chemical compound or mechanical mixture) of 195·50 parts of carbonic acid, 19·06 parts of ammonia, and 35·37 parts of water, making in all 249·93 parts, which the elimination of the above-stated proportion of oxygen by the leaves of the plants reduces to the volume of 100. And the various organic substances differ so little in their proportions, that while albumen is formed by the loss of 60 per cent. of oxygen, the abstraction of 61 per cent. produces fibrine, that of 47·5 per cent. gelatine, and that of 45·4 per cent. starch.

Now if we compare the composition of average coal with that of the solid excreta utilised by Herr Sandberger, we have the following results:—

	Fæces.
Water	75·00
Organic matter	12·20
Nitrogen	1·40
Phosphoric acid	1·06
Potash	0·29
Silica	1·48
Oxide of iron	0·54
Lime	1·72
Magnesia	1·55
Sulphuric acid	4·27
Soda	0·31
Chloride of soda	0·18
	100·00

Grouping these small quantities together we have:—

Water	75·00
Organic matter	12·20
Minerals and gas	12·80
	100·00

Now taking the organic matter to consist of albumen (and we have shown how close in their resemblance are the four main elements of organic substances), we have the following comparison:—

Composition.	Average coal.	Albumen.
Carbon (fixed)	60·00	53·12
,, (volatilised)	20·06	
Hydrogen	5·00	7·29
Sulphur	1·25	
Oxygen	8·00	23·69
Nitrogen	1·20	15·70
Ash flow	4·55	
	100·00	100·00

It is in the presence of the large quantities of oxygen and nitrogen, therefore, that the main difference of the elementary composition of the two substances consists. In the process of life, as we have seen, nearly 150 volumes of oxygen have been eliminated from 250 volumes of the plant-food. In the further process of carbonisation, occurring through the ages that have elapsed since the deposit of the plants now turned into coal, 15 or 16 per cent. more oxygen, and 14·50 per cent. more nitrogen, have been eliminated. There is thus a perfectly good basis for the inquiry, whether it is not possible, by means of the retort and the laboratory, to do in a short time what heat and pressure have accomplished in millions of years, and to produce the pabulum of gas in a manner not abnormal to the procedure of Nature herself.

It is a remarkable coincidence that, at the

very time when the account of this successful experiment at Breslau has reached this country, the result of a new patent obtained by Colonel Chamberlain for the manufacture of gas should be published. The process is said to consist in the distillation in a retort of four parts of refined petroleum and one part of water. This mixture, when cooled and refined, is diluted in the gas-holder with three times its bulk of atmospheric air. We will spare our readers the steps of the analysis of the constituents of these three items,—petroleum, water, and air,—and put the result side by side with that previously obtained from albumen:—

Composition.	Albumen.	Petroleum, water, and air
Carbon	53·12	42
Hydrogen	7·29	8
Oxygen	23·69	21
Nitrogen	15·70	29
	100·00	100

It will be seen from the above that as far as the proportion of elements is concerned there is an advantage in the luminiferous proportion of the sewage gas,—so calling it to avoid a coarser name. It contains 60·41 per cent. of hydrocarbon, against 50 per cent. in the mineral-oil gas, and only 15·70 per cent. of nitrogen (which we will, for the moment, hold to be an anti-illuminant), against 29 per cent. The oxygen is 2·69 per cent. more in the former than in the latter. Thus, from equal volumes, it may be expected that from 10 to 20 per cent. more light may be obtained by Herr Sandberger than by Colonel Chamberlain.

We must not, however, forget that in the production of light the proportion of luminiferous elements is not the sole matter to investigate. The mode in which they are presented for combustion is of hardly less importance than the proportion itself. Many of the circumstances which affect this are as yet unknown. We do, however, know some of them. Thus it is certain that much more light is obtained from the combustion of an equal quantity of gas at a low, than at a high, pressure. It is consistent with this empirical law that Colonel Chamberlain claims that 700 ft. of his gas will burn for as long a period as 1,000 ft. of coal gas, and will give a greater illumination. This, he says, is due to the greater elasticity of the mineral oil gas, which thus necessitates a much lower pressure than that at which coal gas is supplied. That, very likely, is so. But the table we have just drawn up does not lead to the view that the petroleum and water gas will be necessarily more elastic than the sewage gas.

As to the former, we cannot but remark that the price of 1s. 6d. per 1,000 cubic feet seems to us very much more than the proportion of costly to costless elements in the gas warrants. Let us take coal gas at the round figure of forty pence per 1,000 cubic feet. Now whatever be the proportion in price between this gas and vaporised petroleum, it must be remembered that the latter only forms one-fifth part of the volume of the gas supplied from the Chamberlain gas-holder. We should, therefore, conclude that the price at which this can be supplied must be much lower than 18-40ths of the price of coal-gas.

Here, however, comes in the claim on the part of the German gas-maker, that so far from having to pay for his source of hydro-carbon, he might rather expect to be paid for getting rid of a nuisance. At all events (if the Breslau account be accurate) it is evident that no other gas is likely to compete in cheapness with that drawn from a source as to which, in that event, men will be tempted to exclaim "*Non olet.*"

Nor is this all. We spoke of a residuum of carbon. It must not be lost sight of that it may be possible to mix water in the one case with as good effect as in the other. But letting that alone, and remembering the costless character of the supply of carbon (on this theory), what is to prevent its use as fuel? It seems to us, that not only is the material for the gas costless, but that the greater part, at all events, of the fuel to be used to heat the retorts may be obtained from the same source; and if the only cost be the wear and tear of apparatus, and the manipulation, there is no reason why the gas itself should not be used to heat the retort, and thus effect its own distillation.

We are anxious not to be run away with by imagination. We were disposed to begin by saying that the announcement in *Der Teckniker* was too good to be true. We have put the matter to the only test at our command without a journey to Breslau. We have found that the actual constituents of the main portion of the substance treated by Herr Sandberger,—water apart,—bear a strong resemblance in proportion to those of local gas, with which they are identical in number and in chemical equivalence. And, curiously enough, at the very moment of analysis, we are told of a new and rival gas, that is said, from its constitution, to be much more illuminative, pound for pound of carbon, than the ordinary coal gas. With this latter gas, moreover, the Sandberger gas is almost identical in the proportion of elements, so that an unexpected, if not an unanswerable, argument in favour of the German discoverer is supplied by a rival who, economy apart, might almost expect to walk over the field. Repeating that all the accounts that we quote are to be received with reserve, but at the same time pointing to a chemical analysis, which is taken from the best authorities (we refer our readers to the invaluable "Manual of Rules, Tables, and Data," by D. K. Clark, if they wish to verify our analysis), we cannot but feel that there is enough in the vista thus opened to dazzle the imagination. To convert the great source of difficulty, danger, disgust, and disease, into the valuable material for an illuminant gas, would be one of the most brilliant triumphs ever achieved by science. And we hope that Liverpool will pardon a slight departure from its well-known motto, if we suggest that Herr Sandberger's scutcheon should bear the legend, *Ex fimo dare lucem.*

THE CLASSIC FACE.

THE Classic face, or, in other words, the Greek face, such as we find it in most ancient Greek sculpture, is disposed in front of a compact head, which is set on a columnar throat and neck. In the profile the facial angle is high, and the line from the tip of the nose to the hair comparatively straight. In none of the antiques is this latter characteristic more evident than in the series of statues of Niobe and her children at Florence. Indeed, there are no figures in which, taken altogether, the Greek ideal is more distinctly presented than in this family group. In this type the congruity of the other forms of the face with the straight line of the nose and forehead renders it perfectly agreeable, without which harmony of parts, however, it is doubtful if it would be so. Nevertheless, it must have been found in nature, or under no circumstances would it be acceptable. It is, however, very rare, and, indeed, it may be open to belief that the features of the old Greek race, which did so much in almost every intellectual department in so short a space of time, may differ not a little from what we find now existing, even in Greece.

As in the above series of statues, so also usually in other Greek antiques, it is accompanied by another peculiarity, namely, that the inner angle of the eye is higher than the outer, whereas the opposite relative position is, of the two, more common, not only in man, but especially in animals. To be the further removed from which latter configuration many have afforded one reason for the Greek treatment, as that seems to have formed part of their theory for the attainment of human beauty. In usual faces, however, no relative arrangement is more pleasing than that of the outer and inner corner of the eye being on a level. In the Classic face also the space between the eyes is exactly equal to the transverse length of each.

Between the eyes the nose is broad, as is also the *septum* between the nostrils. The wing of the nose is also usually somewhat lower than the tip, and is often strongly and distinctly defined, as may especially be noted in the Apollo Belvedere, the Venus of Melos, and the head of the Apollo Musagetes, in the British Museum. On the male brow the frontal sinuses are prominent, and forcibly marked, as may be well recognised in the newly-discovered Hermes, from Olympia.

The margin of the face all round from ear to ear under the chin is very decided, and, without being sharp, distinguishes it clearly from the throat, into which it never merges, as is often seen in nature, and again may be illustrated by the Niobe series. The Classic ear is small, and well set back; and in some instances, as in the Parthenaic type, is less than the accepted scholastic measurement of the same length as that of the nose. This seems founded on beauty, for not only is a small ear beautiful in itself, but its smallness gives a look of size to the cheek and features, without actually enlarging them.

The Greek height of the forehead is the same as the length of the nose. In Roman sculpture at a later date, especially in portraits, this space is much lessened by the hair being brought much lower down, as is seen in the well-known bust of the Clytie in the British Museum. This was done to give an appearance of youth in opposition to that of baldness; and the fashion of so dressing the front hair as to produce a somewhat similar effect has of late much come into vogue with the fair sex of Europe. This is often, without doubt, very pretty and becoming; and it possesses another graceful quality, as it lessens the apparent size of the head, so as to make the figure appear of taller proportions. At any rate, it is more pleasing in woman than the opposite extreme of too high and bare a forehead, which may even tend toward a look of effrontery. No point, however, of demarcation for the margin of the hair, in the case of a perfectly proportioned face, head, and figure, will more conduce to an agreeable appearance than that adopted by the Greeks in their sculpture, namely, that of the three following measurements being similar, viz., from the bottom of the chin to that of the nose, from that to the brow, and thence to the root of the hair. This standard of proportion may be said to be accepted, at least proximately, by all sculptors.

The mouth is always more or less curved and arched on each side of the centre of the upper lip, like the bow of Cupid to which it has been likened, and the upper lip less thick than the lower one. As in the words of Sir John Suckling,—

> "Her lips were red, and one was thin,
> Compared to that was next her chin,
> Some bee had stung it newly."

We naturally contemplate female form when we think of beauty, but these observations apply nearly equally to the features of either sex.

The chin is always firm and rather full, whether with or without a dimple in its centre. The cheeks have a certain flatness without depression, indicating perfect condition, and the muscles about the mouth are marked with decision, although tenderly, the angles of the mouth not terminating in a sharp point, but each in a roundness of shadow.

The eyes are very distinctly cut, affording the effect of clear sight and health, and there is no second fulness under the lower eyelid, notwithstanding that in nature this often vastly enhances the expression of the eye, although always, it may be suspected, at some expense of the look of youth.

The nose, straight in profile, is evidently the medium between the two other types, — the aquiline and the *retroussé*,—and may be accepted to be the most perfect. All noses, however, begin by being *retroussés* in infancy, in which early stage of life, indeed, any other form would be unpleasing. Soon after this, the bridge commences to grow, and if it stops when it attains a straight profile it may be considered most perfect, but an aquiline nose also is noble in appearance, especially in a man. It gives a look of decision, and a Roman nose is the nose of command and conquest, Wellington possessing this to a marked degree. Even in a woman, if it be fine and delicate in proportion, an aquiline nose is often beautiful, and gives an air of distinction. The *retroussé* nose, also, when refined in its form, is frequently very lovely and attractive, and is especially feminine as opposed to the decision of the more forcible male configuration, in which it seems appropriate that the bones should be more prominent. Still, however, it is rarely adopted in statuary, although often in painting with a most pleasing effect, as in pictures by Murillo, and the Spanish works of Philip and John Lewis, and in some by Grenze. Of whatever type of contour, however, a nose may be, it is essential for beauty that it should be neat and distinct in form, and far away from the vague bigness of that feature in some races, or when bloated by intemperance. The nose in the Kalmuck or the Negro is only to be noticed as illustrative of total divergence from beauty or dignity, and nostrils presented forwards instead of downwards offer the appearance not only of vulgarity, but impudence.

As the foreheads of the lower types of man retreat in comparison with those of the more

intellectual, the Greeks sought the opposite extreme as they rose in the scale of the beings they desired to represent in art. In the Athenian type of the king of Gods the greatest divergence from the sloping animal head is visible in the bringing out of the centre of the forehead from the brow to the line of the hair with such prominence that, phrenologically considered, it might even be thought to give that portion an undue predominance over the adjacent organs on either side. The attainment of the expression of supreme mental power was the object. The forehead of Neptune does not project quite so much in the centre, and that of Pluto is of the same character, but less refined. Nevertheless, the three great brothers, respectively of the skies, the ocean, and the world of shadows, possess in Greek art a strong family resemblance in accordance with their mystic genealogy. This is likewise the case with the sons of Jupiter, namely, Apollo, Mercury, Bacchus, and Hercules, although much varied, Apollo being the most beautiful and godlike, and Hercules, who is a deified athlete, the least so. Juno, the spouse of Jove, is cold, dignified, and placid. Minerva, the offspring of Jupiter without a mother, and the goddess of wisdom and education, is slightly masculine and stern. Diana resembles her twin brother Apollo, and of the daughters of Jove is next to Minerva in dignity. Venus is all that is attractive and fascinating, with most of the stronger points of contour softened. These examples of the ancient gods and goddesses are appropriate to cite, as in them culminate the essential peculiarities of the Greek type of feature and the Classic face, the same principles of configuration being found existing in a minor degree in the Greek representations of human forms of a lower level.

The proportions of the ancient statues present the heads small in relation to the figure, when compared with examples of usual nature. But the intellect, the critic might suggest, being the distinguishing characteristic of man, how then, especially in the higher subjects, is the dwelling-place of its immediate organ made so small, for it would argue that the brain is small also? But in reply it may be noted that, in the Greek statues, not only are their heads round and compact, but also that the situation of the ear, which indicates the base of the brain, is low, thus affording much space above for the mental organ. Moreover, as the muscular development of a beautiful body is not overcharged, but derives its peculiar strength from being well constituted and of firm fibre, so also this may be supposed to be the case with the brain that is contained in the head which surmounts this body. It may be in the recollection of most of us that we have seen living heads larger than usual with intellects nevertheless much short of what their amplitude promised, while, on the other hand, on record are heads of less size than is common, of which the brain power was very great, as, may be noted, those of Pope and of Curran. In truth, as in muscle so in brain, quality rather than expansion appears the main essential for power and activity. And as in the finest antiques the problem of the biggest man in the smallest compass was that of which the solution was sought in Greek art in respect to the body, so in the head a similar compactness was adopted for the dwelling-place of an implied perfectly-constituted brain.

Thus also, the head being small in proportion to the figure, so in consequence also is the face, to a degree which it must be acknowledged is rarely found in nature, but is, nevertheless, an essential consideration in statues which aim at grace and elegance.

The perfect type of the ancient Classic face, although it may have, to a great degree, disappeared in life, will ever remain a cherished dream of the sculptor, holding a similar place in his art to that which the ancient Classic poets do in literature. It will always be regarded with respect and affection, and continue to be consulted as a most valuable tutor in the principles of nobleness and grace, even in the production of works of which the constituent details may be of a different origin and character.

Members' Mansions.—Sir: As you were kind enough to insert a paragraph of our sale (on Tuesday, Jan. 30th) in your issue of Feb. 3rd (p. 158), we beg to inform you that we have sold the above premises privately for 61,000*l.*—Chinnock, Galsworthy, & Chinnock.

NEW PARIS.

Many of our readers, both abroad and at home, and many more who are not our readers, have conversed frequently in years gone by with friends who remembered Paris before the terrible events of 1793, before even the earlier days of the Revolution, when the Bastille stood in its hideous architectural solidity, to frighten and scare the world with its reality and its traditions of merciless political imprisonment and pitiless punishments. Of its history and, most of all, its destruction and its consequences, the world has within the last half-century had ample opportunity of being sufficiently informed. But our business, if business we have any with the Bastille, is to speak neither of its existence, its destruction, nor of the consequences of either, but of the changes of a very different kind that have taken place in Paris within our own memory. There are many of us living who have made the journey between London and Liverpool, or London and Edinburgh, in the old mail-coach days, starting from Regent-circus, and there are not a few of us who can remember their first visit to Paris in good King George's days, before even a dream of a Pullman car could ever, in the misery of a *diligence* journey, have passed through the brain of the traveller. Of all travellers' tales Sterne's "Sentimental Journey" remains most firmly in the memory; of the many writers who have described their experience of travel in France in the past, Sterne, Goldsmith, and Ruskin have afforded perhaps the highest delight. Thackeray's earliest visits to Paris and the Continent were before the days of railways and Pullman cars, and Turner, who knew nothing of the modern conveniences of travel, has left as enduring memorials of his many journeys as the most fascinating writer has ever done; certainly more faithful records of the scenes that so many of us now visit are not to be found than exist in Turner's splendid memorials of our own country and the Continent.

But how different a Paris did Sterne and Goldsmith, Turner and Thackeray, see, to the Paris of to-day,—the Paris that is daily growing more near and still nearer to completion. Outwardly at least, one may say, growing rapidly towards perfection, because in its lively and carefully studied architecture, in its well-paved streets and well-kept roadways, in its rapidly-growing area of cleanliness, in its disposition to consider scientific hygiene, and all sanitary questions, and in its watchfulness of the great economical theories that thoughtful men have ever regarded, and above all (in this journal, we must say) in the love of art in its varied manifestations, the ready and liberal encouragement of talent in its earliest moments of development, and its rewards for its results, Paris without a question stands foremost among the cities of the world. We have but to remember the magnitude of the difficulties that Paris has overcome within the last century to enable us to find ample excuse for many, if not all, of the at times glaring inconsistencies that strike the thoughtful traveller, but more often the prejudiced critic, the former alone, after all, having any right to hope that his opinion can carry with it any substantial weight.

In new Paris and the Paris as we now find it, whether we revisit it for a few days only or for a lengthened period, it must be confessed, no matter what be our political sympathies, that those moments of disgust that it was impossible not to experience in past days are now far less frequent in their recurrence, and we have but to recall the many incidents to be met with in other parts of the world, that shock even the least sensitive of us at home, that is, if we reside in any of our large centres of industry, to acknowledge the propriety at least of the exercise of some caution in the expression of our feelings. One fact there can be no gainsaying, that new Paris has advanced on the old within the last thirty years in a way and through means so varied as to leave us in doubt whether politics have had any share in this wonderful improvement.

We remember a popular Irish writer, the author of "Handy Andy," stating that in his opinion a man once having had a taste of London was not easy to satisfy with any smaller privilege than life in the metropolis of England; but this was said forty years ago, when Paris was not in the possession of the liberty it now enjoys. We are rather tired of hearing Paris spoken of as a city of pleasure, though it does not much shock the Parisians to have their capital regarded in that light, but we cannot speak of it too often with respect as a centre of work, of patient study, and laborious industry. Side by side in the busy streets the student and the pleasure-seeker jostle each other, occupy even the same house, though the true house of the community of mental toilers is in the classic Quartier Latin, divided from the racket of Paris proper by the Seine; in the quiet suburb they have long occupied as neighbours of the noisy students,—who are, however, not quite so noisy as in the past,—long may their memories rest with us. The historic families of France still live in the stately old hôtels their ancestors built in the days when the Faubourg St. Germain was, scarcely as it now is, a portion of new Paris, when no bustling Boulevard cut through its neglected gardens, hewing down their old trees and disturbing the quiet of their slumbers; far away at the east end of the city the toiling Faubourg St. Antoine is even more busy than it was in the days that Dickens has so well described in his "Tale of Two Cities," when from its crowded streets and courts growled the first raisers of the storm of the great Revolution.

Through all the changes of recent years, these sections of the metropolis have retained their respective characters; the city has spread out in different directions; new Paris has had, in common with every other great city of modern days, to find accommodation for its ever-increasing population; but throughout all this century Paris has enjoyed one inestimable blessing to which it owes no small share of its present position,—a centralised form of municipal government. Whether owing to this fact or not, it is difficult to say, but Paris has owed the many advantages it at present enjoys to the warm amount of civic pride and interest felt in its government by almost every inhabitant: thus while Paris, under these influences, has yearly found every suggested improvement warmly taken up, each forward step in London, unsupported by public interest, has been alone the result of a hard-fought battle with innumerable conflicting authorities. Year by year in Paris old abuses are being abolished and further privileges afforded to the number. A just limit is placed to the amount of individual liberty allowed to all, and a general advance forward marks the close of each year. Science and art go hand-in-hand to work out the many problems that remain so glaringly to be considered in our great centres of population.

But Paris and the Parisians, it must be admitted, owe to their ancestors no small debt of gratitude for the manner in which, as Carlyle has expressed it, they filled up the ditches for the onward march of the present generation. Many of the noblest institutions that render Paris so famous are the intelligent creations of the past, their original aims skilfully fostered by the generosity of the present. What does not Paris, for instance, owe to such an institution as the Collège de France, which offers gratuitously to all comers, students, young and old alike, such a series of lectures as are delivered daily in the college near the Sorbonne founded by Francis I., where every branch of learning can be followed under the guidance of the most eminent professers whom France produces, where the latest views on science, philosophy, literature, and art, the most abstruse questions of antique law, language, and archæology, are freely laid before the student by men who, in France, hold the highest position. During many months in the year, eight or ten lectures daily by such professors, lectures thrown freely open to the public, would suffice alone to constitute a source of pride to a great city. When, however, we add to the lectures of the Collège de France, the equally free lectures delivered at the École des Beaux Arts, where M. Taine has made known his whole artistic philosophy, the lectures delivered at the Jardin des Plantes, where such men as Milne-Edwards, Quatrefages, and Chevreul are the worthy successors of Cuvier and his generation; the lectures delivered at the Conservatoire des Arts et Métiers, specially intended for those in pursuit of the industrial arts; the lectures at the École des Arts Décoratifs; the lectures at the École Centrale des Architectes, where the study of architecture is followed in its most abstruse branches; the lectures delivered at the Sorbonne; at the neighbouring École de Droit to the law students; at the École de Médecine and the École de Pharmacie to the medical students; the lectures delivered in the Rue de

Lille on Oriental languages, on archæology at the Bibliothèque Nationale,—a list far from complete, but recently added to by the institution of the free artistic lectures delivered at the Louvre. When we sum up all these extraordinary facilities afforded to the merest outsider, —be he young or old, Frenchman or not,—to pursue in Paris any branch of study in which he may be interested, it is not, we think, exactly correct, when we consider how many other branches of study are represented in Paris, to designate the French capital as a city of pleasure. City of pleasure, indeed, it is, if work be, as it is in reality, true enjoyment; and in this sense Paris has been the home of riot ever since the days when Dante crossed the Alps to seek in the then already-famous Paris University the learning, so much of which had come to the banks of the Seine, exiled like him in later days from his fatherland.

New Paris is, after all, but the creation of all this fervour of the past, the continuation of the traditions earnestly handed down through generations of change and turmoil. Paris enjoys the privilege of having been governed by a succession of rulers whose aim it has been to make their capital the centre of intelligence of the world. Those who know the French capital well, even though they may be Englishmen, can excuse Victor Hugo for his love of, and belief in, the superiority of the city with the history of which his name is so intimately associated. To this belief, instilled largely into the inhabitants, is due the ease with which the municipality are enabled to carry out their plans.* The largest municipal loans are greedily taken up by the thrifty population, and hence funds are never wanting.

ON THE APPLICATION OF COLOUR TO ARCHITECTURE.

ON none of the subsidiary arts connected with architecture has there been in modern practice so little agreement with all ancient rules and customs as on this. It is only of late years that any one has conceded that the duty of architects is to give the best possible combination of form and colour, and that the completest form of architecture is that which affords examples of such a combination.

For the last three centuries architects have shown almost a contempt for colour, to such a degree, indeed, that the world, till lately, was taught to believe that purity of style and absence of colour always went together; and that it was only a vulgar and uneducated eye which saw the greatest evidence of good and matured thought in the harmonious application of colour and form. Our sculptors encouraged this feeling by their dislike to the application of colour to their work, even when it was purely architectural. Both architects and sculptors found it convenient, apparently, to disencumber themselves of one-half of the responsibilities of their calling, and escaped all obligation of studying the laws of colour, or of entering on the large field of its application to architecture; whilst our painters, partly because they lacked the opportunity, partly, it is true, because their art had ceased to be exercised for the public benefit in the old sense, had ceased to regard wall-painting as their legitimate work, and had so completely sunk into the habit of treating only small subjects in a small way, that it will take an age to develop in them the power of dealing properly with those large wall spaces which present them with the grandest opportunity of achieving real distinction. It is abundantly clear that those who argue against the application of colour to architecture, do so without the authority their ancestors would have given them. Of late years much attention has been devoted to this point; there has been considerable discussion, and in the end, though there has been much difference of opinion as to the extent to which colour was applied by the Greeks and Romans, there has been none as to the fact that, at any rate, some introduction of colour was well-nigh invariable in their work. Mr. Owen Jones's apology for the colouring of the Greek Court at the Crystal Palace contains, in a small compass, quite sufficient evidence to show how strong is the ground of those who maintain the necessity of colour in Classic buildings; and equally valuable is the report, drawn up by the committee of the Institute of British Architects, on the colouring of the Elgin marbles, with Professor Faraday's analysis of portions of the coatings of marbles brought from several ancient buildings in Athens, upon all of which he makes it perfectly clear that colour was extensively and generally applied. Professor Semper, of Berlin, in treating of the origin of architectural polychromy, proves that the Syrians, Persians, Egyptians, Chinese, Indians, Jews, Phœnicians, and Greeks, all used colour in their architecture and sculpture; and we may safely conclude, therefore, that there is no country which has been in any way remarkable for its architectural monuments in which the necessity of the combination has been ignored or forgotten. This statement is sufficient on the subject so far as it affects all ancient schools of art.

If we turn to later times we shall discover in all the schools of Mediæval artists a still greater and more pronounced adhesion to the same principle. It seems, indeed, almost superfluous to say that there are most abundant evidences of the fact that the architects of the Middle Ages were seldom satisfied until they had covered their walls with colour,—in one place, with that in which nature has been so lavish in marble and precious stones; in another, with the artificial tints of tiles and bricks; in another, with the bright stencilling of gay diapers over entire walls; or, lastly, in the teaching of Scripture story, or legend, or history, by the aid of the greatest painters of the day.

If we look, for instance, to Italy, we shall see what a lesson these artists have left us. There is, for instance, the Arena Chapel at Padua, designed by Giotto, and then painted by him with his own hands in such a fashion that, to the present day, this simple little room,—some 20 ft. by 40 ft. in its dimensions,—is one of the greatest pilgrimage places in Europe for all lovers of Christian art; and again, in that far grander work, the noble church, so finely stationed on the steep slopes of the Apennines at Assisi, we see how Cimabüé, Simone Memmi, Giotto, and many others, helped to cover with pictures, conceived in a really divine spirit, the walls which would otherwise, no doubt, have been resplendent with the less artistic, but still most effective, labours of the patient stenciller. The same lesson is taught if we look at the Campo Santo of Pisa, and see how Andrea Orcagna, that great architect, painter, sculptor, and poet, and beside him a succession of artists, among whom we count Buffalmacco, Simone Memmi, Giotto, and Benozzo Gozzoli, helped each in his turn in this illumination of architecture; or at the Church and Refectory of Sta. Croce, and the Church and Chapter-house of Sta. Maria Novella, and the crypt of San Miniato, Florence; or at that masterpiece of decorative art,—St. Mark's, Venice,—where precious marbles and mosaics, rich in gold and bright colour, almost dazzle the eye with their magnificence, but combine to make an interior in which none can fail to admit that the effect of the mere architecture of the building has been extraordinarily enhanced.

Nor was such practice as this peculiar to Mediæval artists; for the earlier Renaissance men had the same feeling in some degree, and Benozzo Gozzoli has shown us in his exquisite paintings in the chapel of the Riccardi Palace at Florence, and Perugino and Raffaelle in the Stanze of the Vatican, how their work might be best adorned.

But it was not only in Italy, the land *par excellence* of colour, that men had a true appreciation of its value. It need hardly be told how St. Louis, in the palmiest days of the French kingdom, covered the walls of the Sainte Chapelle of Paris' with gold and colour and mosaic, and filled its windows with stained glass of the richest hues, so that to the present day it is an example of the most gorgeous colouring it is possible to conceive; or how, in England, when our monarchs wished to rival the zeal and enthusiasm of St. Louis, they gave, in St. Stephen's Chapel at Westminster, an example equally sumptuous and rich in colour; whilst at the same time, not only in our cathedrals, but in almost every parish church throughout our country, traces of more or less colouring are found to have existed over nearly the whole surface of the walls. Taking for granted, therefore, that every one will allow that it was, at any rate, the intention of all architects, as far as possible, to combine colour with form, it remains to be seen how this was accomplished. There were two great and distinct orders of architectural colourists,—the constructional and the decorative. The first were those who built their walls partially or altogether with coloured materials; the second, those who so built them that colour might afterwards be added, and with an especial view to its introduction. It is of the works of the former of these two classes that it is right to speak first, because the way in which they did their work was, on the whole, a more thoroughly enduring and proper way than that of the other school. It was also more definitely the works of architects.

The works of the constructional school of architectural colourists must be subdivided into two classes:—(1.) Those in which the coloured materials were part of the substance of the walls, and necessary for the stability of the whole fabric; and (2.) those in which the walls were covered with decoration, such as mosaic, or tiles, or thin veneers of marble, which had nothing whatever to do with their structural requirements. The first class was that which was, on the whole, both the best and the most frequently adopted. The few examples which we see in this country, and, indeed, generally throughout the North of Europe, belong to it. The poverty of England in coloured stones or marbles will account sufficiently for the comparative rarity of the examples we can adduce. Among them are many of the Northamptonshire churches,—as Irchester, Strixton, and St. Peter's, Northampton,—which are built with horizontal bands or courses of dark-red and light stones used alternately; in other districts we find courses of stones and flint alternately, as in the church of Penton Newsey, near Andover, and in a gateway at Rochester. In others flint and stone are used, but with inferior effect, in a regular chequer-work over the whole surface of the wall. In the church standing close to the north side of Rochester Cathedral, a course of chequer-work of flint and stone is introduced under one string-course, and two courses of flint, separated by one of stone under another. The churches of Essex, Suffolk, and Norfolk abound in examples of tracery, and other devices formed by cutting out patterns in the stone, and filling them in with carefully-cut and faced flints of very dark colour, so as to produce a very elaborate system of decoration in two tints. In the cloisters of Westminster Abbey the groining is executed in chalk, with occasional lines of dark stone at regular intervals. Our red-brick buildings are constantly diapered with patterns in black. The interiors of our churches, when not painted, were usually left with the natural colour of all the stone work,—whether wrought or not,—visible on the interior, an arrangement which, though rough and rugged in character, certainly gives a great amount of natural colour in a low key, but infinitely more agreeable to the eye than the cold expanse of plaster generally visible in new public buildings. Finally, throughout the thirteenth century the use of polished marble columns, of a colour much darker than that of the materials of the wall, is one of the most marked features in all the best English work, and cannot properly be omitted in any catalogue of modes of coloured construction.

Every one of these arrangements is noticeable as having been introduced intentionally, and with a sole view to variety of colour. In France, examples are much more numerous than in England, and the very interesting church at Vézelay is an early instance of the alternated use of dark and light stones in the interior as well as the exterior. Sta. Maria in Capitolio, at Cologne, has some good remains of the same kind; and St. Anne's Kloster, at Lübeck, is built with alternate courses of red brick and stone. It is in Italy, however, that we find the most plentiful store of examples of this kind of work, of which a few may be mentioned. The cathedral, baptistery, and the buildings generally, in Pisa and Lucca, are built both inside and out, with white stone courses, with thin courses of black marble occurring at about every fourth course. This is a very delicate and effective mode of dividing the wall space. The baptistery and campanile of the cathedral at Pistoia, and the campanile of Siena, are built in almost equal courses of black and white. In Genoa we find the same equal division of the courses in the façades of the cathedral, and of the churches of San Matteo and San Stefano. At Bergamo the porch of Sta. Maria Maggiore is executed in red, white, and grey marble. It is of three

* A proof of this is afforded in the recent determination of the Paris Municipal Council to institute shortly a Popular Opera House, a want which, for some time past, has been expressed by the ratepayers.

divisions in height, the highest stage being entirely of grey marble; the middle stage has all the moulded parts of red, and the arches and the spandrels of grey marble; the space at the back of the porch and over its main arch are built in equal courses of red and white marble; the groining is in black, red, and white marble, fitted to diamond-shaped panels, and all the shafts are of red marble. The whole design depends for effect almost entirely upon the arrangement and counter-changing of the three primary colours, the white becoming by age sufficiently yellow to take its place very well as one of them. Similar to this in the colours of its marbles is the thirteenth-century front of the Broletto or town-hall at Como; but here the courses are very irregular in their height, and not arranged upon any symmetrical rule. The campanile of the cathedral at Florence is the last example of this class that need be mentioned, and it is the very finest of all; here the component colours are red marble of Perugia, green serpentine, and white marble (the two latter have the effect at a slight distance of being black and yellow); but these colours are further varied by the introduction of very elaborate patterns inlaid in delicate marble mosaic on almost every available space, whilst glass mosaic is introduced behind sculpture in the stages near the ground, in order to make the figures as distinct as possible. It is important to observe that in this unsurpassed work Giotto showed not only his sense of the value of colour, but equally his feeling for true architectural proportion. No building was ever more carefully designed in this way, and the result is so great a success in outline, in detail, and in colour, as to make it one of the most worthy of study of any work in Europe. Here it may be observed, that in the doorways of St. Mark's, Venice, we have examples of exquisite beauty, of sculpture of foliage and figures in marble set off by a ground filled in entirely by mosaic, similar in idea to the way in which figures are set upon a mosaic ground in Giotto's work at Florence.

In the great church of San Petronio, at Bologna, the flat space between the two stone-moulded plinths is of red marble, and above the plinths the walls are all of red brick. This coloured plinth is very fine in its effect, and dignifies the whole building. The upper part of the Ducal Palace and the house called the Ca' d'Oro, at Venice, are examples of a coloured chequer-work over the whole surface of the wall. In the Ducal Palace this is arranged so as to form a regular diaper divided by lines of white and grey marble. The monument of Can Signorio, one of the Scaliger family, in the churchyard of Sta. Maria l'Antica at Verona, is a good example of the successful application of coloured materials to works of delicate detail. It is a lofty erection, composed of a great canopied monument in the centre, with a number of smaller canopied niches rising out of it, or standing upon shafts around it. The base is all of red marble, the niches have red marble columns, white gables, and red pyramids above them. The central mass is mainly of a yellowish tint, with white marble niches and pinnacles of red marble, and, owing to the extent to which the colours are counterchanged, the effect is very good. The west doorway of Sta. Anastasia, and the north doorway of San Fermo Maggiore, both at Verona, are beautiful examples of the simple alternation of white, red, and grey marbles in the jambs and arches; and in both these cases the extreme beauty of the effect appears to be owing to the delicacy and harmony of the tints of the marble employed, and to the absence of the very violent contrasts of colour which are sometimes seen.

There are other examples of buildings decorated with inlaid ornaments which belong to this class; such are some of the French churches, as, *e.g.*, those throughout the Puy de Dome, of which we may select as a typical example Notre Dame-du-Port, Clermont Ferrand Here the lower part of the walls is of uniform colour, the windows have alternate voussoirs of light and dark stone, and the wall above them is entirely covered with a mosaic diaper; the walls are crowned with a heavy cornice supported on corbels, between each of which the space is filled in with a star in mosaic. Similar examples occur at St. Etienne, Nevers, in Poitou, on the banks of the Loire, and frequently in volcanic districts where dark and light materials, tufa and scoriæ, abound and suggest the treatment which has been adopted. Some of the churches at Pisa are very beautifully and delicately enriched by inlaying. The little Church of San Matteo has round all its arches inlaid chevrons, diamonds, or triangles, and a line of inlaying under the moulded eaves cornice of the aisle. The front of San Michele, also in Pisa, is covered with inlaid patterns filling in the spandrels, or following all the architectural lines of the arcading with which the whole upper part is covered; similar inlaid patterns are to be seen between corbels under the tympanum of the south door of San Paolo, Pistoia. An inlaid pattern is carried along under the string-course below the aisle windows of the Cathedral of Lucca, and here, as in the other examples which have been given, the inlaid material is dark, on the white ground of the stone wall, and the object of its introduction was, no doubt, to give as much emphasis as possible to important features. In the case of the windows at Lucca the label is of dark marble, whilst the rest of the head of the window is white. In the Church of San Domenico, Perugia, a window-arch is built of grey stone, with occasional voussoirs of red, and on these, in order to make them as conspicuous as possible, small rosettes are carved. Another window in the same church has alternate voussoirs of red and white stone, and a red shaft for a monial. In the Palazzo Publico, of Perugia, the cornices and strings have ranges of corbels, the spaces between which are filled in with red marble to make the shadow deeper and more effective; in the windows, the shafts are of red marble; and in the doorway the tympanum is of red marble with figures in white in front of it. The west front of Lucca Cathedral is inlaid in the most elaborate manner, the upper part with illustrations of field sports, and the lower part with geometrical patterns. Here, too, and in Giotto's campanile at Florence, the shafts themselves are inlaid in the same way as the rest of the work.

In the arcades outside the walls of San Fermo Maggiore, and in the windows of the little church opposite the cathedral at Verona, great effect is produced by the ingenious combination of brick and stone; and throughout the North of Italy examples of this sort of arrangement of colour occur, and there are none more easy of imitation or reproduction with good effect at the present day and in our own country. In Santa Antonio, at Padua, an arcade of brick and stone in the west front has all its spandrels filled in with red marble; and the case of the east end of the church at Murano will be remembered by all who have read Mr. Ruskin's "Stones of Venice." Here the substance of the walls is red brick for a few feet from the ground, and above that a rather coarse yellow brick; red brick is used in place of labels, &c., to define the arches; the shafts are of various marbles; and courses of marble, cut in triangles, and alternately coloured and carved, are also introduced. The examples here given are enough to show, at any rate, the general prevalence of a love of colour in the Middle Ages throughout Europe. It would be somewhat beyond the scope of the examination of such a subject from an architectural side to go at any length into the mode of decorative painting, which was almost universally adopted at the same time. In this application of colour all countries agree, and there is hardly room to doubt the beauty and expediency of the practice. The passage to the chapter-house at Salisbury, the early church of St. Mary at Guildford, the chapels at the east end of Winchester Cathedral, are interesting English examples of early work. The Norfolk screens and roofs are still more interesting and beautiful works of the richest description, and so numerous were these that at one time no church seems to have been thought furnished which had none of this kind of decoration. These had every portion of their moulded surfaces adorned in the richest way with gold and colours, whilst their solid panels were covered with pictures of single figures or subjects. English roofs were decorated in the same fashion, and of these the finest examples are in Peterborough Cathedral and St. Alban's Abbey Church. If we turn to the pages of illuminated manuscripts we shall find views of towns in which whole houses are decorated with masses of colour on the outside to distinguish them from their neighbours. And in rather later times, as we see in Florence, in Brescia, at Augsburg, at Meran, and often elsewhere, most brilliant effects were produced by painting subjects on the external walls of palaces and houses. But, generally speaking, beautiful as this sort of decoration was, it erred rather in ignoring to a considerable extent the architecture which it adorned,—unlike the earlier works where the effort of the colourist was usually and rightly to make all the mouldings or members of the work decorated more distinct and intelligible than they can be in the absence of colour. Without coloured illustrations of an elaborate description it would be impossible to explain any or all the features of architectural polychrome. But enough has been said to show that the subject is one not only of interest to architects, but of importance to all who care for architecture, for it is hardly possible that works such as those which have here been shortly referred to should be passed over by the student or amateur of architecture, as though they had no interest for us, and it may be confidently asserted that modern schools of architecture cannot with safety ignore so interesting a development of the art. A. T. S.

THE RESTORATION OF TWO HISTORIC BUILDINGS.

The architectural interest of the palace which the Christian-persecuting Emperor Diocletian built in his native province of Dalmatia, at Spalatro, or, as now more generally called, Spalato, on the now deserted Adriatic coast, is familiar to all members of the profession. Only very recently Professor Freeman, in his learned work on the "Neighbour Lands of Venice,"—reviewed in these columns at the time of its publication,—devoted a considerable share of attention to this sadly-ruined relic of Classic art, and the position it occupies in the development of modern architecture. Buried in a remote part of the world on the further shores of the Adriatic, the palace built by Diocletian is rarely visited by any but the most enterprising travellers. At all periods, situated in the half-deserted, wild border-land between the east and the west, ruin and neglect have, generation after generation, crept over the pile in the sixteen centuries of its existence. The work of time has, however, of late begun to tell cruelly upon its stones, and the Austrian Government not long since, consulted on the question of the restoration of one of the most interesting architectural relics of the Empire unhesitatingly gave its consent. The works are, it would appear, now progressing favourably, as we gather from an interesting lecture delivered a few days since at Vienna in the rooms of the Œsterreichisches Museum, by Professor Alois Hauser, entrusted by the Minister of Public Instruction with the restoration.

The first work undertaken was to repair the original mausoleum, now the cathedral. This is a domed building, in shape octagonal exteriorly, circular interiorly; the cupola, it may be mentioned, differs from that of the Pantheon in having no central opening. As the lecturer pointed out the work would not appear to have been executed by Romano-Italian masons, but by Orientals, perhaps Greeks, since the masons' marks are all in Greek characters. The transformation of the mausoleum into a church greatly injured the building, though a large element of artistic grace was undoubtedly gained by the addition of the beautiful Romanesque pulpit and the rich doors. Further injuries to the pediment were also caused by the erection in the thirteenth century of the Romanesque tower. In the restoration, however, the double character of mausoleum and cathedral has been rigorously retained. With the restoration of the building, Professor Hauser urges the necessity of the isolation of the cathedral from the various huts and other parasitical excrescences which in the course of centuries have grouped themselves picturesquely round the central pile, a measure which, fully carried out, would unquestionably bring to light a great deal of antique work at present hidden from the eyes of the restorers. The restoration of the interior of the building also urgently required attention. With this view the cathedral was closed two years ago. It would appear that this measure caused no small amount of local bad feeling, the great *festa* of St. Doeno, which takes place in June, being thus interfered with. The authorities, however, were fully able to explain their reasons for closing the church on the score of the danger to the public arising from the ruinous condition of the interior, large pieces of cornice and plaster constantly being detached at the slightest shock. The material employed for the restoration,—which, it will be seen, has not been con-

menced a day too soon,—is a fine-grained limestone, much resembling marble in texture. The only Roman window (above the entrance), found walled up, has again been opened, and the director of the restorations holds out the hope that by next year the whole will be entirely completed. The restoration of the Romanesque tower will, however, take longer than was at first calculated, as, in consequence of its ruinous condition, the two upper stories will have to be pulled down and rebuilt.

At the very opposite end of the vast Austrian Empire in picturesque Prague, which bears so well the religious traditions which connect the capital of Bohemia with the stirring early days of the Reformation, when Huss and Jerome and Ziska prepared the way for Luther, it has been decided that one of the oldest memorials of the city, the *Altneusynagoge*, shall at length be restored. Buried in the labyrinth of the Ghetto of the Bohemian capital, this hoary monument, shrouded in the dust of ages, might well pass with the unitiated as in reality founded, according to the tradition, by the Jews who fled from the terrible destruction of Jerusalem. The professional critic, however, sees in the Altneusynagoge of Prague a Gothic thirteenth-century building, though it is more than possible that the foundations may be of much greater antiquity. The decrepitude of the pile has at length, it would appear, aroused the attention of the experts, and in spite of the outcry of the synagogue authorities at the threatened sacrilege, a complete examination has been made of the interior,—an examination which, in addition to revealing the urgent necessity of repairs, has brought to light a number of most interesting, and till now entirely unknown, details of the interior decoration, concealed under a thick crust of dirt, dust, smoke, and thousands of cobwebs which had gathered during centuries on the walls and vaulting. Tradition for generations has venerated this brown grime as the blood-stain left by the terrible massacre of the Jews which took place in the synagogue in 1389. The examination recently made has revealed that the vaulting was originally richly painted, numerous inscriptions in ancient Hebraic characters having been brought to light. The carving of many of the capitals reveals a wealth of beauty hitherto unperceived; the sculpture of the flowers and fruit represented being described by the commission as indication of a refined study of nature on the part of the unknown artist who executed these long-concealed treasures of Gothic art. Several interesting and early windows have been discovered, together with numerous other interior details, all of which have been photographed. At the close of last year a further meeting of the authorities was held, when it was determined that the restoration should be forthwith commenced; the necessary repairs to be first executed, but all restorations to be strictly in accordance with the original design. The high-pitched shingled roof will, when the weather permits, be removed, and carefully restored.

From the appearance of the works of the antique Pulverthurm, and the Prague Cathedral, both at present undergoing the process of restoration, the artistic public seem to feel assured that the repairs to be executed in the old Jewish synagogue at Prague will be faithfully and honestly carried out.

VITRIFIED BUILDING.

In an article on "Earthen Monoliths," and in relation to the discoveries of Dr. Schliemann and his interesting statements as to the vitrifying of buildings *in situ* which had been built with unburned bricks, we expressed a wish that some of our archæological readers might furnish us with some British instances of a reliable character of early date in which vitrification was adopted. We alluded to statements made to us, and to the mention of brick or earthen structures which were said to have been vitrified *in situ* in Scotland, but in recent works of a respectable character, and wherein one might expect to find some details of these vitrified buildings, no particulars are given of them. We find, however, in casting about, that towards the close of the last century the subject of early vitrified structures or forts was attracting notice in Edinburgh and also on the part of some of the members of the Royal Society in London. In 1777 Mr. John Williams, mineral engineer, published a pamphlet, and in the same year transmitted a paper to the Royal Society of Antiquaries, London, by Dr. James Anderson, of Monkshill, giving an account of certain vitrified materials on the tops of several hills in the highlands of Scotland. These gentlemen are all agreed in believing that the materials in question are the remains of fortifications, and that their vitrification was produced by fire employed by the builders for the purpose of cementing their component parts. The Bishop of Derry and a Mr. Thomas West, on the other hand, considered these as vestiges of an ancient volcano. As many of the theories of the mere literary antiquaries of the last century were fanciful and conjectural, it need not be wondered that the subject of the Scotch vitrifications gave rise to much difference of opinion. Several members of the Royal Society who examined specimens of the burnt matter pronounced them real lava, while Mr. Andrew Crosbie, a member of the Royal Society of Edinburgh, supposed this so-called lava and the whole of one of the hills to have been thrown up from the bottom of the sea by the operation of intestine fire.

In 1790 came forward Mr. Alexander Fraser Tytler, F.R.S., Edinburgh, to settle the matter from his own point of view, his curiosity being excited by the different opinions of those alluded to above. Mr. Tytler, according to his own statement, examined several hills where these extraordinary vitrified structures existed, but his ambitious paper chiefly relates to Craigh-Patrick, near Inverness. There is no special mention of brick materials, or prepared earth or moulded clay in connexion with the Craigh-Patrick vitrifications as viewed by Mr. Tytler. The stone and that of the neighbouring hills is said to be composed wholly or in part of the same materials, but do not exhibit any appearance of the effects of fire. The stone is described as a "mixed mass of differently-coloured granite, greyish or speckled quartz, and the common white quartz. Unlike the volcanic tufas, it contains neither pumice nor burnt matter, but undergoes a total change, and suffers an imperfect vitrification when exposed to fire." There were no basalts found in the vicinity. In respect of the vitrified matter forming the outer wall, Mr. Tytler asserts that in no place was there a complete fusion. In referring next to some of the hills mentioned by Mr. Williams he observes that the marks of vitrification seem inconsiderable in number compared with those that have not been at all affected by fire. He infers from this circumstance that the partial appearances of vitrification are not proofs of an ancient mode of building, in which fire was employed as a cement, but its accidental effects on the structures composed of combustible and fusible materials. We next come to the theory put forward. Craigh-Patrick and other hills are stated to be composed of stone that could not be quarried in square blocks, but breaks into irregular and generally small fragments. Hence, in his opinion it would be very difficult to form with such materials alone a regular structure possessing sufficient strength, and it is conjectured that the mode of raising a rampart in such a situation was by driving a double row of stakes warped across by boughs of trees, laid so closely together as to confine the materials such as wood, earth, and stones of all kinds and sizes, which might be collected and thrown between them. Against a building fire would be the most formidable engine of attack, and if employed at a time when there happened to be a wind to increase the heat, the stony parts would necessarily come into fusion and produce a mass of vitrified matter, marking the situation of the rampart. It is conjectured that these fortifications must have been erected in Scotland prior to the Roman occupation in the northern parts of the island, and were evidently reared when mortar was unknown. Now, whether these structures afford proof of an ancient mode of cementing stone by vitrification, or arise through accidental circumstances, must be more fully debated. Accidental causes might, and would, produce in some cases the appearances described, but the vitrification is too general to be accounted for in this way.

In none of the various pre-historic structures of Ireland, nor in the early Christian ones, are there any evidences of vitrification. Stones of various shapes and sizes were used, many of a Cyclopean character, but thickness of masonry and close-fitting of the stones compensated for the absence of mortar or other cementing material. The round towers all show that mortar and grout were used in their construction; but the period of their erection, and whether Pagan or Christian, is a still debated question. If these towers are of Pagan date, as some able and practical archæologists and architects have contended, then in that case the dry-wall masonry structures must be pushed back to a still more remote era. The raths and other underground structures, though earth ramparted, were all internally and below of stone. There are no early burned or unburned brick buildings in Ireland; indeed, brick construction in that country is of very late introduction. The Romans employed mortar in their buildings, and the craftsmen of their legions in England and Scotland did the same, but no Roman legion ever set foot on the soil of Ireland. Scotland has always been characteristically a stone building country, and the same may be written of the North of England, Wales, and Cornwall. Vitrification then, if it ever obtained to any extent, must have been in pre-Christian times, or at a time when the art of quarrying and cutting stone for building uses was in a very crude state in those countries. Future excavations and archæological discoveries in the British Isles may afford us more light on a very debatable question. There is no more reason to doubt that beneath the soil of Britain there are buried towns and buildings, than to doubt that sites exist below sites in Greece and Rome, rich in treasures of the long past. There have been waves of civilisation and barbarism succeeding each other in the history of man and the rise and fall of nations and races.

LYCIAN ANTIQUITIES.

Professor Benndorf, the discoverer of the valuable relief sculptures of Gyolbashi, recently gave a lecture upon the results of his Lycian explorations to the members of the Scientific Club of Vienna. Referring to the nature of the country where he carried out his explorations, the Professor said that Lycia, situated in the south-west of Asia Minor, was like the southern part of Tyrol, a bald, rocky region, which formed a plateau 1,800 ft. above the level of the sea, with hills rising 600 ft. higher. For centuries the country has formed part of the Turkish Empire. It is very thickly peopled. The pursuits of the population are chiefly pastoral and agricultural, but the people are very indolent and poor. More than 2,000 years ago this mountain plateau was inhabited by a far superior race. Somewhere about the end of the fourth century before Christ, a Lycian monarch, whose name is unknown, erected there a mausoleum of extraordinary magnitude. There were four strong outer walls, built of large blocks of masonry, each wall being 24 mètres long by 5 mètres in height. They enclosed a donjon-like structure, in the middle of which was a colossal stone sarcophagus, nearly 10 ft. high, and completely covered with sculptures. There is no doubt this formed the burial-place of the Lycian royal family of the period. The entrance was a massive gate, ornamented with oxen's heads. The inner sides of the walls of the enclosure are ornamented with two rows of reliefs, the one fixed immediately above the other. They were 100 mètres in length, and represented scenes from Homer's "Odyssey" and the huntsman and warrior life of Ancient Greece. The ground on which stood this royal tomb is covered partly with large stone ruins, some of them being sarcophagi broken up, and partly with disintegrated rock and wild underwood.

About forty years ago Herr Schönborn, a schoolmaster of Posen, was travelling on the rocky plateau of Lycia, and, losing his way, happened to stumble across the very spot where were the ruins we have mentioned. He immediately recognised the importance of the relics he found there, but he never published any description of what he had observed, and his diary has unfortunately been lost. However, he had given an oral account of the remains to the celebrated geographer, Professor Ritter, who sent a short notice of them to an English periodical. In this communication the latter gentleman failed to mention the precise locality where the relics were found. At a subsequent period Professor Ritter repaired this omission, and in his great geographical work he fixed the spot where these architectural remains were to be seen. Professor Benndorf, on reading Ritter's account, determined to visit Lycia and

inspect the relics for himself. He was only able to carry out this intention two years ago. To his delight, he found the account correct. The sculptured rocks were all there intact. He took a number of sketches and photographs, which he brought home to Vienna. His account excited much interest in Austria, and a number of noblemen and gentlemen, particularly Herr Nikolaus Dumba and Count Edmund Zichy, collected the necessary funds for fitting out an expedition, which proceeded to Lycia last year, and after five months' work succeeded in obtaining these treasures of antiquity for the Austrian capital. Professor Bendorf, who conducted the expedition, mentioned that in that rocky wilderness there is nothing to be met with in the way of civilised conveniences. There is not a cart to be had. There is no shelter. There is nothing to eat. There is, in fact, nothing at all but what the traveller takes with him. The Austrian party had to construct a road from the Mausoleum site to the seashore, —a distance it took four hours to travel over. The sculptured stones that have been brought to Austria filled 167 cases.

The remains consist mostly of massive stone blocks, and they had to be loaded and unloaded seventeen times between the place from which they were sent and their ultimate destination. The explorers had to construct a wooden jetty extending from the shore over a sand bank before they were able to get them on board the vessel which by the liberality of the Austrian Lloyd Company was placed at their disposal for the purpose of conveying them to Trieste, in Austria. And now these unique remains are in Vienna, except the reliefs above the gate and the huge stone sarcophagus, which the Government will probably have to find the means of fetching. In spite of being more than 2,000 years exposed to the influences of the atmosphere, and in spite of all the difficulties of conveyance, all except a few fragments have arrived well preserved at the Austrian capital, where they will soon form a distinguished ornament of the Museum. The sculptures themselves, as already mentioned, represent scenes from Homer, especially Meleager and his companions hunting the great boar of Calydon, and the seige of a city. They are in two rows, and excellently executed. Above is the king on his throne, and the queen with her slaves. There are priests in the act of sacrifice and imploring the gods, courageous defenders of the menaced walls, and other figures. In the lower series are the assaulting party in relief, powerful warriors attacking the gates of the city. Next comes a battle of the Amazons; then Ulysses returning from his wanderings and taking the suitors of Penelope by surprise. The hero is represented aiming with his bow at the intruders, who are protecting themselves with garments, stone tablets, shields, and so forth, while Telemachos is assisting his father, and the goat-herd, Melanchos, is taking to flight.

The style of execution and many of the details justify, with tolerable certainty, the assumption that these sculptured works, which originally were probably painted, were produced about the close of the fifth or beginning of the fourth century before Christ. Their author was probably Polygnotus, one of Phidias's disciples, whose creations breathe the true Homeric spirit. The works, through their pure and noble style, irresistibly remind us of the grand reliefs of the Parthenon and the brilliant Classic age of Pericles, as well as of Alexander the Great. They form a worthy counterpart to the results of Dr. Schliemann's excavations at Troy and Mycenæ, and likewise to the altar of Pergamos. They form a pictorial representation of ancient Greek life, such as for completeness is without a rival.

The Duke of Wellington's Statue.—The First Commissioner of Works proposes to appoint a committee to inquire into and report upon the subject of the most eligible site for the statue of the Duke of Wellington, now being removed from the place where it has stood for thirty-seven years at Hyde Park Corner. The following have agreed to form the committee:—Viscount Hardinge, Sir Frederick Leighton, Mr. James Fergusson, Mr. Boehm, Mr. Mitford, and the Duke of Wellington. The sites which will be chiefly brought under consideration are,—a spot within the new grounds now being laid out near Hyde Park Corner; a position in St. James's Park, opposite the Horse Guards; and one in Hyde Park opposite the Knightsbridge Barracks.

ABOUT BUILDING WOODS.

The first importations of foreign-grown building woods to this country marked a new and distinct era in the employment of timber as a constructive material.

The early arrival of foreign building woods first reached us from Russia, and they came over in such limited quantities that the vessels which conveyed them across the Baltic were usually loaded to the extent of at least three parts of their carriage capacity with linseed or some other commodity. How far the importation has since then progressed may be best inferred from a reference to the following table, which shows the extent of last year's exportation from the wood-growing countries abroad to the United Kingdom:—

	Loads.
Norway and Sweden	2,022,472
British North America	1,292,663
Russia	1,160,050
Germany	224,205
Other Countries	835,756
Total	5,535,146

Any notes relating to such a widely-used constructive material as wood can hardly fail to be of general interest.

It may be remarked that there are in the United Kingdom 118 ports into which foreign building timbers are imported, and to illustrate the important position which London occupies as a timber port, it needs only to be said that during 1882 London alone received 1,404,793 loads, or, in other words, more than a fourth of the total quantity imported into the United Kingdom.

The early importations of foreign building woods consisted mostly of hewn logs, which were upon their arrival into this country converted into the required shapes by the slow and laborious process of hand-sawing.

The sudden and enormous development which has in recent years occurred in respect to wood-working machinery must assuredly be recorded as one of the most striking outcomes of the nineteenth century. No invention, perhaps, has met with more strenuous opposition in his time than the wood-working machinist, and few have been ultimately more successful in the realisation of their hopes, for not only do we find to-day the workshops of our towns and cities amply supplied with wood-working machinery, but we see the latest and most approved types in constant employment even in our villages. The advantages which modern wood-working machinery has conferred are simply enormous, for by its general use we have seen the joinery work of dwelling-houses so far cheapened that in the dwellings of our artisans can now be found conveniences and advantages with which their ancestors, who occupied a far higher social position, were totally unprovided.

In the early days of the importation of foreign building timber, native woods competed with it for supremacy or rather struggled to prolong existence. The issue of the struggle was not, however, long in declaring itself for the foreign material, possessing every requisite, with super-abundant advantages, soon ousted out its rival from the arena of competition. Its use once firmly established the extent of its employment progressed with astonishing rapidity.

It has been a marked feature of the wood trade that the modern builder has required his material almost every year more in a converted shape, *i.e.*, as nearly fashioned ready for use as circumstances rendered permissible. Content in the early day to receive the hewn logs and slowly to fashion them into deals, battens, scantlings, or boards, he now requires each of these articles ready produced, and, save when required for weight carrying or other purposes, rendering large squares indispensable, he has insisted upon having his material converted to the nearest possible shape finally required. At the present day we see this desire emphatically expressed in the ready demand for foreign-made joinery work, and for sizes of sawn wood with which the builders of a quarter of a century back were totally unacquainted.

It will be a matter for satisfaction for those who appreciate good work to know that it is almost the unanimous opinion of wood-dealers that the days for importing wood of common quality are practically gone by. The tendency to use superior material, or rather the disinclination to make use of very inferior, appears to be quite a modern one. The early importation of building woods consisted mostly of sound and good qualities, perhaps for the sufficient reason that the cost of conveyance was such as not to warrant the bringing over of inferior kinds.

Some ten or fifteen years ago, however, and some time after the abolition of the timber duties had made way for largely increased importation, and as architects have many a time most bitterly complained, a class of material was largely imported of such a quality as barely to carry with it the designation of being merchantable material.

During some years the wood markets were flooded with shipments of this most undesirable stuff, which, of course, very largely found its way into the common tenement property put up in all parts of the country by the so-termed "jerry builders." The extensive weedings-out, however, of these traders, and the unsatisfactory results which attended their doings, rendered the continued importations of the very inferior building woods quite unprofitable to the importing merchants, and this circumstance in conjunction with the repression placed upon the business when architects superintended the conduction of the work, appears to have acted in finally closing the importation. That building wood is to-day used of an all-round higher quality than the average of that employed in comparatively recent years is quite certain.

Concerning the use of the early importations of building woods, no circumstances are more interesting than those which relate to the consumption for flooring-board purposes. The matter of laying floors appears to be one which has to the present time been undergoing almost continuous modification. Years ago a wooden floor was regarded as one of the luxuries of the time, and the greatest care was exercised for the production of that then considered perfection,—a clean floor. Boards were selected as free as possible from knots, and some of the early wooden floors were made of boards carefully selected for the straightness and beauty of the grain of the wood. It was then, for the making of better-class floors, the custom to cut up logs of about 9 in. to 11 in. square, and so carefully were the boards cut that frequently a third of the log was discarded as being of insufficiently good quality for the purpose. These logs ceased to be imported when the Norwegian mills commenced to ship prepared flooring-boards. The desire to secure boards of strongly-marked grain carried with it the disadvantage that the coarse fibre was prone to wear into splinters, and not a few serious accidents arose out of the fashion which prevailed.

It is a somewhat remarkable circumstance that coloured, or what are termed "fancy woods," should be sent over fashioned in the same way, *i.e.*, in the shape of hewn logs, as they were at the time when they were first imported into this country in the Elizabethan period. Nay, if anything, the form of manufacture has receded rather than progressed, for we learn that when Sir Walter Raleigh, struck with the beautiful colour and grain-marks of some mahogany which he came across when on a voyage to the West Indies, brought some samples over for his royal mistress, the wood was already sawn into planks.

And whilst treating upon "fancy woods" it may justly be remarked as a matter for surprise that so little attention has been paid to the seeking out of coloured woods for cabinet purposes. The various trees of the rich tropical forests of Central America are to be counted almost by the hundred, and yet we see the general consumption of cabinet woods restricted to some few varieties, such as oak, mahogany, rosewood, ebony, satinwood, &c., including the wood which has recently met with such great favour,—American walnut. The early importation of "fancy woods" has been added to but little, so far as additional varieties are concerned. Yet the increased desire for superior building woods is pretty certain to finally take the direction of making "fancy woods" more popular for better class joinery work, and when this innovation has become completely established, we shall without doubt find a desire spring up to secure woods of

"Various hues and kinds."

A remarkable circumstance of modern times relating to building woods has been the sudden popularity attached to pitch-pine, which not many years ago was almost contemptuously despised by architects. This suddenly-acquired popularity is to be accounted for by reason of

the increasing difficulty of procuring large-sized Memel logs, and the large size and wonderful cheapness of pitch-pine. Nor are size and cheapness the only qualities which recommend its employment. Pitch-pine,—more than, perhaps, any foreign-grown building wood,—is remarkable for its uniform good quality. This reputation it has had established for a number of years, and the pitch-pine shipments of recent years have been, if anything, superior to those of former times.

Referring back to a consideration of the modern liking for wood converted into a shape as nearly as possible ready for immediate use, the conviction appears with much force that this is the distinctive feature of the present time. We find to-day that, not only does foreign timber reach this side in abundant quantities, sawn into deals, battens, boards, and scantlings of all convenient sizes, that immense importations of first-class joinery work reach us annually, but that the minutiæ of woodwork articles,—such as slate-laths, plaster-laths, trellis-work, and even down to the unassuming broom-handles,—are abundantly supplied to us, all of foreign manufacture. This fact already points to the advantage which has been expressed in employing specially-constructed machinery for the doing of particular kinds of work.

THE NEW STREET FROM PICCADILLY TO BLOOMSBURY.

"The first of our society is a gentleman of Worcestershire, of an ancient descent, a baronet, his name Sir Roger de Coverley. . . . . When he is in town he lives in Soho-square."—STEELE, *The Spectator*.

THE more frequented thoroughfares of modern London afford little occasion or opportunity to those who care now and then to summon up to the sessions of sweet silent thought the remembrance of things past. But turning aside the while, a slight effort of imagination may conjure up for them many a picture like to that of Sir Roger passing through New Inn exactly at five, and crossing through Russell-court to take a turn at Will's before the play begins. It is they, then, who will follow with interest the course of the demolitions for the new street. And these, indeed, are of no ordinary importance. Extending from St. James's Piccadilly, to St. George's Bloomsbury, the Board of Works' project traverses the parishes of St. Anne Soho, St. Martin-in-the-Fields, and St. Giles. Already the southern side of Coventry-street is pulled down, Newport Market and its immediate vicinity have disappeared. With Coventry-street was removed the oldest tobacco-shop in London, opened (on the site of Piccadilly Hall) by Mr. David Wishart the same year that Prince Charles Edward was born. His sign of the Highlander Thistle and Crown referred to the claims of the Stuarts, whose adherents frequently assembled here. Wishart was the first to place a figure of a Highlander at his door, and at the doors of retail dealers whom he supplied, in token of such houses being identified with the Jacobite cause. Next to Wishart and Lloyd's Highlander in point of age is that at No. 128, Tottenham Court-road. To this street Henry Coventry, son of the Lord Keeper Coventry, and himself Secretary of State to King Charles II., gave a name. Newport Market is called after the mansion, since rebuilt as Grafton House, of Mountjoy Blount whom King Charles I. created Earl of Newport. William Cavendish, third Earl of Devonshire, died at Newport House in the year 1654, when it passed to other hands. Here Horne Tooke's father, a poulterer, whom his son described as a "turkey merchant," had the memorable dispute with the household of Frederick Prince of Wales about the making of a way from Leicester House to Newport-street, through his back premises in the market. In the result, as the late Earl Russell proudly enunciates in his "Essay on the English Constitution," the "tradesman of Westminster triumphed over the heir-apparent of the English crown, and orders were issued for the removal of the obnoxious door." By the public-house in Prince's-row was the last of the slaughter-houses that survived the Public Health Act of 1849.

Soho commemorates the watchword of "King Monmouth's men," at the last fight deserving the name of battle that has been fought on English ground; St. Giles's-in-the-Fields the name of the abbot and martyr, patron saint of those sufferers for whom a hospital was founded here by the beneficent consort of a Plantagenet king. Soho Fields* was rapidly covered with the town mansions of our great families, in their migration westwards from the City after the Restoration. Towards the close of King Charles II.'s reign Southampton (Bloomsbury) square and King's (Soho) square formed favourite localities with the wealthier and more fashionable classes. Foreign princes were carried to the former, as one of the wonders of England.† On the southern side of Soho-square, first built in 1681, Wren erected for its most popular inhabitant a mansion, whose hideous exterior belied the beautiful adornments within. Of the square in which Monmouth, Evelyn, Burnet, and the Earls of Stamford and Carlisle once lived, Nollekens, whose childhood was passed in the neighbouring Dean-street, says he can remember "there were no fewer than four ambassadors in Soho-square, and at that time it was the most fashionable place for the nobility." Though its inhabitants have long ceased to afford evidences of this earlier settlement, numerous tokens remain of another migration hither which followed upon the revocation of the Edict of Nantes in 1685, three months after Monmouth's execution on Tower Hill. To these emigrants succeeded others, who, fleeing from the Reign of Terror, trafficked here in glass-making, jewel-setting, with the like fine arts, then little practised in this country, and in later days those who would establish a commune in their own fair capital. Our readers are familiar with the French aspect of Soho, especially in its southern limits. Maitland, writing 150 years ago, says that many parts of the parish of St. Anne (see *infra*) so abound with French that a stranger could easily imagine himself to be in France. Hogarth, in his "Noon," paints a group of refugees leaving their church in Hog-lane (now Crown-street). The Swiss Protestant chapel in Moor-street stands upon the site of an old pillared building which was termed the "French Exchange." A *salon des étrangers* has been opened in Greek-street by the London City Mission.

Contrary to general belief, "Soho" dates from a time anterior to the Duke of Monmouth's birth. It occurs in the rate-books of St. Martin's-in-the-Fields at least as early as the third decade of the seventeenth century. Moreover, the "Brick-kilns near So-hoe" are mentioned therein under date 1636; the Commonwealth Survey of 1650 speaks of Shavers' Hall as "lying between a roadway leading from Charing-cross to Knightsbridge west, and a highway leading from Charing-cross towards So-hoe." The fields were so much built upon by 1675 that a separate receiver took the rates of this part of the then parish of St. Martin, and his book was called the "Soho book."‡ The whole of Soho formerly stood within St. Martin's-in-the-Fields. That parish, having existed from a remote period, but without a church of its own, was in this respect rendered independent of St. Margaret's, Westminster, in the year 1535 by King Henry VIII. Taking umbrage at the funerals which passed the windows of his newly-acquired property at Whitehall on their way from the one parish to the graveyard in the other, he caused that church to be built which, in 1721, gave place, at a cost of nearly 37,000*l*., to Gibbs's present structure. From the original parish which, albeit of wide extent, contained less than 100 inhabitants when first rated to the poor, *temp.* Queen Elizabeth, there were taken out the following at the dates given: St. Paul's, Covent-garden (1638), St. James's, Westminster (1684); St. Anne's, Soho (1686); and St. George's, Hanover-square (about 1720). St. George's, Bloomsbury, was taken out of St. Giles's in 1730. Soho-fields were first granted to Henry Jermyn, Earl of St. Alban, by the trustees of the "Rose and Lily" Queen; then by King Charles II. to his son by Lucy Walters; and subsequently by King James II. to the Duke of Monmouth's widow. But in the spring that followed her husband's death the young Baroness Wentworth, of Nettlestede, was buried beneath the transept of the church at Toddington, Bedfordshire, the seat of her race. Her name, carved by his hand whom she loved too well, was a few years since still discernible on a tree in the adjoining park. A sumptuous mausoleum marks her resting-place; Monmouth lies beneath the communion-table of St. Peter's Chapel in the Tower,* and the last link that connected him with Soho was lately broken in giving the style of Dudley to the street that bore his name. Lord Bateman bought the house, in 1717 it became an auction-room (*vide* "Walpole's Anecdotes," v. 322), and some sixty years later Bateman's-buildings arose in its stead. The grant to the Bentincks specifies all the existing streets and courts, and from it we learn that Wardour-street,—built *circa* 1696 and, with Arundel-street, commemorating Henry, third Lord Arundell of Wardour, the steadfast adherent of King James II.,—was otherwise known as "Old Soho." Henry, fifth lord, married Elizabeth, daughter of the celebrated Colonel Panton, gamester, last proprietor of the gaming-house Shavers' Hall (Piccadilly Hall), who gave his name to Panton-street. Charles Lamb's enjoyment of strolling along Wardour-street as we know it on a summer's day is recorded by Leigh Hunt. Besides those already spoken of as having lived in Soho-square may be instanced Sir Cloudesley Shovel, who lay in state at Falconbergh House before interment in the southern aisle of West Minster; Lord Chancellor Macclesfield, and George, his son, president, in 1752, of the Royal Society; Alderman Beckford, in the now House of Charity at the corner of Greek-street;† George Colman the elder; and at No. 32 (the Hospital for Heart Disease), Sir Joseph Banks, together with his eccentric sister, famous for her three riding-habits,—Hightum, Tightum, and Scrub. At Carlisle House, on the eastern side by Sutton-street, town house of the earls of that title, Mrs. Teresa Cornelys, during the period 1763—1772, held her renowned concerts and masquerades, precursors of Almack's. Reduced by improvidence to selling asses' milk at Knightsbridge, the Heidigger of the age, as Walpole styles her, ended her life in the Fleet. Much of the house was taken down about eighty years ago, when the music-room became the Roman Catholic Church which Nollekens attended "on fine Sunday mornings." It contains a Crucifixion by Vandyke. Sutton-street and Falconbergh-court, with the Falcon Tavern, take their designations from Sutton Court, Chiswick, the home of the Falconberghs. At No. 20, lately D'Almaine's, a fine specimen of old domestic architecture, died Mary, Lady Falconbergh, Cromwell's daughter, leaving it with all else she could away from her husband's family. This stands between the "White House," whose assemblies were as popular, if not quite so select, as those of Mrs. Cornelys, and one, with ceilings by Angelica Kauffmann and Biagio Rebecca,—home in turn of a duke of Argyll, an earl of Bedford, and Speaker Onslow. In premises formerly occupied by the Storekeeper General, Soho Bazaar was opened in 1815 by a Mr. Trotter, to which family it still belongs. The central statue, of King Charles II., or of Monmouth, has been removed to a garden at Harrow Weald. Around the fountain at its base were figures of the Thames, Trent, Humber, and Severn.‡ Greek-street, built with Church-street *circa* 1680, is named after the Greek Church in Hog-lane; the first of that faith in London, consecrated in 1677. The curious inscription above its western door has been discussed and illustrated in our columns. Purchased by the Huguenot *émigrés*, and next used as a chapel, this is now St. Mary's Church in Crown-street; Hog-lane yielding in 1762 to the latter style, after the sign, not infrequent in this locality, of the celebrated "Rose and Crown" at the corner of Rose-street. About ten years since a northern aisle and spacious chancel were added to the original fabric. There has thus disappeared the view (commonly reversed in the engravings) of the east end, with St. Giles's steeple in the background, of Hogarth's

* In the conveyance (the 13th of May, 1700) by William III. to his *ci-devant* page of honour, William Bentinck, first Earl of Portland, they are set forth as including Kemp's Field, Bunches Close, Colenan Hedge Field, 220 acres; and Doghouse Field, or Brown's Close, 5¼ acres,—being nearly all the now parish of St. Anne, Soho.

† See the Travels of Duke Cosmo. King's-square was named after the builder of that name.

‡ Of Flaxman, who lived at No. 27, Wardour-street, 1781-7, J. T. Smith, in his "Life of Nollekens," writes:—"During his residence in this house he was chosen by the parish of St. Anne, in which he resided, as one of the collectors for the watch-rate; and I have often seen him with an ink-bottle in his button-hole, collecting the rate."

* See the *Builder* vol. xliii., pp. 645, 643 (November 18, 1882).

† See Walpole's Letters to Sir H. Mann, under date the 19th of April, 1770.

‡ This is the fountain of which Nollekens affirms the water would never run out of the river gods' jugs; and he would watch them, he adds, for hours together; but when the windmill was going round at the top of Rathbone-place.

picture. The tenements along two sides are the survivals of the almshouses built by Mrs. Graham and Sir Charles Cotterell, their foundation being attributed to Nell Gwynne, who lived at No. 38, Prince's-street, re-numbered No. 53, Wardour-street, shortly to be demolished.* The handsome son of a rich ironmonger,—one Buttall,—of Greek-street, lives in the "Blue Boy" of Gainsborough. In a miserable room at No. 2, Brewer-street, the Chevalier D'Eon closed his chequered career; at a mean lodging in Frith,—which, by-the-bye, Maitland calls Thrift,—street, Mrs. Inchbald wrote her "Simple Story"; and here Hazlitt lived and died. At No. 75, Dean-street, its staircase painted by him, lived Sir James Thornhill; his daughter Jane, who eloped with Hogarth, is said to be represented in the fresco; and at the house now Nos. 42 and 43, Francis Hayman, the renowned illustrator of "Don Quixote." Jack's Coffee House,—so called from John Roberts, a singer in Garrick's Drury Lane company,—became Walker's Hotel. Bishop Compton, dean of the Chapel Royal, is believed to have given names to this and to Old and New Compton streets,—the latter though may be due to the union of the third Lord Arundell of Wardour with a daughter of Sir Henry Compton.

We now pass to a quarter whose very title is a by-word and reproach. Until the Dissolution Queen Matilda's lazar-house lay in the "verie pleasaunt village" of St. Giles's-in-the-Fields, consisting of a few cottages around an old stone cross, with one or two shops whose owners' names and callings are preserved in the hospital grants as Gervase le Lyngedrap, Reginald le Tailleur, &c. The property being granted at the Reformation to John Dudley, Viscount l'Isle and Duke of Northumberland, he built himself a mansion over the hospital site, the vineyard degenerated into Vinegar-yard, and its chapel was converted into a parish church. This was rebuilt by Laud and consecrated, as he tells us in the "History of his Troubles," on the 23rd of January, 1630. But around that church which contained the remains of George Chapman, Charles II.'s "Trusty Richard," Shirley, Lord Herbert of Cherbury, and Andrew Marvell, sprang up a district whose notoriety had never been excelled in London. Furnished with numerous appliances, a gallows not excepted, for the punishment of evil-doers, an object of special regulations for its improvement by the Puritans, and nearly depopulated by the Great Plague, it supplied Hogarth, Smollett, and Fielding with fearful types of vice, destitution, and disease. In St. Giles's Hogarth places his supposititious "Gin-lane."† Tom Nero is a St. Giles's charity boy; it figures in the "Harlot's Progress," and in a St. Giles's night-cellar the Idle Apprentice, betrayed by his mistress, is arrested for murder. So long ago as the 1st Henry IV. the northern wall of the hospital garden was, with West Smithfield, a place for the execution of persons of high rank or guilty of crimes of unusual magnitude, such as heresy and treason: its victims including Babington and Sir John Oldcastle, Lord Cobham, with their accomplices and followers. At the hospital gate criminals proceeding to Tyburn would halt to drink a last bowl of ale with the hangman and guards. This unseemly custom, practised also at York, was subsequently observed at the Bowl,—afterwards the Angel,—Tavern (pulled down in 1873), by Bowl-yard, over against Clark's-rents, in the High-street. A Board school stands on the site of the Round House in Coal-yard, familiar to readers of Ainsworth's "Jack Sheppard." In the Coal-yard, says Oldys, Nell Gwynne was born, an honour that is also claimed for Hereford, the birthplace of Garrick. The plague broke out in Lewknor's-lane (Charles-street), Drury-lane, abode of Jonathan Wild, Summers, and other thief-takers, as of those whom Butler stigmatises in the couplet,—

> "The nymphs of chaste Diana's train,
> The same with those of Lewknor's-lane."

The rookery where the plague made such sad havoc was not abolished until the year 1849 upon the extension in a right line of Oxford-street to High Holborn. The old Uxbridge-road in this part ran along from Bury-place, then Lion-street, to the corner of Tottenham Court-road by what are now the western end of High Holborn, Broad-street, and High-street, St. Giles's. A profitable change to all concerned, since the Duke of Bedford received 113,000*l.* for his interest in the property. Over the Cock and Pye Fields Neale (see Neale-street), a speculative builder and introducer of lotteries into England, built Seven Dials with its convergent streets,* at the end of the seventeenth century. On the supposition that large sums of money lay beneath, his column bearing seven sun-dials at top was removed in July, 1773; it now stands surmounted with a coronet on Weybridge-green as a memorial to the Duchess of York who died at Oatlands. Famous for ballad dealers and ballad singers, the churchwardens' accounts of St. Giles's contain entries of small amounts paid on behalf of such long-forgotten worthies as "oulde Guy the poete," "Tottenham-court Meg," and the "Ballet-singing Cobler." To Seven Dials we owe the term "catchpenny," from an ingenious device of James Catnach, a ballad printer in Monmouth-court, to secure the sale of one of his broadsides. It is curious to observe that generally, as at Oxford, Winchester, and elsewhere, places dedicated to St. Giles were outside the town by reason of the leper hospitals with which they were connected.

* See the *Builder*, vol. xliii., p. 776 (December 16th, 1882).

† Dated 1751; the steeple of St. George's, Bloomsbury, appears in the background. The lines beneath, "Drunk for a penny," &c., were often inscribed upon tavern signs of the day. See the *Gentleman's Magazine*, February, 1736.

SCOTTISH REGIMENTAL COLOURS.

Such present owners of stands of colours as may be disposed to further the project of Major-General M'Donald's committee, might do well first to visit St. Paul's Cathedral. There they will find colours of the Coldstream Guards, and of the 57th (West) and 77th (East) Middlesex Regiments, hanging in dust, neglect, and decay: a condition which may be profitably contrasted with that of the several colours carefully preserved at Chelsea Hospital, and in the chapel of Wellington Barracks. As far as concerns our Highland corps, either Holy Rood Palace or Edinburgh Castle seems to be the most suitable place for a final deposit of the colours, over which,—though no longer to be carried into action,—"Auld Lang Syne" is regretfully played when exchanged for new ones by their respective regiments. At the Castle they would come within charge of the garrison; of befitting and responsible custodians at the Palace. Moreover, the capital offers this further advantage in that no local susceptibilities can be hurt in the choice of a city where, as it happens, no regiment, Scottish or otherwise, is localised under the existing territorial scheme.

MEMORIAL OF ROBERT BURNS, THE SCOTTISH POET, IN WESTMINSTER ABBEY.

A committee, having its head-quarters at Glasgow, resolved to raise a fund by shilling subscriptions for the erection of a monumental bust of Burns in Westminster Abbey. A sum of 370*l.* has been collected. The correspondence with the committee embraced letters from Southern Africa, Bengal, New Zealand, Canada, and other portions of the American continent; Switzerland, London, Edinburgh, Glasgow, and other towns in England and Scotland. The Very Rev. Dean Bradley has decided upon the site in the Abbey for the bust. It will be erected on the stone screen in the Poets' Corner, against and in front of the centre of which the monument of Shakspeare has been erected, in close proximity to the memorials of two of his brother Scottish poets, for in front of the screen, and immediately to the right of the Shakspeare memorial, is the statue of Thomas Campbell, and on the left the monument to Thomson. The Burns bust will be on a line with that of Robert Southey. It is intended that the bust shall be erected and unveiled on the next anniversary of the poet's birthday, January 25th, 1884. In the ambulatory of the Abbey, at the foot of Queen Philippa's tomb is the monument to Sir Robert Ayton, a Scottish poet, who received his knighthood from James I., and was, for some time secretary to Henrietta Maria, queen of Charles I. "One of the best poets of his time," says Aubrey; and Ben Jonson took pride in informing Drummond, of Hawthornden, that "Sir Robert Ayton loved him dearly." He is the first Scottish poet buried in the Abbey, and there is a singular link between him and the latest Scottish poet, of whom a memorial is to be placed in the same shrine. Ayton wrote the first version of "Auld Lang Syne"; this version Allan Ramsay adapted and spoiled with insipid conventionalisms. "Ramsay," writes Burns to his friend Captain Riddel, "here, as usual with him, has taken the idea of the song and the first line,—'Auld Lang Syne,'—from the old fragment." Burns knew not of Ayton, not even when he rendered the beautiful song of the latter,—"I do confess Thou'rt smooth and fair,"—into the Scottish dialect, without, however, improving it. Strange, that after the lapse of two centuries the aristocratic Scottish singer of courtly ditties, and he, his countryman, who sang the joys and sorrows of the lowly while "following the plough along the mountain-side," should meet together under the roof of England's most hallowed shrine.

* Conf. Evelyn's Diary, October 5th, 1694.

THE NATIONAL MEMORIAL TO KING VICTOR EMANUEL.

The Roman correspondent of the *Cologne Gazette* recently described the principal features of the second competition for the above memorial, for which designs will be received until the middle of December, 1883. The site and relative dimensions are defined, as well as the general *motif* of the design, which is to be a combination of sculptural and architectural work. The site chosen is the northern slope of the Capitoline Hill, so that the figure of the king, with its surroundings, will form an imposing close to the perspective. The central point is to be an equestrian figure of the king, and the architectural background will more or less hide from view the buildings lying behind the structure. The third feature of the general design is the flight of steps leading to the portions of the work already mentioned, and it is remarked that this portion of the task will be rendered more difficult from the fact that there are so many notable models of that class of work in the immediate vicinity. It is curious that the choice of the site has afforded another instance of the preference shown to the more ancient part of Rome as compared with the newer portions of the city.

The invitation to compete is extended to the artists of all nations, but it is remarked that the action of the jury in the first competition tended to discourage the sending in of designs from other countries. It is considered by the correspondent of the *Cologne Gazette* that neither the honour nor the money for the work itself will be allowed to leave Italy. The sum to be spent on the work is about 360,000*l.*

THE POSITION OF ORGANS IN CHURCHES.

Sir,—I see that in Mr. Brewer's reply in the discussion on this subject at the Architectural Association, he said he did not approve of my suggestion of "a small transept" for the organ. I never suggested such a thing, and am quite aware that an organ should be kept as far from outside walls as possible. My idea was, the choir in the nave and the organ at one side of the nave, and I then added "or in a shallow transept," *i.e.*, a transept of little projection and considerable width, merely to prevent the organ taking up an inconvenient amount of space in the church by projecting too far towards the centre. The idea of building "a small transept" for the organ would be only a degree better than the organ-chamber, and certainly never had my recommendation. H. H. Statham.

A School for Carpenters.—The Visiting Committee of the schools at Mitcham submitted the report of the superintendent as to the cost of the second carpenter, from which it appeared that during the past year he had been paid 79*l.* 3s. 9d., and the work done realised 129*l.* 7s. 6d. After deducting the cost of the wood there remained a profit of 5*l.* 2s. 9d., besides the advantages arising from the boys being taught carpentering. Mr. Green moved that the report be approved. He considered it to be very satisfactory, and would be very glad if the members would visit the carpenters' shop and see how well the boys could use the plane, the saw, and other tools. Mr. Batchelder said the boys did a good class of joiners' work, doing their work well, and hoped the members would take more notice of the workshop when they visited the schools.

LECTURES ON ARCHITECTURE AT THE ROYAL ACADEMY.

IRON.

MR. GEORGE AITCHISON, A.R.A., delivered a lecture on Iron as a material for the architect, at the Royal Academy, on Wednesday evening last. We append the substance of his remarks:—

Mr. Aitchison commenced by saying that he proposed, in the two lectures which he had to deliver, to enlarge on the most important and the most interesting subjects he knew, viz.,—Iron and Colour. He treated of iron first because he felt it to be of paramount importance for the architects of the future to consider this comparatively new material. We were, he said, in the midst of the Second Iron Age, and if the first discoverers of iron were able to conquer the then known world by its means, the second great discoverers, the English, had through its aid been able to make as great but more peaceful conquests, and to endow mankind with powers only dreamed of by novelists and poets. Iron in one of its three forms,—cast iron, wrought iron, or mild steel,—was now one of the most important building materials we had, but, as yet, it had not been very completely brought into purely architectural use, except occasionally in the subsidiary forms of columns, bressumers, and girders. The great architects of the thirteenth century found brick, stone, and wood used much as they had been by the Romans, and the Romans were sound and even brilliant constructors, for though they had not the unerring artistic instincts of the Greeks they had a great capacity for producing splendid and magnificent effects. The Romans, however, had the tribute of the known world for their income, and armies of slaves for their work. No expense was spared on foundations, and daring feats of construction were not, in our sense, cramped by expense; but in all their flights thrust was opposed by mass. The architects of the thirteenth century,—the greatest innovators the world had ever seen, had neither the Roman wealth nor Roman means, and had to trust to their own skill and ingenuity and to that of their skilled workmen, to construct buildings rivalling those of the Romans in extent and sublimity, and absolutely original in form, detail, and ornament. To do this they revolutionised construction. Vaults were no longer uniform arches of great thickness, but the groin-points were turned into ribs, and the filling-in was of extreme thinness; and where thrust could not be counteracted by thrust, it was carried to the ground by series of flying buttresses and a wide-spread base of the last buttress. In their carpentry, too, the heavy tie-beam was done away with, and each slender rafter bore its own truss. Could we suppose that, if such a material as iron had been in their hands, as it is in ours, they would not have rivalled our engineers in constructive skill, and, at the same time, given new forms to their buildings and impressed on them new decorations? It has been too much the fashion amongst architects to decry our engineers, —the true children of the age, whose sole aim is utility; and yet, looking at their works from the constructive side of our profession, what can be more admirable? They have carried their constructive skill to a pitch that even the thirteenth-century architects might envy; and no man can walk down the vast nave of the Crystal Palace and see its filmy consruction and its flood of light without thankfulness and admiration; and if any regret mingles with its emotion, it is that the building's tenure of existence is almost as frail as the spider's web it rivals. Architecture, it is true, has, in the present day, fallen upon evil times, but no architect should shut his eyes to the signs that by slow degrees this insensibility is passing away and a faint and tepid interest is being awakened. But the position of architecture is not wholly due to outside influence; it is partly due to the retirement of its professors from the actual strife of the world. As he had pointed out in a former lecture, architects were inclined to pose as gentlemen and not as bricklayers. Roofs and domes were beneath their notice; they merely attended to the æsthetic part, and architecture had come to be looked on as a sort of potted art,—a delicacy for the *gourmet*, and not honest bread and meat for the multitude. Architects must free themselves from all this nonsense, and strive to be great constructors, doing what they can to impart character to our buildings. Passing on to consider minutely the materials with which he had to deal in the present lecture, Mr. Aitchison observed that cast-iron, wrought-iron, and steel are perfect materials, for, with the exception of the glazing, the whole of the structure may be made of each one of them, though practically their employment for certain parts of a building might be inconvenient. Iron can be cast into almost any form and enriched with almost any ornament. Cast iron is very strong as compared with other materials, and consequently takes up a small space, and particularly lends itself to the bony structure of a building, especially if the building be symmetrical. Its defects are that it rapidly transmits heat, and in damp weather horizontal pieces drip and vertical pieces stream with water. It melts in great heat, and if heated to redness and cooled by water it cracks. Its contraction and expansion under variations of temperature are considerable, and it rusts rapidly. Professor Barff's process is said to prevent rusting, but it is not practically in use. Iron may also be enamelled, but the cost is great, and the experience of its efficacy insufficient. Cast iron is difficult to cast in very long pieces, and ornament cannot be chased after casting. Its peculiarities are that it is very heavy; that it is, roughly, six times as strong in compression as in tension; and that unless its parts are of nearly uniform thickness, it tears on cooling; so that in the case of girders the lower flange must be six times as wide as the upper one. Patterns have to be made for each piece: hence there is a strong desire for repetition to minimise the cost of patterns. Wrought iron and mild steel might be considered together, as they were practically the same material, only one is stronger than the other. Their capabilities are less than those of cast iron in most particulars, but their tensile strength is much greater, being, in wrought iron, about 3½ times as great, and in steel five or six times as great. Both wrought iron and steel can be rolled into very thin plates, and these plates can be riveted together, so as to be of any length. The defects of wrought iron and steel are the same as those of cast iron, except that they rust more readily; and though they will not melt under the influence of great heat, they crumple up like wet paper; and they are susceptible of no kind of ornament or shaping, except at enormous cost. Their peculiarities are that they are mostly built-up,—*i.e.*, riveted together into the required form from plates, tubes, bars, L, T, H, and U pieces. As cast iron is six times stronger in compression than in tension, and as much variation of thickness causes fracture in cooling, and we can rarely core the lower flange, there is a wonderful scope for ingenuity in trying to make a girder sightly. Again, in columns, every considerable swelling out,—as in caps, bases, or the lower parts of shafts,—is a source of weakness and danger instead of being an additional strength, as in wood or stone. All incised work is a fatal element of weakness, and if much relief is wanted in caps cast on to columns their ornaments have to be stuck on. Mr. Aitchison said he made no apology for treating of the natural qualities of the materials, for without knowing these it is impossible to design in them either with safety or propriety. Architects are, before everything, constructors, and paper architects are a mere burlesque,—even worse than sculptors without anatomy. To go further, it is the want of a thorough knowledge of the properties of iron and of the abstruse statical problems connected with its use that has condemned it to be so little used architecturally by architects. Two minds cannot act like one, and the scientific mind with no art, and the artful mind with no science, are apt to be like two horses pulling in opposite directions. The use of iron has restored the post and beam construction of the Greeks, and swept away the arches, domes, and vaults of Roman and Mediæval times. It is not that arches or domes cannot be made, but as there is no abutment the ribs must either be girders without thrust or be trussed or tied. From the energy of the material the proportion of voids to solids is so great that it is unusual and unpleasant to the eye, and from the small size of the supports where they do occur they tend to effacement. In fact, this may be said generally of iron,—that it tends to effacement. In proportioning the parts of columns our module must be something different from half the diameter when the columns are, not from eight to ten diameters in height, but from twenty-five to thirty diameters, or more. If we are to have old world ornament we must go to the bronze tripods and candelabra of Greek and Greco-Roman times, or to those fantastic structures found in the arabesques of Rome and Pompeii which so stirred the bile of Vitruvius. Iron, however, is absolutely untrammelled by any former scheme of design or of ornament. We want to analyse the causes that produce satisfaction or admiration in our minds when we look at a building, and having discovered them, to endeavour to apply the principles to the ironwork we have in hand. This knowledge will prevent us from going wrong, but we must be blessed with invention if we are to go right. It is, perhaps, not so difficult to make a structure slightly when we have cast-iron columns of any considerable size and cast-iron girders of inconsiderable span; but when the girders are of wrought-iron and of large span, the difficulty is considerable; for the girders then mostly take the form of a series of strung triangles, with lines at the top and bottom, or of lattice-work. Iron will not do for external walls, and if we use brick, stone, or concrete, the outside of the building ceases to show that it is iron construction. A feature might be made of iron in this way: between the main iron supports there might be thin iron ones, double-slotted, and filled in with earthenware slabs ornamented in colour; the black lines of the ironwork would then look well,—something like half-timbering on a small scale. A splendid hall ceiling might be made of cast-iron girders carrying smaller ones, so as to make small square panels filled in with red glazed earthenware domes, enriched with gold. Corrugated iron is absolutely unusable, in point of effect, except on a colossal scale; when it can be so used, the corrugations, that destroy all scale, where the size is small, merely give a texture, but we must then arrange for something to take off from its papery appearance where there are openings or overhanging roofs. Of iron buildings there are many, mostly of the corrugated iron type, as churches, schools, sheds, &c., most, if not all, simply hideous. Iron, like other materials, is apt to bear upon its face the impress of other forms of construction. The arch is frequently exhibited in it, though perhaps this is not more ridiculous than wooden arches or wooden vaulting. Gasometers are sometimes picturesque structures, and different examples show how iron may be used so as to be ridiculous and ugly, or appropriate and elegant. As an example of the former, you see a series of attenuated Roman Doric columns set in a circle, each column with its capital connected at the top by thin pierced cast-iron girders, occupying an inch or two of the middle of the projecting caps; but, occasionally, gasometers whose shafts are connected with iron ties are quite picturesque; and, latterly, the lecturer had seen a very elegant one, of which the standards were battered on the outside, and made of heavy wrought iron lattice-work, held together at the top and midway by very slight lattice girders. In England, we have three classes of people,—those of cultivated taste, who admire beauty and will not willingly do without it; those who pretend to admire beauty and do not; and those who neither like nor pretend to like it, and who shamelessly proclaim that beauty is all nonsense. Roughly speaking, the last class represents the age, more particularly so in regard to iron, because those whose architectural taste has been cultivated have cultivated it by the study of brick, stone, or marble buildings, and only look on iron as a makeshift, which they would not use if they could help it. Not that there is no elegant ironwork in England, for there were excellent bits here and there, as, for example, the ironwork to the glass domes of an office at the Bank of England, designed by Professor Cockerell, which, like all his work, is refined and elegant. In France and Belgium there is greater demand for artistic work than in England. The lecturer proceeded to speak of the essays made in those countries to develope the treatment of iron. Victor Hugo prophecied, after the event, that printing would kill Gothic architecture; pointing from a printed book to Notre Dame, he said: "This will kill that." Now hear the prophecy of another distinguished Frenchman, who echoes the words, "This will kill that," pointing from the cast-iron of the Central Market to the stonework of St. Eustace. "Iron will kill stone, and the time is near." Since the beginning of this century, only a single monument has been built,—a monument copied from nothing, and which has sprung

naturally from the soil of the epoch, and this is the Central Market of Paris,—a swaggering work if you like, but which is only a timid revelation of the twentieth century. Although the Halles Centrales seem admirably adapted to their purpose, and have, in fact, served as a model for markets in different parts of the world, the problem of the use of iron for architectural effect has not been satisfactorily solved by them. Some of the details are good, but the buildings themselves exhibit a flatness and uniformity very far from the lecturer's notion of architectural beauty, and the best part, the gutter on corbels, is spoiled by the corbels being of stone proportions. The arch that joins the two blocks is thin, and not very nicely proportioned. The interior effect of the galleries is spoiled by a regular succession of skylights in the roof, which mar any grand effect of light and shade. Inside each block, the central part is impressive from its size and height. Its circular arches, and open spandrels filled with strap foliage, and its open cross and panel work, do credit to M. Victor Baltard's skill. There are, however, two splendidly successful works of iron construction in Paris—the Northern Railway Station by Hittorff, and the National Library by M. Henri Labrouste. After describing the Northern Railway Station in terms of commendation, on account of its grand proportions, and the excellence of design shown in its ironwork, particularly in the columns,—observing, incidentally, that the columns bear the inscription, "Alston & Gourlay, Glasgow, 1862, British Ironworks," so that M. Hittorff found the brains although we found the labour and materials,—Mr. Aitchison proceeded to speak of the National Library as being as agreeable a room as one could wish to see. In the middle of the room are four most elegantly-slender cast-iron columns, bearing cross-braced wrought-iron arches, and from these spring nine domes with eyes at the top. The Fine Arts Schools, by Duban, has its entrance hall formed of cast-iron girders filled in between with cream-coloured terra-cotta arched and slightly enriched with a raised pattern. After M. Duban's death, M. Coquart had to cover the court to form a sculpture gallery, but was unwilling to touch Duban's work, so kept his few columns in pairs detached from the building, carrying the intervening spaces by iron cantilevers in the cornice. After incidentally mentioning the great extent to which bronze is used in Paris as a material for lamp-posts, railings, &c., the lecturer proceeded to speak of the Exchange at Antwerp, which has its central court covered in one span by wrought-iron trusses, and glazed at the sides, the collar-beam carrying a plaster ceiling. The wrought-iron bearers are treated after the manner of the wooden ones at Wollaton Hall. The constructional ironwork is so slight that it is almost lost, and to fill the vacant space and catch the eye, wrought-iron fruit and flower-work has been introduced. A vast building for the sale of drapery, close by the station of St. Lazare, and called "Les Magasins du Printemps," is now being built by M. P. Sedille. The whole interior construction is of iron, and each external bay is wholly of glass, the framework being of cast-iron, wrought-iron, and bronze, enriched by gilding, marble, and mosaic. It is worth study by architects visiting Paris. In conclusion, the lecturer expressed the hope that what he had said might stimulate his hearers to devote themselves to the architectural development of iron, the grand material of the future, with an ardour, a single-mindedness, and a self-denial that would not be in vain.

Mr. Aitchison will lecture on "Colour," on Wednesday, February 28.

THE EDEN THEATRE, PARIS.

A description of this building appeared in our issue of last week, and we are now able to publish with our present number some sketches which will serve to render that description more clear. The sketches are only rough, as taken on a programme margin, and give no idea of the rich colour and play of light and shade which form such characteristic features of this theatre, but they may be sufficient to show how the architect has treated so difficult a style as the Hindoo, and applied it with such success to modern requirements.

The piece which is being played in this theatre, and which rumour says we may hope to see in London in a few months, is the great pseudo-scientific Italian ballet of "Excelsior," which, in a series of pictures, displays the triumph of light and science over obscurantism and ignorance. Steam and the electric light, Mont Cenis tunnel and M. de Lesseps, all play a part in the great spectacle; while the utmost perfection of mathematical precision is shown in the absolute accord with which the 500 dancers perform their wonderful gyrations. The finest picture of all is in the prologue, when the birth of light takes place amid crowds of angels with silver trumpets and wings which outrival the highest colouring of Filippo da Lippi. J. T. P.

ULM CATHEDRAL AND ITS RESTORATION.

To the internal view of the choir of Ulm Cathedral given in our last,* together with some particulars of its history, and the steps recently taken towards its restoration, we now add a view of the exterior of the choir.

BLACKMORE PARK.

This estate is one of the most ancient in the county of Worcester, and is situated about four miles from Great Malvern. It came into the possession of the ancestors of the family of Hornyold in the fourteenth century, and they have continuously resided in it since the time of Henry VIII. The present owner determined in the year 1861 to build another residence, and adopted designs furnished by Mr. David Brandon in the style prevalent in the latter part of the sixteenth century, upon a site in the park looking on to the Malvern Hills, situated about 200 yards from the existing one. This building contained no architectural feature of interest, except portions of an old oak staircase, which was preserved when it was pulled down.

The new mansion was finished in the year 1864, and continued the residence of the family until the early part of 1880, when, with the exception of the billiard-room and chapel, it was almost entirely consumed by fire, believed to have originated in a servant's bedroom; the external walls, built of bricks made on the estate, with Box-ground stone quoins, cornices, &c., were considerably injured, and the roofs and greater part of the floors, which were double-framed with main beams of iron, were destroyed; the corridor flooring, however, constructed of iron joists and concrete remained nearly intact.

We give herewith a plan and illustration of the building brought to completion last year, considerable alterations having been made from the origiual design; firstly, by the omission of the greater portion of the third story; and, secondly, by the addition of a north wing, containing a ground and first floor appropriated for sitting-rooms and bedrooms. The offices also were much enlarged and altered in the rebuilding.

The main approach is on the south side by a road leading to a *porte-cochère* and entrance-hall, from which corridors conduct to the principal rooms, which are mostly ranged on the south and west sides of the house. Their dimensions are as follow:—The entrance-hall, 31 ft. by 22 ft.; saloon, 47 ft. by 22 ft.; library, 30 ft. by 22 ft.; morning-room, 23 ft. by 22 ft.; business-room, 25 ft. 6 in. by 18 ft.; dining-room, 33 ft. by 23 ft.; billiard-room, 40 ft. by 18 ft. The principal staircase, 30 ft. by 26 ft., and 30 ft. 6 in. high, is divided into three flights, 6 ft. in width, and enclosed with an oak balustrade, with heraldic figures on the pedestals. The arrangement and dimensions of the other rooms and offices are sufficiently described upon the plan.

The first-floor contains a boudoir, sitting-room, nineteen bedrooms, including dressing-rooms arranged *en suite*, linen and store closets, bath-room, housemaids' closets, &c.; there is also upon this floor a corridor communicating with the chapel.

Servants' bedrooms are arranged on a third story, over the offices in the east wing.

The height of the ground and first floors of the main building is respectively 15 ft. 6 in. and 13 ft.; that of the new north wing and offices being somewhat less.

In the basement are wine, beer, and coal cellars, a muniment-room, a room for the heating apparatus, and other offices.

* See pp. 173, 181, *ante*.

The original cost of the house was about 25,000*l*. The whole of the late work has been carried out by Messrs. Bromwich, Foster, & Co., of Rugby. Mr. Jenkins was the clerk of the works.

NEW STABLES, MAYFAIR.

One of our illustrations shows a portion of the extensive and well-appointed range of stabling which has lately been erected in Brick-street, Park-lane (adjoining Christ Church, Mayfair), for the Marquis of Londonderry, from the designs and under the superintendence of Mr. James Brooks, F.R.I.B.A. The buildings stand partly on the site of the duck-pond of the "Dog and Duck," a tavern which was the scene of much revelry in the times when a fair was held in the neighbourhood in the month of May, before the locality became closely covered with houses. The entrance to the stables is in Brick-street, through an arched gateway, which gives access to an irregularly-shaped quad rangle, round which the buildings are arranged. The pre-existence of the duck-pond gave some considerable trouble with regard to the foundations, and as there was a restriction against buildings being erected more than 12 ft. high, the whole area of the ground had to be excavated 2 ft. or 3 ft. On the right hand, after entering the gateway, is a block containing, on the ground-floor, four loose boxes, quite distinct from the rest of the buildings. The first floor of this block contains a spacious and pleasant mess-room for the use of the grooms and under-coachmen. The floor, like all the other over-head floors, is constructed on Dawnay's fireproof system. The coachman's suite of rooms occupies a portion of the first floor of that part of the buildings which faces Brick-street, and consists of a sitting-room (over the archway, and so planned as to enable the coachman, as the responsible man in charge, to have command over the entrance, and to have oversight of all that is going on in the yard), kitchen, and three bedrooms. These apartments are reached by an open stone staircase from the yard, and a balcony passing in front of them gives access to the men's mess-rooms. In a recess beyond the block containing the four loose-boxes, is the coach-cleaning shed, very commodious, and well lighted by a skylight. In this shed, which is enclosed by glazed gates of an ornamental character, the washing of the carriages will be done, irrespective of the weather. On one side of the shed are four bays, in which carriages, when cleaned, will stand. Adjoining the carriage-shed are the harness-rooms, and then come two more loose boxes. The western side of the quadrangle is divided into two ranges of stall stables, each range consisting of six stalls, with a horse-cleaning compartment between each range, so that a horse can be cleaned under cover and taken to its stall without passing out of doors,—a point to which considerable importance is attached. (The outer end of this compartment is formed by the archway shown in the view.) The stable fittings have been made to the architect's designs by Messrs. Musgrave & Co., of Belfast, and in them one or two specialities have been introduced, one of which is that water being laid on to each stall, each horse is provided with a tip-up receptacle for its drinking-water, and these receptacles are so arranged as to be made available for the flushing of the gutter in the floor of the stall. Special attention has been paid to ventilation and drainage. The remaining apartments on the upper floor consist of a dormitory for the men (each man having his own cubicle or compartment and a separate wash-basin, with hot and cold water), saddle-room, and hay, straw, and corn stores. The principal materials used externally are red bricks, supplied by the Bracknell Brick and Tile Company, and Corsehill stone. All the woodwork, including doors, is teak, and all the steps and landings are of Scotgate Ash stone. A portion of the flooring on the upper story is of Brunswick Rock asphalte paving. The yard is paved with Walker's granitic paving, and the floors of stalls and coach-house with Dutch clinkers. Mr. Parrott was the clerk of works, and the builders were Messrs. Patman & Fotheringham, their foreman being Mr. Fairweather.

Mr. W. C. Fenton has been appointed Building Inspector of the Sheffield Corporation. The salary is 130*l*., with an increase of 10*l*. per year to 160*l*.

The Stage

The Auditorium (lighted by gas)

Foyer Fitted up with Refreshment bars with attendants in Costume.

Street Front

A

Corridor

Bar

Fourteen feet wide and lighted by gas.

Staircase

The Garden (Eden) covered with a glass & iron roof & furnished with fountains rocking palm trees &c. & lighted by arc lights

A Mem: The side A is not equal to the opposite sides but is reduced to allow of the opening to the Proscenium being wider

Plan at the first tier level (Fauteuils de Balcon) No scale.

One of the Towers

In the Garden (Eden)

Stage

Section on the dotted line No scale.

Arcade behind the fauteuils de balcon.

Sketches from "Eden" the new theatre recently opened in Paris near the Opera House

T. Jarvis Perry January 1883

Whiteman & Bass Printers 239 High Holborn

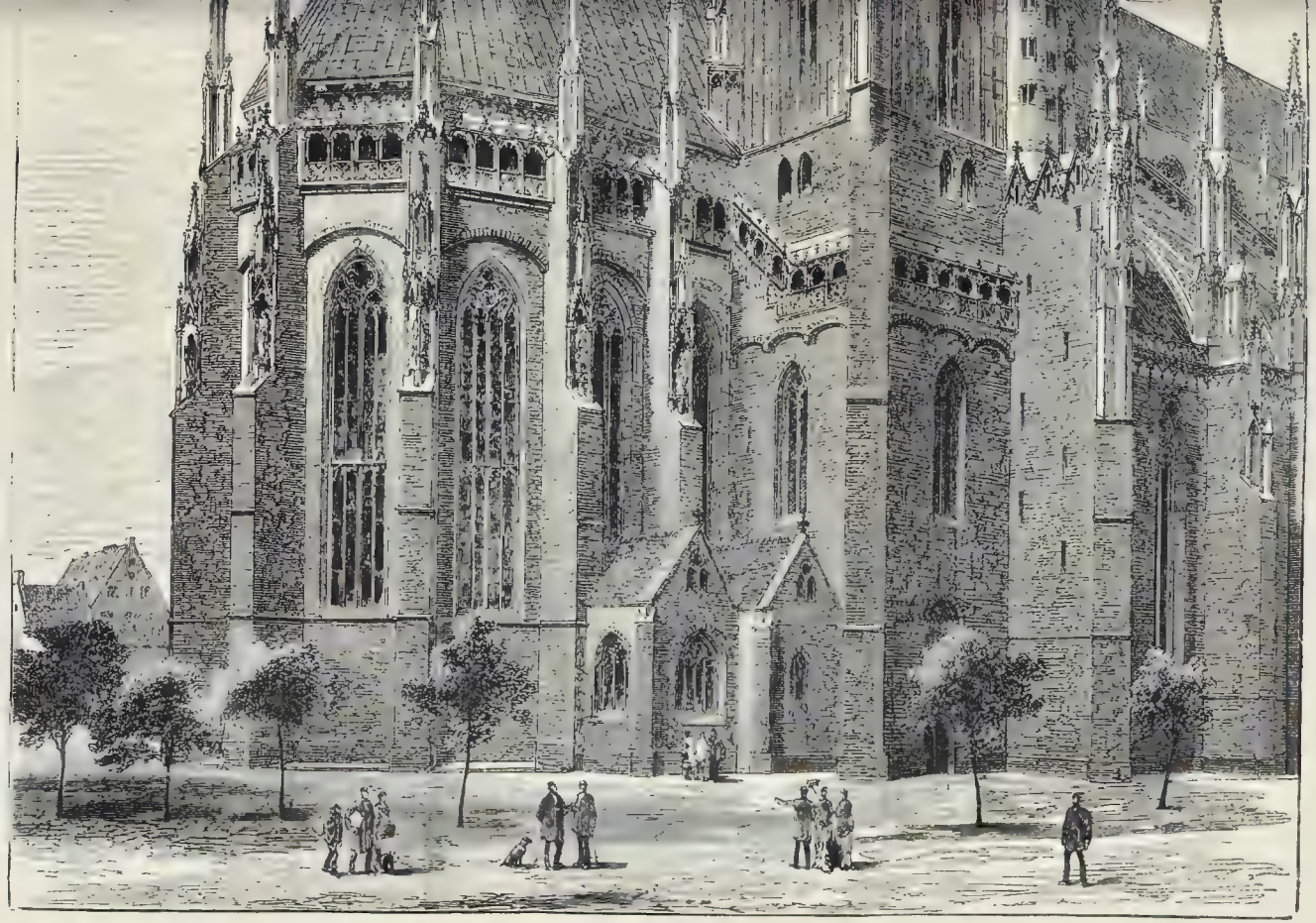
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BLACKMORE PARK, NEAR GREAT MALVERN.

Mr. David Brandon, F.S.A., Architect.





ULM CATHEDRAL, IN COURSE OF RESTORATION.—Exterior of the Choir.



VIEW IN COURT-YARD OF STABLES, BRICK STREET, MAYFAIR.

(Recently built for the Marquis of Londonderry.)

Mr. James Brooks, Architect

— MANSION — AT — BLACKMORE — PARK —

— WORCESTERSHIRE —



A LIBRARY
B SALOON
C MORNING ROOM
D ENTRANCE HALL
E DINING ROOM
F BUSINESS ROOM
G PRINCIPAL STAIRCASE
H BILLIARD ROOM
I GARDEN ENTRANCE
J SITTING ROOM
K BED ROOM
L DRESSING ROOM
M STORE
N LIFT
O STILL ROOM
P HOUSEKEEPERS ROOM
Q LARDERS
R SCULLERY
S KITCHEN
T LUGGAGE ENTRANCE
U SERVANTS HALL
V LAVATORY
W BUTLERS BEDROOM
X BUTLERS PANTRY
Y STRONG ROOM
Z SERVANTS STAIRS
a GUN ROOM
b UNCOOKED MEAT
c & GAME LARDERS

— GROUND — FLOOR — PLAN —

— DAVID — BRANDON — ARCHITECT —

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THE PROPER USE OF MODERN CLASSICAL ARCHITECTURE.

THIS was the title of a lecture delivered in the theatre of the London Institution, Finsbury-circus, on the 8th inst., by Professor Kerr. At the outset the lecturer observed that the popular appreciation of that most dignified and pleasant art which we called architecture was a test of national culture, and it was therefore highly gratifying to observe at the present time an increased disposition on the part of the public to acquire some sort of architectural knowledge. The possession of architectural knowledge in its fullest sense implied the combination of two qualifications, viz., the power of designing and the power of understanding and criticising. Now the power of designing a work of architecture could only be obtained by the few, after a long course of professional education, but the power of understanding and criticising a work of architecture might be enjoyed by everybody who would take a little trouble. Primarily, the fine art of architecture was concerned with producing graceful effects in the form of buildings, and the architect would therefore be the artistic director of the builder. In practice, however, as he need scarcely say, the architect directed the builder not only in matters connected with the graceful appearance of a building, but with equal regard to its scientific construction and the arrangement of its plan. But the construction and the plan were only to be regarded as the groundwork on which the surface of a beautiful building was to be properly worked out. If the surface was out of accord with the construction actually used, it was sham architecture. It must not be supposed, however, that the work of the architect ceased when the work of the builder (so-called) ceased, for although there were decorative artists of all kinds in abundance, architectural principles should control their work in most cases, if the result of the building as a whole was to be successful. One of the most acceptable signs in artistic practice at the present day was that we saw various subsidiary arts concerned in the furnishing and decoration of buildings engaging the attention of trained architectural minds, and with, in the main, very successful results, for it was very often the case that when people took an intelligent interest in these subsidiary arts they were led on to take an interest in architecture and the other fine arts. To take an instance, it could not be doubted that the increased attention which had been paid of late years to matters of church decoration and architecture had done much to produce that strong feeling in favour of Gothic architecture which, though now gradually subsiding, had produced throughout England one of the most highly-creditable periods of artistic building that the world had witnessed. The peculiar fashion known as "Queen Anne" architecture, now so commonly prevalent, might be frankly said to have little merit of its own, but it served the useful purpose of a stepping-stone between the Gothic revival,—now fast fading away,—and the Classic revival, which was coming forward. But it might be asked how it was that we in the present age were confined to working in either Classic or Gothic. The common answer, that they were merely old styles which were copied by architects because they could not create a fashion for their own time, was a frivolous one. It would not be far from the truth to say that the progress of artistic design in building had produced only two great artistic styles of design, viz., that which appertained to the Empire of Rome, and that which appertained to the Church of Rome, or, in other words, Classic and Gothic. As Greece led the way for Rome, so Italy followed Rome in the modern Renaissance, so called. Classic architecture had pursued its course from the Ephesus and Athens of the ancients to the Paris, London, Berlin, Munich, and Vienna of the present day. Just as Classic architecture was for a time cast aside by the fall of the Roman empire, so Gothic architecture, which was gradually evolved from the ruins of Classic architecture, lasted as long as the great system of Roman ecclesiasticism existed in full force. The general revival of Gothic architecture which had been witnessed in this country was, too, only part of an ecclesiastical revival which had taken place. It was, indeed, a maxim in architectural history that the fashion of building always followed closely and characteristically the social movements of the age, and hence architecture had been well called "history in stone." After comparing various features common alike to Classic and Gothic architecture, for the purpose of showing how the self-same problems in construction had been met, though in different ways, the lecturer proceeded briefly to trace the history of both styles, pointing out that the Gothic style never flourished freely on Italian soil, for, although the Goths took possession of the country, the Roman feeling still lingered on, and made the Renaissance possible. The period of the Reformation witnessed changes in the political system of Europe which would have rendered the perpetuation of the Mediæval or ecclesiastical type of architecture an anachronism. In point of fact, the Renaissance was coeval with the commencement of the modern period of the history of Europe, and experience had shown that Classic architecture was more compatible with the spirit of modern progress than Gothic architecture. It was not, however, until the time of Sir Christopher Wren that the effects of the Renaissance could be recognised in England. Wren's greatest work, St. Paul's Cathedral, in spite of its all-pervading grace, and beauty of superficial form and proportion,—qualities which could scarcely be too much admired,—was, as architects knew, characterised by grave and vital departures from the true principles of architecture. It was the first principle in architectural design that the surface and the substance shall run together,—that the superficial design shall correspond with the facts of construction. Unfortunately that great rule was not recognised by Wren, whose idea evidently was that the outside and the inside of his building had nothing whatever to do with one another. The lecturer was sorry to have to confess that that doctrine had been accepted in England ever since,—so much so that it was only within the last thirty years that its fallacy had been exposed and the true philosophical character of artistic architecture insisted upon and recognised, though, too often, in theory rather than in practice. Wren's example had led to shams of the grossest kind in modern specimens of Classic architecture,—and, in spite of the corrective influence of the Gothic revival, such specimens were by no means few or far between, for, with few exceptions, all important public or semi-public buildings which had been erected in this country since his time were in the Classic style. It was true that in a few instances town-halls and similar buildings had been erected in the Gothic style under the idea that the Gothic style was indigenous to the country, while Classic was thought to be an exotic; but such notions were now tolerably well exploded. Of course Houses of Parliament and Courts of Law might be erected in as Gothic a manner as might be desired by the intending occupants, who were not, perhaps, very much to be pitied when they complained of the after-consequences to themselves. In the coming return to Classic architecture in England, those who sought to adapt it to modern requirements must seek to impart to it an individuality which should be peculiarly its own. The English people were fond of a certain degree of picturesqueness, and it was this circumstance which gave to our architectural position at the present moment a peculiar interest. Fashion had become tired of Gothic architecture, but the English mind could not all at once dispense with the picturesque element which it had been accustomed to enjoy. Hence the uprising of the so-called "Queen Anne" style,—which was more Dutch than anything else,—as a sort of picturesque Classic. The French had ever been true to the Renaissance; but, nevertheless, there were modern buildings in the Classic mode in France that possessed a picturesqueness of their own. It remained to be seen whether English architects would not abandon the fashion of the clumsy Hollander for the gracefulness which characterised the French Renaissance. Among the lessons which we had been taught by the great Mediæval revival, that of truthfulness in construction was conspicuous, and it might fairly be hoped, therefore, that the result of the artistic training of the last fifty years would not be lost, even though Classic forms might prevail. Some people were of opinion that a style of English Classic which should be picturesque might be produced by an infusion of Gothic details; but whatever was to be done in that direction must begin with first principles. Let it be fairly recognised that the weak point of modern Classic design had always been its want of structural truth. The articulation and the surface appearance of a building ought always to represent the facts of its construction. Of course, it was sometimes very difficult to do this, and it was likely to become more and more difficult with the increasing intricacy of modern requirements in building. Moreover, the future of the principle of the arch seemed to be involved in mystery, but very much depended upon it. As to the English style of the twentieth century, he ventured to predict that it would be a free rendering of the so-called Renaissance. The leaders of modern European taste were France and Germany: they had never swerved from allegiance to the Renaissance. The Gothic style, so far as secular work was concerned, had now run its course; how long it would last for church work it was difficult to say. The effect of the Gothic revival upon the architectural work of the future could not, he thought, be other than beneficial.

HINTS TO GAS CONSUMERS.

IN the course of his inaugural address as President of the Society of Engineers, on the 5th inst., Mr. Jabez Church, in expounding a few of the leading principles which underlie economic and effective gas illumination, said:—I would observe, in the first place, that the advent of electric lighting undoubtedly gave an impulse to the demand for improved gas-lighting, as well as to invention in that direction. Means were at hand to meet the demand much more readily than it was generally supposed it could be met, and inventors were stimulated to still further improve those means. The general public had grown into the conviction that any improvement in lighting thoroughfares by gas would be attended by enormous expense, and so undoubtedly it would be if the gas were burned in the same wasteful and unscientific manner as for the most part was, and unfortunately still is, the case in many places, both for indoor and outdoor illumination. It was, however, shown during 1879, by three notable examples of experimental street-lighting in the Waterloo Bridge-road, Waterloo-place, and Victoria-street, that the deficiencies of our street illumination are not due to the impossibility of obtaining a better light by the aid of gas except at a prohibitory cost. Parliament-street and Charing-cross are present examples of a generous but not extravagant supply of gas at by no means a prohibitory increase in expense. And in other parts of London, in the suburbs, and in most of our provincial towns, as well as in many Continental cities, similar examples of vastly improved gas-lighting are to be met with on all hands. One reason of the inferiority of gas-lighting in general is largely due to a false economy consequent upon a lack of knowledge respecting the true principles upon which gas should be consumed. The general impression is that gas is not being wasted if it be turned down so as to give a reasonable light without rushing noisily from the burner. This is a great fundamental error, inasmuch as if there be no governing medium interposed between the meter and the point of ignition of the burner, great waste of gas is going on. A control over the pressure of the gas is one of the first essentials of economical gas-burning, as has long been scientifically demonstrated. This lesson should be taught by those who have the supply of our gasfittings, but unfortunately, as is very generally the case, they are as ignorant and as prejudiced as the generality of the public themselves. Who, with any knowledge of the subject, has not noticed that many respectable gas-fitters' shops are simply stores of the merest rubbish in the shape of burners, ill-shaped and light-obstructing globes, regulators, economisers, and the like? There is, however, a growing improvement, thanks to the electric light, in this direction; some of our leading manufacturers having discarded mere rule of thumb, have brought scientific knowledge to bear very practically upon these all-important matters. I have said that the chief factor in the economical burning of gas is the due exercise of a controlling power over it; and this began to be one of the chief studies of gas engineers soon after the practical introduction of gas-lighting. We may place that date about three-quarters of a century since, but it is only within comparatively recent times that the subject has been fully grasped

and worked out to a fairly successful end. This power of control is the key to the efficient and economical use of gas, or, in other words, the production of a good light at a low cost; to it is due the bold front which gas companies and others have been able to show to their more dazzling rival, the electric light. I would remind you that at the time of the practical introduction of gas-lighting the chief, if not the only, illuminants were the oil-lamp and the candle. The lamp was the larger and more costly, the candle the smaller and less expensive, and the first idea was to imitate these lights as far as was possible. These being the only examples present to the minds of those who introduced gas-lighting, they naturally followed them in designing their burners; they, therefore, bored a little hole in the stopped end of a small cylinder, thus producing a flame resembling that of a candle. Proceeding to deal with the higher kind of illumination, they took the Argand burner itself, stopping the annular wick space with a perforated ring. They thus produced an excellent light, and a burner which is in extensive use at the present day under, of course, modified conditions.

It does not appear to have occurred to any of our early gas engineers that the loss of illuminating power in these burners was very great, in consequence of the over-oxidation of the flame, owing to the velocity with which the gas issued from the orifices, for there is no record of any attempt at first to govern the pressure, or at least of any success in so doing. The velocity was very great, as at first there was nothing, not even a meter, interposed between the company's gas-holder and the consumer's burner. In those days gas was supplied by contract, and in order that the company might be on the right side, and that consumers should not burn more gas than they paid for, burners having very small holes,—about the 100th part of an inch in diameter, — were used; the consequence was that the gas was propelled from the burner with extreme velocity, and could not remain a sufficient length of time in contact with the oxygen of the atmosphere to become thoroughly incandescent, thus developing more heat than light for the quantity consumed. In this way with the old Argand and fish-tail burners the gas rushed into the air through the small holes at a velocity of from sixty to ninety miles an hour. Under modern conditions the case is materially altered, for with one of the best burners of the present day, Sugg's London Argand, the gas issues from the holes with a velocity of only a little more than one mile per hour. But then the gas is properly governed before it reaches the point of ignition at which it is consumed, and hence the economy.

It is now a well-known fact that the lower the velocity with which the gas issues from the burner, the better are the results as regards illuminating power, simply because the whole of the illuminating properties of the gas are utilised instead of being sent into the air to waste themselves and vitiate the atmosphere of the room. Notwithstanding all the improvements that have been made in gas-burners, the fact remains that a very large proportion of those in use at the present day destroy the latent power of the gas consumed to the extent of from 20 to 50 per cent. Some of these burners should give sixteen candles illuminating power for a consumption of 5 cubic feet per hour, but careful experiment has shown that they only give six candles for that quantity. A very critical examination was made some years since by the Gas Referees into the burners in general use. In the result they reported to the Board of Trade in January, 1870, that in London alone an annual saving of 250,000*l.* might be effected by the use of good burners. As mentioned in my last address, I now repeat that if Parliament would grant powers to gas companies to allow them to prescribe and regulate internal fittings in a similar way as water companies are allowed to do, great benefit would accrue to the public. It is not my province to advocate any special invention, but I would advise that those who are using the old-fashioned and wasteful fittings, should have the defects remedied by some well-known firm, not only for the sake of a better and more economical gas-light, but for the purpose of preventing the unconsumed gas passing into the house, which is highly injurious both to furniture and to health.

This brings me to the question of ventilation in connexion with gas-lighting. Now there can be no doubt that the great superiority over the present method of internal illumination by gas which the incandescent electric light possesses, is that with these lamps no products of combustion are discharged into the room. If with gas this defect can be overcome in ordinary gas-fittings,—and mark me, sooner or later, it will be overcome,—then I firmly believe that ninety out of every hundred people, after having had experience of the two lights in all their bearings, would elect to adopt the gas-light. It appears to me that in this particular, and this alone, has the electric light for internal illumination any superiority, while there are many particulars, such as certainty, convenience, and last, though not least, cost, in which gas must take the lead. If this be correct, it behoves scientists interested in this matter to go thoroughly into the question, for a vast future awaits any one who can successfully accomplish this. If gas is properly used it should be an aid to ventilation instead of making the apartment hot and unhealthy.

NEW BUILDINGS IN FLEET-STREET.

Architectural improvements in Fleet-street have for some time past been proceeding at a rapid rate, more especially as regards the newspaper offices, of which this historical thoroughfare and the locality immediately surrounding is largely the home. Only a few months ago, an extensive and palatial block of buildings, which had been erected as the *Daily Telegraph* offices, was opened for business, and within the last few days a somewhat similar block, which has been in course of erection for the daily organ known as the *Sportsman*, has been completed and occupied for the purposes of that journal. The building has displaced some of the ancient houses previously occupying the site, one of them having been for many years the offices of the *Weekly Dispatch*. The building, which contains four lofty floors and dormer story, in addition to a deep basement constructed for machinery, is faced with red stone from the Corsehill quarries, on a granite basement. The elevation has a frontage to Fleet-street of 40 ft. in length, and is carried to a height of 60 ft. The ground-floor portion of the frontage, which contains the general business offices, has a prominent entrance, surmounted by a pediment enclosing a carved figure of a racehorse, typical of the business of the establishment. The entire elevation, from the ground floor to the upper portions of the building, contains a profusion of carving and ornamentation. The first, second, and third floors contain each a range of five-light windows, between which are carved pilasters, surmounted by capitals. Between each floor there is a frieze and cornice, as also at the top of the elevation, immediately under the surmounting dormers. The windows of the several floors are ornamented with stained glass.

Internally, the building, which is 120 ft. in depth from Fleet-street, contains, in the basement, the machine-room, which occupies the entire area of the apartment. The composing-room, which connects the front with the rear of the premises, where is situated the foundry or stereotyping department, has a length of 75 ft., and beneath is a large space devoted to the publishing department. A lift places the foundry in communication with the basement, and carries the stereo direct to the printer. A second lift connects the ground floor with the basement, and the latter is provided with a platform lift for conveying the paper from the street, a system of overhead travellers delivering it to the machines. The basement floor has a depth of 16 ft. from the pavement, and beneath it a tunnel has been constructed, which contains the requisite shafting. The whole of the drainage is carried through this apartment in cast-iron piping. A portion of the upper floors will be let as offices.

Mr. W. B. Brown is the architect, and Messrs. Colls & Sons are the contractors.

A New Cemetery at Hasland, near Chesterfield, has been consecrated. The land, about two acres in extent, cost 277*l.*, and it is estimated that the cost of fitting it for the purposes of burial will amount to about 1,000*l.* The preparation of the ground has been carried out by Mr. Butterworth, surveyor to the Rural Sanitary Authority, the contract for the buildings and for the laying out and drainage being let to Mr. James Hoole, of Hasland.

NEW THEATRE AT VALPARAISO.

A competition is invited for a new theatre at Valparaiso. The auditorium is to seat 2,000 persons, and the building is to contain, besides the usual spaces and rooms for a theatre, a large ball-room with dining and retiring rooms, a restaurant, &c., attached. The cost is not to exceed 40,000*l.* Designs must be sent in, accompanied by an explanatory report and estimate, before May 9 next, through the Chilian representative, to the administration of the Valparaiso theatre. Two premiums will be awarded, one of 600*l.* and another of 200*l.* Architects intending to compete may obtain further particulars at the Chilian Embassy, Berlin, Stühlerstrasse 7, and, we suppose, also at the Chilian Legation in London.

IRON CEMENT.

One of the leading organs of the metal industry in Germany recently published a description of the various cements by which the fastening of iron to iron or stone may be effected. The subject is divided into various heads, corresponding with the different forms of employment, and consequent divergence in the properties of the cement used.

1. *Iron Cement, or Iron Rust Cement.* (This cement is intended for the joining of cast and wrought iron: as, for instance, in water-communication pipes, cast-iron vessels for cooking and washing purposes, &c.)

a. Two parts of powdered sal ammoniac and one part of flowers of sulphur are mixed, and kept carefully closed up. When required for use, one part of the compound is mixed with 20 parts of fine iron filings, and the whole is stirred with water into a stiff paste; there having previously been added to the water a sixth part of vinegar, or some drops of sulphuric acid. This cement requires to be applied to or pressed into the filed-off points of junction.

b. One part of sulphur, two parts of sal-ammoniac, and 16 parts of very fine iron filings, are mixed together. When required for use, a similar quantity of iron filings is again added, and the whole is worked up into a thick paste with water, to which a few drops of sulphuric acid have been added.

c. 100 parts of iron filings, free from rust (fine dust from turning or boring cast iron) and one part of sal ammoniac moistened with urine.

(*d.*) For the cementing of fine castings (such as ornaments to iron stoves and chimney-pieces, &c.) there is used in the cement described under division *c*, instead of the iron filings, finely powdered iron, which is known to and sold by druggists as *Ferrum pulverisatum*.

[These iron cements harden completely after several days, until which time it is advisable not to subject them to the action of heat.]

2. *Waterproof Cements for Gas and Water Pipes (particularly adapted for use on a small scale.)*

(*a.*) Ground white lead or red lead is rubbed into a stiff paste with thick linseed-oil varnish. This cement is extensively used in connexion with wrought-iron gas-pipes, for the protection of the riveted seams in gasometers, hot-water ovens, and cast-iron flange-pipes for hot-water heating appliances. The cement made from red lead is also known under the name of red-lead cement. In some cases ground gypsum is added to it. Red lead cement dries slowly, but resists water even before it has quite hardened. When quite hard it holds very fast.

(*b.*) The following cement is less expensive than that made with red lead as described: 1 part of white lead, 1 part of manganese ore, 1 part of white pipe-clay mixed with linseed-oil varnish; or 2 parts of red lead, 5 parts of white lead, and 4 parts of pipe-clay, mixed with linseed-oil varnish.

(*c.*) For use with water-pipes on a large scale,—twenty-four parts of Roman cement, eight parts of white lead, two parts of silver-litharge, and one part of resin are mixed together in a fine powder, with the addition of eight to ten parts of boiled linseed oil (old), in which one part of resin is dissolved.

3. *Methods for Fastening Iron in Stone.*

(*a.*) By the use of gypsum. A hole is made in the stone for the iron which has to be inserted, and it is suggested for this opening to be somewhat widened towards the interior. To facilitate the adhesion of the gypsum to the

stone the walls of the opening should be damped before the gypsum is poured in.

(*b.*) By the use of sulphur. Sulphur is used in the fastening of portions of railings in stone, &c., but it has been found by experience that atmospheric influences quickly destroy the sulphur. The expansion of the sulphur when the cement hardens causes thin pieces of the stone to become detached. The addition of colcothar is said, however, to obviate this inconvenience.

(*c.*) By the use of lead. This is considered the most durable, but it is at the same time the most expensive method of fastening iron into stone. Sometimes, however, the contact between lead and iron causes the latter to be eaten away by rust, as may be occasionally seen in the case of railings.

MECHANICAL INDUSTRY IN RUSSIA.

FROM an official report recently published on Russian mechanical industries, we notice that, incidentally, reference is made to the means taken by the Government for developing these industries throughout Russia. The special methods adopted by the Government for this purpose are thus summarised:—1. Lending money on mortgage to works, to be repaid by easy instalments. This is said to have proved unsuccessful, for the greater number of the works being unable to repay their loans, became in consequence the property of the Government. 2. Lending money by the State Bank on work taken in hand and finished when orders were few; these goods were laid by in reserve by the Government in anticipation of future demands. This measure was of assistance to some works, especially to those occupied with some particular branch of mechanical industry. 3. Giving Government orders to works, and paying as the work progressed. This system has been the making of the great St. Petersburg factories, but the absence of private orders leaves them sometimes unemployed. 4. Giving bounties on certain articles, such as locomotives, rails, &c., made of Russian materials. This, the Government Report says, produced a favourable effect. The bounty on steel rails is 30 copecks a pood, and that on locomotives 3,000 roubles (300*l.*). 5. Granting permission to factories to import, duty free, everything necessary for building their works. This is considered to have been very slightly beneficial to the works, and highly prejudicial to native industry, as it prevented the orders being given at home. 6. Permission to import steel at a low tariff. This privilege will probably be abolished, owing to the increasing production of steel in Russia. The 1880 tariff charges it at the same rate as iron.

THE GAS LIGHT AND COKE COMPANY AND THE ELECTRIC LIGHT.

THE half-yearly meetings of the gas companies which are now being held indicate that their receipts are so far in no way prejudicially affected by the electric light movement. At the meeting of the Gas Light and Coke Company, which was held on Friday, the 9th inst., the chairman observed that almost every item showed an improvement in the receipts, except for coke, and with respect to that, he believed that the falling off in the sales was only of a temporary character, and due to the extraordinary mildness of the weather. He added that the company did not altogether depend on the medium of lighting for a revenue. Great progress had been made in the consumption of gas for cooking, and for domestic stoves; and last year 23,500,000 ft. of gas had been consumed in this way. Adverting to the question of electric lighting, he observed that he would only say it had done them no harm. He was no prophet, and would, therefore, abstain from saying anything with regard to the nature of that light. In some cases, companies had been formed whose efforts had been attended with partial success, but he could not help remarking that several others had been established otherwise than on a sound basis. A dividend at the rate of 11 per cent. per annum was declared, 40,399*l.* being carried to the reserve fund. A special feature in the meeting was the rejection, by 84 to 79, of Sir Thomas Paine as a director, on a motion to the effect that no person, either directly or indirectly interested in the question of electric lighting, should be allowed to sit as a director. It was explained that although not personally interested in any electric lighting company, he was at the head of a firm of solicitors who were promoting one, but that he had nothing to do with the Bill.

DUBLIN SANITARY ASSOCIATION.

THE annual meeting of this association was held on the 8th inst., in the Molesworth Hall, Molesworth-street, Mr. Jonathan Pim in the chair. The report contained many useful propositions.

Dr. Moore, in moving the adoption of the report, referred to the loss which the Association had sustained by the death of Mr. G. C. Henderson, C.E., one of the members of the executive committee, whose special knowledge and active labours had greatly advanced the work of the Association.

Mr. La Touche, in seconding the motion, referred to the influence which the Association had had in the education of public opinion on health questions. When the association was originated, ten years ago, the attitude of the corporation towards measures of sanitary reform, if not actually hostile, was, at all events, merely passive. At the present day it was not too much to say the Corporation of Dublin were eager and anxious for the promotion of sanitary reform. Of course, the corporation, in carrying out many of these measures had difficulties to contend against which had not been anticipated. In one matter, that of the slaughterhouses, they had been compelled to take a retrograde step, having adopted measures in 1871, part of which they had to let drop in their by-laws of 1882. They had built public abattoirs of a most complete and perfect construction, and it should be the work of the association to press upon the public opinion of the city the duty of insisting that the abattoirs were used by the butchers, and that all slaughterhouses which had not vested rights prior to 1849 should be compulsorily disused.

The report was adopted.

Mr. Robert Sexton, T.C., in seconding a subsequent motion, said that as a member of the Cleansing Committee of the Corporation, he was glad to be able to inform the association that one of the matters referred to,—namely, the gratuitous cleansing and removal of house ash-pits,—was already an accomplished fact, and any one could, by sending notice to the proper office, have his ash-pit cleansed free of charge. He had procured from Mr. Young, the superintendent of the Scavenging Department of the Corporation, an abstract of the work done in the past year, the result of which was that during 1882 there had been removed no fewer than 130,354 loads from the streets of Dublin, and the average quantity of house refuse removed and carted away was over 1,000 loads per week.

WORKS AT SHEFFIELD PARK.

THE noble owner of Sheffield Park, near Brighton, the Earl of Sheffield, has, during the last two years and a half, directed works to be carried out on his beautiful domain. Those already completed include considerable improvements to the whole of the exterior of the mansion, the western part of which has been beautified with new windows in the upper story, while on the north side a handsome new entrance porch has been added. The whole of the roofs have been stripped and re-slated, and a new English oak bell-turret fixed on the centre, which now makes the mansion present a very ornate appearance from many parts of the park. The old stables have been pulled down and new ones built, giving accommodation for eighteen horses, with loose boxes, riding-school, and four double coach-houses. There are also apartments for coachmen and grooms, including no fewer than eight large rooms, also large lofts and forage-rooms.

The ground-plan is a square of over 10,000 ft. area, with quadrangle in the centre. The principal entrance is through a Tudor arch-way of good proportions. The south and east fronts are of two stories, the centre of the east front being surmounted by a mansard roof. The interior of the stables has been fitted in the most complete manner, Musgrave & Co.'s fittings being used. The stall divisions are of 2-in. pitch-pine varnished; the walls are party-coloured Portland cement and pale green hexagon tiles. The ornamental iron posts are furnished with heavy brass polished rings and chains. The stables and quadrangle are paved with yellow Dutch clinkers and blue Staffordshire grooved bricks. The harness-room and cleaning-room walls are covered entirely with 6-in. by 1-in. pitch-pine and varnished, and fitted up in the most complete manner with Musgrave & Co.'s fittings. The stables are built of red kiln bricks and local stone dressing, his lordship supplying all bricks and tiles. A new laundry and wash-house, with coal and wood houses, have also been built, with flat roofs covered with 7-lb. lead, and battlemented parapet all round, the fittings for drying-closet, wash-house, &c., being supplied by Messrs. Packham, of Brighton. A new clock-tower has been built near the mansion, which forms a very pretty feature, with four faces, the clock being supplied by Messrs. Tanner, of Lewes.

A new garden has been formed, at a great expense, comprising about 3 acres, surrounded with a high brick wall, with new greenhouses, vineries, &c., and a very complete range of offices, fitted with every convenience, Messrs. Packham, of Brighton, supplying the heating-apparatus, and Mr. Baker, of North-road, Brighton, the ventilating apparatus and other ironwork. The locks, which are all of solid brass, were supplied by that well-known maker, Mr. S. Thomas, of Birmingham, the whole of the fittings, &c., being of the best description.

A new pavilion has also been built at the cricket-ground, with flat roof surrounded with ornamental iron railing, supplied by Messrs. Every, of Lewes. The ground has also been enlarged, and is now one of the finest, if not the finest, in England. For some considerable time his lordship has had about 150 men employed in extending the lakes to their present size, and has had a large reservoir constructed, with hydraulic rams, for supplying water to the mansion in case of fire, also to the stables and gardens, as well as to the cricket-ground, for use in dry seasons.

Mr. H. Card, of Lewes, was the architect for the new buildings, and Messrs. G. Cheesman, of Uckfield and Brighton, were the contractors for the alterations to the mansion, and new stables, Mr. E. Baker being the foreman. The other works have been executed, day-work, by Mr. John Fuller, builder, Fletching, under the supervision of Mr. C. A. Rapson, clerk of the works.

THE BURDETT BUILDINGS IN WESTMINSTER BRIDGE ROAD.

ON a site in Westminster Bridge-road, immediately opposite the Rev. Newman Hall's church, an extensive pile of buildings in flats for the industrial classes has just been erected by Mr. Hobbs, who is also the builder and owner of Queen's-buildings, which now cover the site on which formerly stood the Queen's Bench prison. The buildings, which, when completed, will consist of six blocks, occupy an area of about 6,000 superficial feet. They have a frontage to Westminster Bridge-road, 54 ft. in length and 70 ft. in height, and contain six floors. The elevation is faced with white Suffolk brick and Portland stone windows and dressings, all the upper floors having ranges of arched windows. The return frontage in Burdett-road (from which the buildings take their name) is 88 ft. in length, and uniform with that in Westminster Bridge-road. The greater part of the ground-floor of the Westminster Bridge-road frontage is occupied as a coffee tavern, in connexion with a dining-room in the basement, the remaining part consisting of shops. The tenements are approached from the Burdett-road frontage by three flights of stone stairs. Three of the blocks have already been completed, and contain thirty-six tenements,—six on each floor. Some of the tenements contain three apartments each, and the remaining portion two apartments, namely, a living-room and bed-room. The living and bed rooms are fitted with dresser, cupboard, and copper in the living-room, and cupboards in the bed-room. Each tenement has its separate sink, water-closet, and dust-bin, the several tenants in this respect being thus independent of each other. Within the several blocks there is an open area 20 ft. in width and 72 ft. in length, with an approach-road at the rear 18 ft. wide. The buildings have a flat roof for drying purposes, and when completed will contain seventy-two tenements, with accommodation

for an estimated number of about 300 persons. The site upon which the buildings have been erected was until recently occupied by Messrs. Maudslay, Son, & Field, engineers, where they were in the habit of fitting up their boilers and engines. This portion of Messrs. Maudslay's works has now been transferred to new premises at Greenwich.

Mr. Sinclair is the architect of these new industrial dwellings; and Mr. T. Hodgkins is Mr. Hobbs's clerk of works.

WASHABLE LIME COLOUR.

A washable lime colour is still a desideratum; but a compound appears to have been invented, which is said to possess that property. It is stated by the *Polytechnische Notizblatt*, that if a powder consisting of three parts of flint, three parts of marble and sandstone, and two parts of burned china clay is mixed with two parts of freshly-slaked and still warm lime, a mass for coating walls is obtained which, by frequent watering, is changed into a silicate of a stone-like yet porous texture. The four ingredients well mixed together are said to supply a grounding which may be added to any colour usable with lime. The mass is thickly applied and then left to dry until the next day, when water is poured over it at frequent intervals, by which proceeding the coating becomes weatherproof. This coating may be washed without giving off any colour. In fact, the more water is used, the firmer the mass becomes, so that it may even be brushed; whilst in warm weather, owing to its porosity, it is quite soft. The mass may be used both for the most coarse and the finest painting. With it a so-called fresco layer may be produced in the dry way.

CONCRETE WATER-PIPES.

In a late number of the *Annales des Ponts et Chaussées*, a cheap method of making water-pipes of small diameter is described. The pipes were formed of concrete in the trench itself. The mould into which the concrete was stamped in was of sheet-iron, and had a length of about two yards. The several pipes were not specially joined to each other, the joints being simply set with mortar. The concrete consisted of three parts of slow-setting cement and three parts of river sand, mixed with five parts of limestone *débris*. The inner diameter of the pipes was 9 in.; their thickness, 3 in. The average fall is given at 1 : 500; the lowest speed of the current at 1 ft. 9 in. per second. To facilitate the cleaning of the pipes, manholes are constructed every 100 yards or so, the sides of which are also made of concrete. The trenches are about 5 ft. deep. The work was done by four men, who laid down nearly 200 ft. of pipes in a working day; the cost was about 3s. 9d. per yard run. It is claimed as an advantage for the new method that the pipes adhere closely to the inevitable inequalities of the trench, and thus lie firmly on the ground. The works were carried out by M. Thanneur for the water-mains of the town of Coulommiers. It may here also be mentioned that in the course of the Canal du Verdon, which supplies the town of Aix-en-Provence and the neighbourhood with water, several mains were carried in a similar manner. But the concrete pipes which are submitted to great pressure have not proved effective. The method, consequently, is only suitable for pipes in which there is no pressure, or only a very trifling one.

THE NEW YORK ELEVATED RAILWAY.

In the second volume of the great work of Messrs. Lavoinne & Partzen, entitled "Les Chemins de Fer en Amérique," much attention is devoted to the elevated railways of New York. There are altogether four lines of this description, having a total length of nearly thirty-two miles. The rolling stock consists of 203 locomotives and 612 carriages. The trains consist of from two to four carriages, and the average speed is from twelve and a half to fourteen miles. The intervals between the trains vary from one and a half to five minutes, according to the time of day. Between twelve o'clock midnight and half-past five in the morning, they only run at intervals of fifteen minutes. The average time of stoppage at each station is only from fifteen to thirty seconds. The carriages are all of one class, and the fare is the same for all distances. It is about 5d., except for the early trains from half-past five to half-past eight in the morning, and from half-past four to half-past seven in the evening, when the price is only half. The cost of these lines averaged about 200,000*l.* per mile, but in spite of this comparatively moderate outlay, and the enormous number of passengers carried, the financial results have not proved very satisfactory.

THE WEEHAWKEN TUNNEL.

The boring of the tunnel under the Hudson River at Weehawken, New Jersey, opposite New York, has now been completed, but it will probably be six months before the tunnel and its approaches will be ready for traffic. The eastern entrance has been cut through solid rock for 150 ft. The breadth is 56 ft., while the tunnel itself, which is 4,000 ft. long, is 27 ft. broad and 21 ft. high. Most of the boring has been done since January, 1882. The estimated cost of the tunnel was a million and a quarter dollars, but the actual cost will, it is expected, prove considerably higher. It was only possible to make such rapid progress by sinking shafts and working in both directions from each of these. The number of shafts was five, and upon the five sections of the tunnel seventy borers, driven by compressed air, have been kept constantly at work. The shafts are to be employed hereafter for the purpose of ventilating the tunnel. A steam shovel, which was recently invented, has done good service in helping to load the trollies and remove the rubbish.

THE DOME OF ST. PAUL'S.

Sir,—Are your correspondents on this subject architects? If so, they have taken very little trouble to make themselves acquainted with the facts of the case.

There is a famous engraving by Emmett, which was executed under the eye of Sir Christopher, in which there is proof positive that the great architect did not set much store on "the smooth uninterrupted hemisphere of the dome." The dome, as it was carried out by Wren, was honey-combed with panels divided by main styles or ribs into compartments. This panelled surface was faced up to receive Thornhill's work. Thornhill was a coadjutor of Wren's, and Thornhill's designs must have been approved by Sir Christopher. The only decorations originally suggested for the dome were arabesques on the dividing ribs of the panelling. I very much doubt whether any but the horizontal sections of the dome are spherical curves; on this point my memory does not serve me. Moreover, if the main portion of the dome be a section of a hemisphere, its hemisphericity is signally interrupted by the great opening in its centre, from which the crown of the dome takes a second and elliptical curve.

Correggio is regarded by those painters who have made mural painting a study as a decorative artist of the decadence.

A Painter.

GARLANDS ASYLUM, CARLISLE.

Sir,—I observe a paragraph with the above heading in your issue of Feb. 3, with a description of certain large additions which have recently been completed under the direction of Mr. Cory, architect and county surveyor, Carlisle, and stating that "the plans, from the beginning of the asylum, some twenty-five years ago, have all been prepared by Mr. Cory." Without in any way wishing to detract from the part that gentleman has had in carrying out the building, I feel it due to myself to state that the original design was prepared by myself, selected in an open competition, for which I was paid the first premium of 300*l.* This was the first asylum planned on the block system, and I received from my friend Mr. Samuel Gaskell, who was at that time the most active of the Lunacy Commissioners, valuable assistance and advice in the general disposition of the buildings so as to admit of a large future extension.

My design was illustrated in your journal of May 1, 1858, and the Lunacy Commissioners subsequently requested me to allow the plans, as illustrating a principle, to be published in their annual report.

The magistrates, unfortunately for me, reserved to themselves the right to retain the drawings and carry them out in their own way, and availing themselves of this condition, I was obliged to submit to the hardship of losing a very valuable commission which I had thought I had fairly won.

So many years have elapsed that the circumstance had quite passed from my recollection, until reminded of them by the paragraph alluded to.

Thos. Worthington.

THE CONSTRUCTION OF THEATRES.

Sir,—It is to be hoped that Mr. Tanner's excellent paper may promote discussion on a subject of professional as well as public interest, and result in a better acquaintance with the principles on which these buildings should be constructed. It must in all fairness be admitted that the designers of many of our modern theatres deserve credit for improved arrangements for both seeing and hearing, with a greater degree of comfort than formerly; but beyond this there is much to be desired. The arrangements of corridors, staircases, and the general approaches, parts of the house with which the public safety is more intimately connected, are, if not altogether neglected, designed on no fixed principles, and without reference to the purposes for which they are intended, viz., the easy removal, from the auditory to the street, of a moving throng of people, without discomfort, and as rapidly as possible. It is true that in many cases the architect is hampered with unreasonable demands; and as these portions of the house are the non-paying ones, it is fair to assume that, in the eyes of a lessee, they should be considered of secondary importance. Still, there can be no excuse offered for staircases leading one on to another, or so long and steep that, in case of panic, they would be of very doubtful service; nor for emergency-doors, with fastenings at the floor-level; nor for steps in passages; nor for awkward, ill-contrived angles; nor for gangways within the house of such narrowed dimensions that they cease to become passages at all; and yet all these defects, and many others familiar to playgoers, may be found in any theatre in London, even those of recent construction.

The high value of ground in any leading thoroughfare will probably never permit the complete isolation of buildings of this class as they should be, nor can sufficient space be allowed for surrounding the body of the house with open corridors, accessible from the different tiers, nor, perhaps, for external staircases from galleries. But there is no reason why the several approaches should not be of larger dimensions, and passages communicating with all parts of the auditory made broad and straight. There can be no better illustration of the dangers attending narrow passages than by taking an ordinary wine-bottle and pouring into it a handful of dried peas. Turn the bottle gently over, and the peas will escape by the neck, one by one. Invert the bottle suddenly, and the peas will remain jammed at the entrance to the neck. This is exactly what takes place in the case of a panic, and therefore necks at theatre-entrances should be unhesitatingly avoided.

Probably there is no one theatre in Europe that could be accepted as a model of its class, or that would meet in every respect the demands of a reasonable criticism, although many might be cited as having points of excellence. At Palermo, for instance, is a large theatre, of recent construction, that possesses nearly all the essentials, both in the auditory itself and its various approaches. Having only a note-book sketch of this building, I am unable to furnish a correct measured drawing of it, but it may suffice to state that it stands in the centre of a large piazza, and is circular in plan, both externally and internally, with porticos on the south, east, and west sides. There is a broad corridor running round the auditory, on the ground-level, and an open loggia over it, accessible from the upper tiers. At the back of the arena, which is of large dimensions, and raised about 4 ft., are two rows of *posti distinti*, corresponding in a measure with our stalls. Behind these, almost on the same level, is a tier of boxes, nineteen in number, and immediately over the boxes, is the dress-circle, four seats deep. The gallery rises behind, separated (architecturally only) by a very effective range of columns, of the

Corinthian order, of large dimensions. The construction is very simple, and the general effect is most excellent. Wall stands upon wall, and as the tiers recede, instead of overhanging, there is no necessity for any of those cumbrous pieces of engineering skill that Mr. Tanner refers to so markedly in his paper.

It is satisfactory to learn that the Metropolitan Board of Works, as constituted guardians of the public safety, have been authorised to take up the question of theatre construction. It is to be hoped that they will succeed in formulating a set of rules for the construction and arrangement of corridors and staircases, enabling the playgoer to enjoy a sense of security he has not hitherto experienced, and consequently reducing the chances of panic to a minimum.

ALEX. GRAHAM.

GAS AND VEGETATION.

SIR,—A visitor to the Electric and Gas Exhibition at the Crystal Palace cannot fail to notice the difference between the old and new styles of gas-lighting. Unfortunately, these burners, which are said to rival the electric light in economy and splendour, have, unlike this new illuminant, a most destructive effect on the trees and plants, which give the interior of the place the pleasing appearance of a winter garden. Although the exhibition has only been opened a few weeks, the foliage on the trees already presents a withered appearance, and the leaves which fall daily show the necessity of providing some better means of carrying off the products of combustion from these regenerative burners, which owe their efficiency to the large amount of air consumed. The quantity of gas used for the exhibition cannot be far short of 10,000 cubic feet per hour, which, according to Herr von Fragstein's tables, would require over 1,660,000 cubic feet of air per hour to make up for the quantity vitiated. Whether the large amount of carbonic acid evolved will have any destructive action on the ironwork remains to be seen, but its effect on the vegetation clearly shows that on one point the electric light has triumphed over its improved rival; and, as a set-off to the expense of electricity, it would be well to remember that cheapened gas-lighting means a polluted atmosphere or the additional expense of efficient ventilating arrangements.

KILLINGWORTH HEDGES, C.E.

GAS FOR COOKING ABROAD.

ACCORDING to the *Gesundheits-Ingenieur* there has been a practical trial of the above system made in the island of Laaland at the town of Naksko, which numbers 3,600 inhabitants. According to the statements published, the cost of gas for illuminating purposes is about 2d. per cubic mètre (about 35 cubic feet), while that used for cooking is supplied at the rate of 1½d. for the same quantity. The communications are brought free into the house, and the gas-meter is supplied at cost price. The internal fittings are put up as economically as they can be with due regard to efficiency, and can be paid for by quarterly instalments, extending over five years, interest being calculated at the rate of 4 per cent. The gas consumed is paid for monthly, but no charge is made for the quantity consumed for cooking during the month immediately following the putting up of the cooking apparatus. One gas jet in the room with the cooking appliance is supplied with gas at the reduced scale of charge. It is said that the population of the little town has evinced its appreciation of the enterprising policy of the local gas company, and that the use of gas for cooking has become general. For small cooking ranges the cost of the gas is said to be from 1s. to 3s. a month. The *employés* of the gas company participate in the profits made according to a graduated scale, and therefore have a direct inducement in the development of the system.

Reports to Local Government Board.—We are glad to hear that for the convenience of members of the medical profession and others, copies of certain of the reports made to the Board by their medical inspectors will henceforth be placed on sale. Many of the reports contain matter of public value. They may be obtained from Knight & Co., 90, Fleet-street, and several other publishers.

THE NEW CHURCH OF THE ORATORY, BROMPTON.

ON Saturday afternoon last a large number of the members of the Architectural Association visited this building. They were received by the architect, Mr. H. A. K. Gribble, and by him the most important features of the building were explained and pointed out. Nearly a year ago (see *Builder*, vol. xlii., p. 248) we gave some account of the building, so that it is not necessary to recapitulate more than a few points. The nave is 51 ft. wide, the sanctuary or chancel 75 ft. in length by 50 ft. wide. The semi-dome over the apse, partly in brickwork and partly in concrete, has been completed. The aisles are 30 ft. wide, and are divided up into chapels, four or five on each side of the nave. The nave is vaulted throughout in cement concrete, composed of ten parts of Portland stone chippings (broken to about a ¾-in. gauge) and two parts of Portland cement. This part of the work has now been completed, and the centering has been struck from some of the compartments. Over the crossing formed by the junction of the nave, transepts, and sanctuary will be a large dome, 51 ft. 6 in. in diameter at the springing. The height from the church floor to the main cornice at the springing of the dome will be 44 ft. 3 in. The height of the dome from the springing to the eye at the top will be about 30 ft. The height from the eye of the dome to the top of the cross surmounting the lantern will be about 38 ft. This dome will be almost entirely of concrete, and will be 2 ft. in thickness at the haunches, gradually diminishing to 1 ft. in thickness at the eye, which will be formed of stone. The lantern which will rise over the eye will be of stone, and is calculated to weigh about 56 tons. The lower portion of this great dome is in brickwork, which has now been carried up nearly to the level for the commencement of the concrete work. Externally this dome will be protected from the weather by an outer dome of timber framing, covered, in the first instance, by zinc. A great deal remains to be done before the church can be ready for opening. It was desired to open it in May next, but we understand that the opening ceremony will probably be deferred until May, 1884. The completion of the western front, including the two flanking towers, appears to be for the present abandoned.

Mr. Joseph Seed is the clerk of works, and the contractor is Mr. George Shaw, of Westminster, whose representative on the building is Mr. Tinckam.

PROPOSED ARTISANS' DWELLINGS AND PUBLIC BATHS IN ST. BOTOLPH'S PARISH, BISHOPSGATE.

THE Vestry of the parish of St. Botolph Without, Bishopsgate, are taking steps for the erection of artisans' dwellings and public baths within the parish. At a meeting of the Vestry held last week, the Rev. William Rogers, the rector, presiding, the question was under consideration, when Mr. Teetgen, who reminded the meeting that the unsatisfactory state of the dwellings in the parish had often been brought before the public, moved a resolution to the effect that it was desirable that a portion of the charitable funds belonging to the parish, and producing about 2,600*l.* per annum, should be applied to the provision in the parish of good and wholesome dwellings, baths, and recreation rooms for the poorer classes, in the place of the tenements which they now occupy. He observed that they had in the parish a whole neighbourhood of buildings in such a disgraceful condition, and so fearfully overcrowded that any diversion of the parish income in that direction would be of inestimable benefit to the parish. The trustees had resolved recently that in all future dealings with the moneys left for the benefit of the poor the sums should be applied where deemed desirable, for the erection of artisans' dwellings in the parish. The scheme, which emanated from the rector, included baths, wash-houses, and other conveniences for the poor. It was incidentally stated during the discussion that the leases of estates belonging to the parish which would be shortly falling in included the Eagle in the City-road. The rector, in supporting the resolution, said that they had even bought the land for the erection of almshouses and artisans' dwellings, but the railway company subsequently required it, and had shut them out. They might not be able to lay out 100,000*l.* or 200,000*l.*, but they could do something towards removing the abominable state of things which at present existed. The resolution was unanimously adopted, and a committee appointed.

Well done, Mr. Rogers! Violent as the accident was that for many months crippled you, it seems never to have depressed your energy or stopped your good works.

WESTMINSTER ABBEY.

A HIGHLY interesting discovery was made on Saturday last (10th instant) during the progress of some alterations in the abbey precincts. The southern side of the main portion of Ashburnham House stands over the wall that returned in a westerly direction from the southern end of the old Dormitory (now the schoolroom). Parts of this wall may yet be seen in the archway of the "dark entry" leading to the big cloisters, and in the more modern wall of Ashburnham House itself. These, with certain massive beams that have recently come to view in that house, and in its boundary-wall and porter's lodge (recently pulled down), are remains of the ancient "Misericorde," where, amongst other uses, alms and doles were distributed to the poor. In removing certain portions of the house inhabited by the late Mr. Turle, which stands between Ashburnham House and the old Dormitory, and which includes work of Henry VIII.'s time, have been found in the wall of the "Misericorde" two Norman windows giving light, curiously enough, to an apartment or gallery upon its southern side. Along the foundations of the wall runs a subterranean passage terminated at one end by a cellar, in Dr. Bridge's house, that bears evident traces of having once served as a latrine of the monastery.

THE LATE MR. C. CHALONER OGLE, ARCHITECT.

IT has been conclusively established, by the evidence taken by the Commission appointed by the British and Hellenic Governments to inquire into the circumstances of the death of Mr. Ogle, that he was murdered by the Turkish or Albanian soldiers on the 17th of March, 1878, about sunset, while proceeding alone and unarmed to Macrinitza, near Volo, in Thessaly, in order to beg the pashas to stop the bloodshed and pillage by the soldiery after the battle of Macrinitza.

The allegation that Mr. Ogle was an insurgent, and was shot with arms in his hands, is abundantly disproved, and it is shown that he had nothing in his hands but a riding-whip, and that his principal object in going to Macrinitza was to fulfil his duties as a correspondent of a newspaper.

Mr. Egerton, in a despatch from Athens to Lord Granville, dated December 18th, 1882, observes upon this point:—"To my mind, the greatest presumption of premeditation is the very falseness of the accusation made on the Turkish side against Mr. Ogle, viz., that he was killed fighting against them armed with a chassepot."

That Mr. Ogle was murdered by the Turks is clear from the evidence, and there are suggestions in the report that there was premeditation, and that some persons in authority were concerned in his death. That he had incurred the displeasure of the pashas by his remonstrances against their cruelty is probable; and the Government, if they are sincere in their desire to arrive at the truth, should not allow the inquiry to end at its present phase, but should offer a reward for the discovery of the murderers. Our relations with the Hellenic Government are of a most cordial character, and they are not likely to put any difficulties in our way, but they cannot be expected to take the initiative. Mr. Ogle was a British subject, and it is for the British Government to take the necessary steps to bring his assassins to justice.

Mr. Ogle is spoken of by every one who knew him in the highest terms. Mr. Egerton says of him:—"From what M. Tricoupi and others have told me, Mr. Ogle was a man of singular promise, and his loss is a loss beyond the immediate circle of his relatives and friends. Though he died so young [he was only 27], he has lived to do credit to the name of England here. The high spirit which he showed in following what he believed to be right, and in denouncing wrong, and his gentle humanity to the weak, will long be remembered in the land to save whose helpless ones he fell."

One of his last acts was to write a pencil note (which has been recently recovered and sent to England) to a shopkeeper at Macrinitza, to provide at his cost for some women and children whom he had rescued from the Turkish soldiery.* J. H.

* See *Builder*, vol. for 1878, p. 436, for Biography of Ogle.

OBITUARY.

Miss Fanny Corbaux.—The death of this self-taught lady artist is announced as having occurred at Brighton, on the 1st inst. Born in 1812, Miss Corbaux at a very early age exhibited a talent for drawing, and though she was unable, through want of means, to go through a regular course of study, she struggled to make up for this deficiency by perseverance in her studies by herself, and in the year 1827 she gained a silver medal of the Society of Arts for an original portrait in miniature, as well as the Isis medal for a composition in water-colours. This medal she also gained in the following year, and in 1830 the gold medal fell to her lot. In this year she was elected an honorary member of the Society of British Artists, and a little later she became a member of the Institute of Painters in Water-Colours, at both of which galleries she frequently exhibited her works. In addition to her talents as an artist, Miss Corbaux evinced a considerable bent for Oriental studies. About ten years ago Mr. Gladstone granted Miss Corbaux a pension from the Civil List in recognition of her services to art and literature.

BUILDING PATENT RECORD.*

APPLICATIONS FOR LETTERS PATENT.

427. C. Weygang, London. Manufacture of fibrous material for floor-cloth, roofing-felt, wall-covering, &c. Jan. 26, 1883.

435. A. R. Holland, London. Ventilation of apartments, &c. Jan. 26, 1883.

436. W. Lord, Middlesbrough. Preventing down-draughts in chimneys. Jan. 26, 1883.

445. P. Born, London. Folding lattice shutter. Jan. 27, 1883.

473. J. Hall, Stourbridge. Porcelain fire-clay baths. Jan. 29, 1883.

481. R. Stone, New York, U.S.A. Apparatus for hoisting stone, &c. Jan. 29, 1883.

489. J. A. B. Bennett, King's Heath, and J. Herd, and B. P. Walker, Edgbaston. Heating and cooking stoves. Jan. 30, 1883.

516. W. R. Lake, London. Apparatus for building arches or domes. (Com. by T. J. Lovegrove, Philadelphia, U.S.A.) Jan 30, 1883.

531. M. Benson, London. Drain-tiles. (Com. by J. Lynch, Washington, U.S.A.) Jan. 31, 1883.

532. M. Benson, London. Terra-cotta tiles, architectural work, &c. (Com. by J. Lynch, Washington, U.S.A.) Jan. 31, 1883.

576. D. F. W. Quayle, Castletown. Window-sashes. Feb. 2, 1883.

578. P. Gay, Paris. Machinery for sawing stone. Feb. 2, 1883.

599. S. S. Hellyer, London. Water-closets and slop-sinks. Feb. 3, 1883.

608. T. Cliffe, Huddersfield. Apparatus for removing superfluous body and glaze off enamelled bricks, &c. Feb. 5, 1883.

615. T. Webster, Edinburgh. Apparatus for closing and opening curtains. Feb. 5, 1883.

619. G. W. von Nawrocki, Berlin. Hinges for doors, &c. (Com. by O. A. Ludewig, Stettin.) Feb. 5, 1883.

637. W. White, London. Rendering existing walls damp-proof and tiles therefor. Feb. 6, 1883.

651. H. C. Symons, London. Apparatus for raising, &c., weights in water-closet levers, &c. Feb. 6, 1883.

656. W. M. Hobson, Birmingham. Arrangement of tesselated tiles, &c., to buildings. Feb. 6, 1883.

684. J. G. Stidder, London. Apparatus for supplying trapping, &c., arrangements for sanitary and sewage purposes. Feb. 7, 1883.

695. J. Hay and G. Robertson, Glasgow. Window-sashes. Feb. 8, 1883.

NOTICES TO PROCEED

have been given by the following applicants on the dates named:—

Jan. 30, 1883.

4,550. J. Shaw and F. Milan, Lockwood. Apparatus for indicating the presence or absence of water in cisterns, &c. Sept. 25, 1882.

Feb. 6, 1883.

4,726. W. A. Barlow, London. Door, lock, or latch checks. (Com. by F. W. Boldt and P. C. A. Vogel, Hamburg.) Oct. 4, 1882.

Feb. 9, 1883.

4,715. J. Bateman, London. Stoves and fireplaces. Oct. 4, 1882.

4,727. W. A. Barlow, London. Trapping sewers and drains. (Com. by L. Henry, Brussels.) Oct. 4, 1882.

ABRIDGMENTS OF SPECIFICATIONS.

Published during the Week ending February 3, 1883.

2,783. H. J. Haddan, London. Machinery for cutting and dressing stone. (Com. by A. McDonald, Massachusetts, U.S.A.) June 13, 1882. Price 6d.

This relates to adjusting and working the rotary disc cutters of stone-dressing machines.

2,806. S. Deards, Harlow. Securing sheets of glass, metal, &c., for roofing and other purposes. June 14, 1882. Price 6d.

The sheets of glass, &c., are held by stripe of metal of an elongated x form, the edges of the sheets being held between the jaws of the x, while the strip of metal is secured to the rafter through the web joining the two sides of the x.

2,829. R. R. McKee, Kirkcaldy. Water supply and regulating apparatus for flushing-drains. June 15, 1882. Price 6d.

This consists of an automatic apparatus in a tank whereby the tank is periodically emptied into the drain.

2,850. J. H. Johnson, London. Supplying and distributing water to and in houses, &c. (Com. by A. Dumas, Paris.) June 16, 1882. Price 6d.

The service-pipes are all small ones, and a series of closed tanks are provided about the house where the water is required. (*Pro. Pro.*)

2,935. A. Clark, London. Fireproof screen for separating the stage from the auditorium of theatres, &c. June 20, 1882. Price 2d.

This consists of a double screen of iron or steel plates, the space between which is filled with water or any non-conducting substance. (*Pro. Pro.*)

2,940. T. Beddoe, London. Apparatus for supplying disinfectants to water-closets, urinals, and drains, &c. June 21, 1882. Price 2d.

The disinfectant mingles with the flushing water as it enters the basin. (*Pro. Pro.*)

Published during the week ending February 10, 1883.

2,670. C. J. T. Hanssen, Flensburg, Prussia. Plugs for connecting service-pipes to water and other mains. June 7, 1882. Price 6d.

Hollow plugs are screwed into the main, which are closed by plugs of hard sugar protected on their undersides next to the main by layers of insoluble material. When the connexion is made a little water poured in from the outside dissolves the sugar plug, and the insoluble material gives way under the pressure in the main, and the connexion is opened.

2,834. A. M. Clark, London. Water-closets, &c. (Com. by J. J. B. Frey, New York, U.S.A.) June 15, 1882. Price 8d.

The valve on the discharge-pipe is a ball of indiarubber, and round the spindle thereof is fitted a spring to keep the ball down on its seat. When the pull raises the ball the cistern valve is also opened, and a flush effected. At the same time the drip tray is also flushed through a flushing-rim formed round it. To connect the porcelain pipe of the closet with the metal pipe a screw-sleeve passes over the end of the porcelain pipe and engages an external thread on a ring passed over the end of the metal pipe, thereby bringing the two parts tight together.

2,868. J. Thomas, Bangor. Apparatus for cutting and shaping stone. June 17, 1882. Price 6d.

This consists of an apparatus wherein the block is placed on an anvil, and a succession of blows are struck on it in the required place by a series of hammers driven by machinery.

2,926. A. K. Robinson, Leeds. Cooking ranges and stoves. June 20, 1882. Price 6d.

A bonnet is fitted to closed fire-ranges to pass the steam and gases direct to the chimney.

2,986. J. McDougall, Glasgow. Apparatus for regulating the supply of water to water-closets. June 23, 1882. Price 2d.

The handle actuates two valves, one at each end of a long-closed tank, by one of which water is admitted to the tank, and by the other is passed to the closet. (*Pro. Pro.*)

2,994. R. Jackson & S. Jackson, Broadbottom. Ash-receiver. June 24, 1882. Price 2d.

A metal box is fitted below a grating beneath the fireplace into which the ashes fall, while the cinders are arrested by the grating. (*Pro. Pro.*)

3,009. W. S. Morton, Edinburgh. Fireplaces. June 26, 1882. Price 6d.

Receptacles for fuel are formed in the hobs or sides of the fireplace.

3,028. J. W. Cook, London. Forming temporary partitions in class-rooms, &c. June 27, 1882. Price 2d.

Flaps are hinged to the backs of the forms which, when turned up, form the partitions. (*Pro. Pro.*)

5,165. A. M. Clark, London. Gas cooking stoves and ranges. (Com. by W. W. Goodwin, Philadelphia, U.S.A.) Oct. 30, 1882. Price 4d.

A flue is so arranged above the burner that while no heat is abstracted all the noxious products of combustion are carried off to the chimney.

* Compiled by Hart & Co., Patent Agents, 166, Fleet-street.

AN ARCHITECT'S CLAIM.

HESKETH *v.* ROLLWAGEN.

This case, tried at the Liverpool Assizes on Saturday last, before Mr. Justice Kay and a special jury, was a somewhat singular one. The plaintiff, Mr. William Hesketh, architect, Liverpool, sought to recover from the defendant, a waiter at the Alexandra Hotel, Dale-street, money due as commission for professional work done. The defence was that the work had not been carried out according to the instructions given. Mr. Russell, Q.C., M.P., and Mr. Carver were for the plaintiff, and Mr. Gully, Q.C., and Mr. Stewart for the defendant.

Mr. Russell said the action was brought to recover between 200*l.* and 300*l.* for work done by the plaintiff in the capacity of an architect. The defendant became interested with a man named Copestake about July last, in some land at Heswell, which is midway between West Kirby and Parkgate, and upon this property they contemplated the erection of an hotel. The plaintiff was applied to by Copestake, who took him to the defendant, and it was explained that, as there was no hotel in the neighbourhood of Heswell, it might be a good speculation to build one. It was necessary to at first procure a licence, the magistrates by a recent Act having power to grant a conditional licence on plans being submitted to them. It appeared, however, that there was a rival aspirant for hotel-keeping in the village, a man named Bainbridge having purchased some house property, which he proposed to alter so as to adapt it to the business of an hotel. The defendant, being of opinion that this would not satisfy the magistrates, instructed the plaintiff to prepare his plans, the commission agreed on being 2½ per cent. on the cost of the building if the plans were not carried out, and 5 per cent. if they were. The application for a provisional licence came before the magistrates on the 31st August, but as the plans did not show stabling accommodation the consideration of the subject was postponed till the following licensing sessions. The plaintiff was thereupon instructed to provide the plans, and did so. He also prepared an estimate of the cost of the building, putting it down at from 8,000*l.* to 10,000*l.*, the stabling being for about sixty horses. The plans were again submitted on the 28th September, and the provisional licence was granted, and confirmed on the 7th October. The defendant then instructed the plaintiff to have the plans, tracings, and specifications completed by the 16th November, but between that date and the end of the month the defendant seemed to have changed his mind, and affected to be surprised at the plaintiff's estimate of the cost of a new hotel, and refused to pay a penny for all his labours. The plaintiff stated that no limit was given as to the cost of the hotel, the defendant on the other hand saying that a few thousands were not material, he having friends to help him; and Mr. Bainbridge deposed to the defendant paying him 150*l.* to buy off his opposition to the erection of the hotel as designed by the plaintiff, in respect to certain restrictions on land required for the scheme.

The defence was that the plans exceeded in cost the instructions given, and that the plaintiff was expressly informed of the extent to which the defendant would go, namely, about 3,000*l.*

The jury awarded the plaintiff 200*l.*

PAYMENT FOR MEASURING VARIATIONS IN CONSTRUCTION.

Sir,—Regarding the question of your correspondent, "A. Z.," in your last issue, may I be allowed to state an opinion as to the custom which, in ordinary cases, I believe would be applied, as being the reasonable thing, by those architects and surveyors of good standing who practise in the leading centres, and possibly elsewhere, in dealing with variations of addition and omission, during the construction of a building, arising out of the from time to time modified views of the proprietor or architect; and, I am bound to say, generally occurring at the instance of the former, whose mind would seem to have become curiously clearer in regard to his wants during the progress of erection than at the time of signing the contract.

In these remarks I allude to any building erected for a stated sum, for which quantities may or may not have been originally supplied, the contractor having performed his part honourably and thoroughly to the end, and having only obtained fair remuneration for his work.

Assuming, then, that no special clause had been inserted in the signed conditions of contract binding the contractor to pay the whole or part of the measuring charges, he would not, or should not, be called upon to pay the same out of his own pocket; and because he is assumed to have made no provision for it in his estimate, for unless clearly so stated in the conditions he could have no object in increasing the estimate (especially in these days of close competition) by making an unasked-for provision; but if, on the other hand, a clause should exist in the conditions binding him to pay them, he would be called upon to do so, and this without any hard-

ship, for he had made provision for them in his estimate, or if not, that would be his own matter.

In result, it should make no difference to the proprietor whether he or the contractor agrees to pay the measuring charges, and for the reason that, if contractor pays, they are generally added into the certified amount the proprietor has to pay at settlement; and if he pays them direct out of his own pocket they are, of course, not so added.

Of course there are exceptional cases constantly cropping up to which ordinary custom could not be justly applied, as, for instance, where one side seeks to gain an undue advantage over the other, or all may be tinged with the same hue; and in such cases a very decided opinion, based upon the ordinary custom, and given without being conversant with the whole history of a structure from beginning to end, might prove to be misleading, — altogether unjust to the fair interests of all concerned. N.

DAMP AND POROUS WALLS.

SIR,—I note your correspondent, "House Agent," [p. 160, *ante*] writing from Bristol, a neighbourhood suffering in a very large degree from the recent floods, wants to know if there is any cheap method of rendering walls impervious to wet.

As "House Agent" very pertinently remarks, this is a very serious matter, and no one, save doctors, has any conception of the amount of illness and death brought about by people inhabiting damp houses. I am glad to be in a position to point out to your correspondent a cheap and absolutely effective remedy, viz., the Hygeian-Rock Building Composition, of which I am patentee, and if he will put himself in communication with me, I shall be glad to give him particulars of cost, &c.

My composition has now been before the public for twelve months, during which time it has been extensively used and put to some very severe tests, and has given universal satisfaction. Any walls built upon my system, and with the aid of my composition, I will guarantee to be absolutely impervious to wet or damp of any description, no matter how thin the walls, how porous the bricks, or how bad the mortar; and this can be accomplished without any additional cost, inasmuch as the composition imparts so much additional strength to the walls, that a reduction in their thickness can be made, equivalent in cost to that of the composition.

I have also perfected a system for applying my composition to existing damp or wet walls, the *modus operandi* being as follows:—In the first place the plaster is removed from the face of the wall, and the joints well raked out; then a cavity for the reception of the composition is formed by means of a specially made "locked tile," which is vertically fixed against the wall by means of a temporary cramp, behind which the composition is poured in a hot liquid state, and when cooled and set, which takes place in about five minutes, fixes the tiles, and forms an absolutely impervious lining to the walls, with a honeycombed undercut surface upon which a render of plaster or mastic cement can be placed, and the wall be prepared for decoration within six days from the time of taking off the old plaster; and in this manner any wall, however wet, can be made permanently dry by the introduction of a vertical impervious lining, not exceeding seven-eighths of an inch in thickness, which can be applied either internally or externally.

WILLIAM WHITE.

No. 3, *Westminster-chambers, S. W.*

LAMBETH PALACE.

SIR,—As in your notice of Mr. Cave-Brown's most valuable work on Lambeth Palace you have been good enough to refer in terms of praise to the Society for Photographing Relics of Old London, you may, perhaps, allow me to mention that the Society are now preparing to issue, as a part of this year's series, three views of portions of the Palace, —the gatehouse, the exterior of the hall or library, and the so-called Lollards' Tower.

ALFRED MARKS.

DAMP HOUSES AT BRISTOL.

SIR,—If your correspondent "House Agent" chooses to inquire, I think he may, in his own city, come across a manufacturing firm who can supply an article that may possibly partly serve, if not entirely, his purpose. I allude to the firm of Messrs. A. T. Morse & Co., Ferry-road, St. Michael's, Bristol, makers of the Patent Calcarum Washable, Damp, and Heat Proof, Water Colours. If not, I must refer him to numerous silicate paint manufacturers, both in London and the provinces. It is a pity that the Local Authority, or its officers, does not interfere to prevent such nests of disease continuing to exist, much less to be erected, very often with little or no concrete footings, or asphalte, or other suitable damp-proof course, so frequently occurring nowadays. CAMDEN TOWN.

CAUTION.

THERE is a man just now calling upon architects stating that his father had done business with them, and soliciting money, sometimes as a gift, at others as a loan. He gives the name of Smith, and his head is utterly without hair. The sums he has received range from 2*s.* 6*d.* to two guineas.

BANKRUPTCY LAW.

SIR,—As it is probable an alteration will be made during the next session of Parliament in the existing scandalous condition of the law on bankruptcy, it is to be hoped it will be done thoroughly, and not leave so many loop-holes for dishonest traders. Out of the 9,700 cases of insolvency last year, 3,500 were compositions; 54 per cent. of these paid under 6*d.* in the pound, and 82 per cent. under 5*s.* in the pound. The number of cases are on the increase, and the amounts paid are diminishing. Where one man comes to grief through misfortune 100 come to the same end by dishonesty. No wonder one of our judges lately stated sarcastically he was surprised that as long as the law stood in its present unsatisfactory state any man who studied the interests of his family should think of paying 20*s.* in the pound. Leniency should be shown to any man who can clearly show he cannot meet his demands through misfortune, but severity should be shown to rogues. It is quite a common practice nowadays for unprincipled scoundrels to submit estimates for work at ruinous prices, never intending to pay for the material; and they also divide their work out to other masters, and cheat them openly under the protection of the law. I know of many cases in my own experience where work has actually been taken below the honest price of the material. Architects would do well not to encourage this system, but know something of those whom they employ, and adopt the man whose price is nearest to the surveyor's estimate. Unless some alteration is soon made the whole trading community of the country must come to grief. ROBT. PEARSE.

CHRIST CHURCH CATHEDRAL, DUBLIN.

SIR,—In the book which you so favourably reviewed in your wide-spread journal on the 3rd inst., on the restoration of Christ Church Cathedral, Dublin, published by Messrs. Sutton Sharpe & Co., the late Mr. G. E. Street, R.A., says.—"The risk and difficulty and consequent anxiety in undertaking such a work was very great," &c. . . . . "and the work was done throughout, thanks to the energy and skill of the clerk of works (Mr. Doolin) and the builders (Messrs. Cockburn) without a sign of a crack or settlement." So far as the name of the clerk of works is concerned I feel extremely sorry such an error should have remained uncorrected before it came before the profession and the public, as I superintended the most important and largest portion of the restoration under the late eminent architect. I feel all the more grieved about the occurrence as I have lost during the last few weeks the appointment on some most important works to be carried out from similar misrepresentations. I hope for justice sake you will give the above correction as prominent a place in your next issue as you can give it.

WM. CONRADI, late Clerk of Works at the Christ Church Cathedral, Dublin.

FINCHLEY SCHOOL COMPETITION.

THE following is the result:—

1st Premium, "Knowledge is Power," Dunk & Geder, 36, Leadenhall-street.

2nd Premium, "R.R.R.," Chas. Bell, 9, New Broad-street.

3rd Premium, "Lux," C. E. Sayer, 17, Soho-square.

Professor T. Roger Smith acted as referee.

BUILDING DISPUTES AT THE BOW COUNTY COURT.

THE Judge of the Bow County-court has just had before him two cases in which parties connected with the building trade were respectively plaintiffs and defendants.

WRONGFUL DELIVERY OF TIMBER.

In this case, Mr. Lamont, the plaintiff, is a timber merchant, residing at Leyton, and the defendant, Mr. Cotes, is a builder, at Bow, and the action was brought to recover 9*l.*, the value of timber wrongfully delivered to the defendant. It appeared from the facts of the case, as stated on behalf of the plaintiff, that he purchased the equity of redemption of certain property of William Cotes, brother of the defendant, and afterwards purchased for William Cotes, from Messrs. Gunton & Co., a quantity of timber of the value of 9*l.*, to be delivered to and used by him for building purposes. The defendant, who was also building close to the spot, got possession of the timber by mistake, and used it in his own buildings. On the plaintiff speaking to the defendant on the matter the latter asked him to treat him as his customer, which the plaintiff refused to do, and shortly afterwards he heard of the defendant's liquidation, of which he had no notice. He (the plaintiff) had paid for the timber.

In answer to the claim, the defendant replied that the goods were delivered to him by mistake, and he afterwards asked the plaintiff to allow him to be his debtor.

His Honour, in giving judgment, said,—"You should pay the money and end the matter. Be honest if you can, and do not shelter yourself under bankruptcy." The judge then amended the summons for "detention of property or value thereof," and gave judgment for the amount claimed, payable in a week, or formally the property to be given up.

CHARGING FOR FOREMAN'S TIME.—FRENCH *v.* GENTRY.

IN this case the plaintiff is an engineer at Whitechapel, and the defendant is a builder, of the Longthorne Works, West Ham, Stratford. The action was brought to recover 14*l.* 10*s.* for fitting up a steam-boiler at the defendant's works at West Ham. The defendant had paid 10*l.* 11*s.* 6*d.* into court, and before the case was gone into, the solicitor who appeared on behalf of the defendant said that he objected to pay the amount charged for foreman's time in superintending the job, and the arguments in the course of the hearing of the case turned upon that point.

On the part of the plaintiff, it was stated that he paid his foreman 1*s.* an hour for going to the job, and allowance was made for superintendence. It was the custom of the trade.

His Honour observed that a man was allowed to charge time for going to a job, but the plaintiff could not get it in two ways.

The defendant said he employed a large number of hands, and had twenty foremen. He sent out foremen to superintend his work, but never charged for them. He had paid dozens of bills, but never before had such an item charged to him.

In answer to the judge, he said, "I live by the profits on the men's time and the materials, but I am charged twice for it in the plaintiff's bill."

The plaintiff, in reply to the judge, said that if he had had no foreman he should not have charged for his time in superintending the work.

The judge said that the charges for superintendence were not maintainable, and gave judgment for the defendant.

THE ADELPHI THEATRE.

ON the 8th inst., at Bow-street Police Court, Messrs. A. and S. Gatti attended before Mr. Flowers to a summons taken out by the Metropolitan Board of Works for unlawfully making default in complying with a notice requiring them to make certain alterations necessary to remedy structural defects in the Adelphi Theatre.

Mr. Besley appeared in support of the summons, and said the proceedings were instituted under the 11th section of the Metropolis Management and Building Act Amendment Act, 1878. With reference to the facilities given to the public for egress from the theatre there was nothing to complain of, as the theatre was provided with several doors. In April last, however, Captain Shaw inspected the theatre, and, in consequence, the defendants were served with a notice to effect certain alterations included in a list of eight requirements. A proscenium wall was to be built in brick between the stage and auditorium, a portion of a house in Maiden-lane, used as a scene-shop, was to be separated from the rest of the house, and the house was to be separated from the stage by a brick wall, all openings in such wall to be closed by wrought-iron doors. The ceilings in the auditorium and other parts of the theatre were to be made fire-resisting, and hand-rails were to be fixed in different parts of the house. The gallery door was also to be made to open outwards. Formal notice to carry into effect the requirements of the Board had been served on the defendants in June last, but they had neglected to make the necessary alterations. They were consequently liable to be fined 5*l.* per night, which would make a total of 200*l.* Since these proceedings had been instituted, however, the defendants had given an assurance that the work would be proceeded with at once. It was, therefore, suggested that a fine should be imposed for two nights, making 10*l.*, and the case be adjourned for a month to see whether the requirements of the Board were completed. If they were, no further steps would be taken.

Mr. Flowers imposed a fine of 10*l.*, and granted the adjournment asked for.

STAINED GLASS.

Pendleton, near Manchester.—The Bishop of Manchester has lately unveiled the five-light east window of St. George's Church, Pendleton, near Manchester. It represents the Ascension of our Lord, and has been subscribed for by the miners of the neighbourhood. The artists are Messrs. Mayer & Co.

Galway.—A large stained-glass window has been given to the Church of St. Nicholas, Galway. It is in the east end of the church, and consists of five compartments, representing Christ as the Good Shepherd, raising of Jairus's daughter, our Lord in prayer, Christ calling little children, and Mary at the sepulchre, while the tracery contains a bust of St. Nicholas and angels. The window is by Messrs. Mayer & Co.

VARIORUM.

When the first edition of Street's "Indian and Colonial Mercantile Directory" came before us, we were impressed by the extent of ground covered, and the amount of valuable information given, and gladly expressed approval of the book. In the edition for the present year the number of towns and cities has again been increased, as well as the number of maps. As before, the leading merchants and traders of every class, likely to be of any use to manufacturers and all engaged in commerce, are fully enumerated, together with the leading professional men, and concise descriptions of each country and town are furnished, with a view more particularly to show their commercial capabilities and peculiarities.——The "City of London Directory for 1883" seems again increased in size. Amongst its chief features are: A Street List, clearly arranged. Every house, occupier, and the business carried on, is given, and the floor occupied. Alphabetical List, name, address, and business of everybody in the City of London. Livery Companies of London. Valuable information, not to be found in any other work, is given in this section concerning these ancient Guilds of the City, halls, names of the masters, wardens, officers, fees, particulars of charities, gifts, &c.; and a coloured map gives the parish and ward boundaries, and improvements to date of issue.——The new number of "Our Homes, and how to make them Healthy" speaks thus as to iron stoves:—"Iron is a very useful material for stoves. Iron lends itself readily to convenient forms, and it is a very good conductor of heat. The consequence is that iron has been more largely used than any other material for stoves. There are, however, several serious objections to iron stoves, especially for small rooms. A long flue-pipe is unsightly, and on that account often inadmissible. Iron stoves heat rapidly, and easily become red-hot, therefore the effect produced is unequal both on the air and on persons in the vicinity of the stove. An iron stove cools down with rapidity when the fire is low. The flue-pipe gives out unequal degrees of heat in the different parts of its length. With an iron stove the temperature, at 18 in. from the stove, has been found to exceed, by 27° Fahr., that observed at 6 ft. from it; and with a red-hot stove the difference in that short distance has been found to be in some cases as much as 45°. Carbonic oxide has been found in air heated by iron stoves. This can only occur provided the stove be very highly heated; but a high temperature is a liability to which many iron stoves are subject. Iron, very highly heated, may take up the oxygen from the carbonic acid prevalent in the air of an unoccupied room, and thus reduce the carbonic acid to the condition of carbonic oxide. Moreover, the quantity of dust in a room, which almost always contains organic matter, may, under these conditions of temperature, somewhat influence the presence of carbonic oxide. General Morin alleges that he found the effects to be nearly three times as great with cast-iron as with wrought-iron stoves. It has also been alleged that the carbonic oxide generated in the fire may permeate through the cast-iron of the stove, if very highly heated or if made of inferior porous metal, into the surrounding air. Carbonic oxide may also be produced by the oxygen of the air acting on the carbon in the cast-iron if heated to a red heat. The effect would be diminished by the presence of moisture in the air. Consequently, the use of vessels containing water on metal stoves has been recommended. The use of surfaces of iron heated to a red heat for warming air for ventilating purposes is objectionable. Hence, whenever iron stoves or cockles are used for heating air, care should be taken to prevent the iron from attaining a high temperature, and with this object all iron stoves should have a lining of fire-brick, so as to prevent the fire from coming in direct contact with the iron; such an arrangement prevents these inconveniences, and preserves greater regularity in the heating of the air."——Cassell's "Household Guide" for February gives useful hints on lawns. "It would be impossible to state dogmatically at what intervals a lawn should be mown, as this must much depend upon the season, the state of the weather, and the rapidity with which the grass grows. It is, however, always desirable to begin mowing before the grass has attained undue length in the spring, and during the summer to cut it as frequently as possible; a week is the extreme period during which it should be left throughout the grass-growing months, and, to keep the lawn in really fine order, it should be mown much oftener. With the machine mower the labour of going over a lawn on which the grass is short is very slight, and the roller attached to the machine will then be generally sufficient to keep down worm and ant-hills. In those cases where worms are so numerous as to become a nuisance, they may be destroyed by sprinkling the plot, through the rose of a watering-pot, with water into which, on the previous day, hot quick-lime has been thrown, in the proportion of six or eight pounds to the hogshead; it is, however, doubtful whether worms are not frequently as beneficial as hurtful by rendering the ground porous and admitting air to the roots of the grasses. Where such weeds as plantain or ribbed grass exist they should be carefully rooted out, as they will destroy all the finer grasses near them. Moss, which results from poverty of the soil, is best destroyed by enriching it with top-dressings, such as guano, soot, fine compost, lime, &c., applied early in the spring, and well brushed in. Treating the lawn in this manner, and using a collecting mower, is, in the opinion of some persons, preferable to the practice of scattering the grass; but the latter mode certainly affords nourishment to the grass."

Miscellanea.

House-Builders' Eccentricities. — The *Medical Press and Circular* speaks strongly of some of the arrangements at the much over-praised Bedford Park. The writer says, speaking of the houses:—"The arrangement of the domestic offices is frequently carried out with almost perfect neglect of all sanitary precautions. We particularly refer to the fact that the 'larder,' in which the food of the unfortunate families destined to live in the houses is placed, is invariably *next to a water-closet*, and in the majority of cases the doors opening into the two receptacles, for *ingesta* and *ejecta* respectively, are directly contiguous, while in even the best constructed only a partition wall divides the two compartments. Such a disposition cannot be at all a necessary arrangement, as the merest inspection suffices to indicate; and in a district which appears to be growing very rapidly in public favour, and to be each year more thickly populated, immediate steps ought to be taken under authority to prevent the repetition of blunders so glaringly detrimental to the preservation of health."

Huddersfield Fine Art and Industrial Exhibition, 1883. — The Council of the Huddersfield Technical School and Mechanics' Institute have decided to hold a Fine Art and Industrial Exhibition, in connexion with the opening of the new Technical School and Mechanics' Institute in June next, and a large committee has been appointed for that purpose. The new building, now nearly completed, together with a large shed for machinery, and a spacious annexe to be erected on the adjoining land, will provide ample room for a most extensive exhibition. The large shed being lighted from the roof is admirably adapted for the exhibition of engines, mechanical tools, and machinery in motion, which it is intended to make a very important and prominent feature in the exhibition. There will be a large and attractive collection of paintings, water-colour drawings, statuary, and other works of art. Applications for space must be sent in not later than the 21st of February, 1883, to Mr. Austin Keen, secretary.

The Calcutta International Exhibition, 1883.—The requisite new buildings adjoining the Imperial Museum are now being erected under the superintendence of Colonel the Hon. S. T. Trevor, Royal Engineers. Invitations have been sent throughout India to all the rajahs and princes, inviting them to contribute to the Indian display, which is to be on a very grand scale. The machinery department is expected to attract much interest.

School of Art Wood-Carving. — It is worth mentioning that in this school, held at the Royal Albert Hall, Kensington, in connexion with the Technical Institute of the City and Guilds of London, free-studentships in both the day and evening classes are at present vacant. Application should be made to the Manager of the School, Royal Albert Hall.

Overmoigne.—The parish church of Ower Moigne, Dorset, has been reopened, after having been almost entirely rebuilt,—a work rendered necessary by the dilapidated and dangerous condition of the church. The walls were decayed and bulging, the roof showed signs of probable speedy collapse, the south porch was a good deal out of the perpendicular, and as for the pews, many of them had been repaired with portions of tea-chests and odd pieces of wood. By a bequest of the late Rector, supplemented by the liberality of his nephew, the present lord of the manor (Mr. Cree), funds were provided for carrying out the works. It was originally intended merely to place a new roof upon the old walls and generally renovate the church, the sum of money referred to having been left for this purpose only, but it was found the walls were in so decayed a condition as to be unsafe, and it was subsequently decided to pull down the whole of the building, with the exception of the tower, and rebuild it, Mr. Cree undertaking to bear the extra cost. The faculty for carrying out the restoration was granted to him by the Bishop, and plans of the needed alterations were designed by Mr. S. Jackson, architect, of Weymouth, and, having been approved, were entrusted to Mr. John Beer, builder, of Wareham, to carry out. The work was commenced last April. The total cost of the alteration was upwards of 1,000*l*. The original stone facing of the building has been utilised for the same purpose in the rebuilding. No variation has been made in the form of the church (except the addition of a vestry), which consisted of a nave, chancel, and transept. The style of architecture of the old church, which appeared to have been built at three different periods, was a mixture of Early English and Perpendicular. The architect in the restoration has followed the latter style. The tower arch, which was formerly closed up and hidden by a hideous gallery, has been thrown open and restored. The western window has also been carefully restored. The nave is divided from the chancel by a bold moulded arch in character with the old tower arch. The transept has a similar arch. The whole of the window and door dressings are new and of Portland stone, except the three windows on the north and south sides of the chancel, which have been restored. The east window is new, and is filled with stained glass. The centre light represents Christ, the Light of the World, that on the left St. Mary, and on the right St. John. The colours are tastefully arranged. The window is the gift of Mrs. Stone, and is in memory of members of her family. It was supplied by Messrs. Heaton, Butler, & Bayne. The interior walls above the seats are stuccoed; below they are finished with Portland cement. The roofs are open-timbered, boarded alternately with pitch-pine and red deal on the purlins and principals. The timber is all wrought, stop-chamfered or moulded, and varnished; the whole is covered with Bridgwater tiles. The church is heated by a Porrett's stove. The approach to the church has been much improved by the removal of the steps and lowering the path. The stone dressings and other Portland stone were supplied by Mr. R. Greenwood, of Weymouth.

Rye.—Sir E. Watkin, speaking at a meeting at Lydd, Feb. 13th, which resolved to petition the Houses of Parliament for a fuller inquiry into the claims of Dungeness to be converted into a harbour of refuge, said that, after a careful study of the subject, he had come to the conclusion that Dungeness was the proper site; and, on economic as well as philanthropic grounds, the absence of exertion on the part of the Government in the matter was supremely reprehensible. From a Parliamentary return it appeared that in the limited period of fifteen years the loss of property,—to say nothing of invaluable lives,—from Folkestone to Dungeness, through the absence of a harbour of refuge, represented a sum far in excess of any estimate yet advanced for ample and magnificent works at that spot. The undertaking was not a competition with Dover. Lord Brabourne thought that a fuller inquiry was needed.

The Tyndale Memorial.—The memorial statue of the martyr, William Tyndale, first translator of the New Testament into English, is to be cast in a few days, and it will be placed at the west end of the West Garden on the Thames Embankment. The statue, designed by Mr. J. E. Boehm, represents Tyndale in his doctor's robes, with his right hand on an open New Testament.

Art Foliage.—Mr. J. K. Colling, of London, delivered a lecture on "Art Foliage" at a meeting of the Leeds Architectural Association last week. Mr. Corson occupied the chair, and briefly introduced the lecturer, who began by saying that few attempts had been made in modern times to give architectural foliage its proper character of art workmanship. We go on reproducing and copying the works of former ages, and appear to be quite satisfied if in doing this we are able to produce a tolerably faithful imitation of old work. Why should not nature be appealed to? Why should not natural form be conventionalised and adapted instead of ancient forms revived? He confined himself here to architectural foliage carving, and did not claim for it a position above the subordinate one as an accessory to architectural ornament, and therefore subservient to the form of the work itself. When designing foliage, nature should be faithfully and constantly referred to; its endless beautiful forms should be drawn and stored up for future use. Yet these natural forms must in some degree be rendered differently; in other words, they must be conventionalised or altered sufficiently to make them applicable and suitable to the various purposes for which they were designed. No positive rules could be laid down for the manner of doing this. Every age had its own peculiarities, and every people their conventional mode of expression. Experience, too, had taught us that foliage and flowers could not be represented precisely as we saw them in nature. They must be modified according to the material in which they were wrought. For instance, carving in statuary marble allowed a closer approach to nature than could be the case with coarse sandstone; while the pattern on wall-paper might be a more direct imitation than architectural carving. In carving, we had to study chiefly form and light and shade. In form, we had first to decide upon the most proper laying or setting out of the lines before clothing them with foliage. To avoid monotony it would be advisable to introduce animal form among the foliage, as was often done in Mediæval work. The artist should not allow himself to be fettered by the forms in nature, but should work upon broad principles. In art, as in nature, there should be constant variety and change. No two designs in foliage should be precisely alike. Yet wherever Corinthian capitals were chosen for a building the same patterns,—accurately taken from some well-known example,—were used. This could not be true art. The designs seemed more like work turned out by machinery than by men. He urged artists and architects to strike out into new and independent combinations from nature. Great improvements had been made in carving within the last forty years, but we were still far behind the ancient schools in this class of work. There was a wide field in which we might go far beyond anything done by the Greeks or the Goths. Unfortunately, at present there was a distinct inclination to omit foliage from architectural ornament, or to confine it to a panel or two with a sunflower. Good foliage carving need not necessarily be dear, and all architects might work together to render it less expensive and more attractive and varied. The lecture was illustrated by means of numerous diagrams, in which Mr. Colling pointed out the combinations and arrangements of foliage ornaments.

Lectures on the Development of Ornamental Art.—The Painters' Company have arranged with Dr. G. G. Zerffi, one of the examiners and lecturers of H.M. Department of Science and Art, to deliver in Painters' Hall, Little Trinity-lane, near the Mansion House Station, three lectures on the "Historical Development of Ornamental Art" (illustrated by diagrams), specially addressed to operative painters and decorators. The first lecture will be given on Friday, February 23, at eight p.m., and treat of the origin of ornamentation, ornamental art in Asia, Greek, Roman, and Pompeian art.

Earley Church, Reading.—This church has been recently lighted up with some ornamental gas-fittings, from the designs of Mr. Francis Bacon, architect, Newbury, the work being carried out by Messrs. Jones & Willis.

Ramsgate.—A large addition to the Convent of the Assumption, Ramsgate, has just been commenced, from the designs of Messrs. Pugin & Pugin, of Westminster and Ramsgate. Messrs. L. H. & R. Roberts, of Islington, are the contractors.

Strong Rooms.—Messrs. Chubb & Son have just completed at their works at Glengall-road, Old Kent-road (which now contain the whole of their manufacturing departments), a large Fire and Thief-Resisting Room for the Credito Publico Nacional of Buenos Ayres. It is 9 ft. 10 in. high, by 15 ft. 9 in. wide, by 8 ft. 4 in. deep, and is made of wrought-iron boiler plates ¼-in. thick, rebated at their edges, and secured by angle iron, bars, rivets, &c.; an air-chamber and cases of non-conducting material make up a thickness of 5 in. Its total weight is 43,988 lb. Entrance is obtained through doors of steel (with an inner flame-proof door), secured by a number of heavy bolts, which are locked by a small key of the size of an ordinary latch key. The inside is fitted with shelving, &c. The work of erecting this room has occupied the workmen for four months. It will now be taken to pieces, and re-erected at Buenos Ayres by Messrs. Chubb's workmen; when it will be used for securing the books and papers of the Government of the Argentine Republic, who, some years ago, when the Government offices were destroyed by fire, had their important state documents saved in Chubb's Safes. They have also completed a larger strong room, measuring 9 ft. 6 in. high by 17 ft. 3 in. wide by 15 ft. deep. It is not intended to be fire-resisting, as it will be fixed inside a fire-proof building, but the plates used in its construction,—sixty in number,—are all 1 in. thick; the roof is supported by girders, and the sides and floor are connected by 550 ft. of thick bars and angle-iron. There are 2,940 separate pieces of iron used in making this one room. The total weight is 54,466 lb., and the cubical contents will allow standing-room to 100 persons, and the storage in bags of 48,000,000*l.* in gold.

Proposed Enlargement of the Tower Subway.—The report, just issued, of the directors of the Tower Subway Company, states that the traffic receipts for the past half-year amounted to 738*l.* 5s. 5d., showing a deficiency of 81*l.* 10s. as compared with the corresponding half-year of 1881, a temporary result which, they say, is readily explained by the removal of workmen's dwellings and shops for the widening of streets, the new buildings not having been yet erected. The dividend on the ordinary shares is thus only 2 per cent. instead of 3 per cent. as it otherwise would have been. A Bill for the construction of a carriage subway under the River Thames from Trinity-square, Tower-hill, to the opposite side of the river, which takes power to purchase the Tower Subway, is promoted in Parliament this year. The position is well selected for traffic, as is proved by the City Police returns. It will command the heavy traffic of Bermondsey-street and the Bricklayers' Arms goods stations, which a communication below the Tower would not attract, even if there were no steep inclines. The principal novelty in the proposed scheme is the use of lifts on Sir W. Armstrong's principle, instead of inclined approaches.

Edinburgh Architectural Association.—The association met on the 7th inst., the president, Mr. MacGibbon, in the chair. After some preliminary business, Mr. Andrew Dewar read a short paper on "Architectural Skylines," in which he expressed as his opinion that greater attention should be devoted by architects in their treatment of roofs and chimney stalks. Mr. MacGibbon offered some remarks on Dunblane Cathedral, in the course of which he referred to the peculiarities of the edifice in construction and design. This paper was illustrated by a series of careful drawings, prepared by Mr. Robert Watson. A paper, entitled "Notes on Rubbings from Iona," which had been prepared by Mr. Thomas Leadbetter, late of Edinburgh, now of London, was communicated by the president. At the conclusion, cordial votes of thanks were awarded to the speakers and Mr. Leadbetter.

Masters and Men.—A *réunion* of the *employés* of Messrs. T. W. Smith & Son, of 81, Finsbury-pavement, and 38, Moorfields, also of Isledon Works, Essex-road, Islington, took place at Barnsbury Hall, Islington, on the evening of last Thursday, to celebrate the recovery of Mr. J. E. Smith, the surviving partner and son of the late Mr. T. W. Smith, from a serious illness. A gratifying incident occurred when, after a speech from Mr. J. E. Smith recognising the good feeling present, he was presented with an album containing the several portraits of those connected with the firm, which was handed to him by a deputation headed by an *employé* of forty-seven years' standing.

British Archæological Association.—At the meeting last week, the efforts made to preserve the old Tolhouse, Great Yarmouth, were detailed by Mr. F. Danby Palmer, F.S.A., in a communication which stated that the Mayor and Corporation had agreed to sell the building for a nominal sum to trustees, to be devoted to some useful purpose. Mr. Brock, F.S.A., in reading the above, referred to the great antiquarian interest of the building, which is known to have belonged to the Corporation as early as 1251. The assurance of the safety of the building was received with much applause. Mr. W. de Gray Birch, F.R.S.L., spoke of the readiness with which the building could be adapted for a museum. The second paper read during the evening was on "The Traders' Signs in Old St. Paul's Churchyard," by Mr. H. Syer Cuming, F.S.A. (Scot.). After referring to the custom of denoting shops by signs, the animated appearance which the streets of a town must have presented in Mediæval times was referred to. St. Paul's Churchyard, having been always a place of considerable commerce, the number of trading signs must have been very great. Many hundreds were referred to of very different import.

The Artane Industrial School, Ireland. The buildings at Artane, visited a few weeks ago by the Lord Lieutenant, Earl Spencer, are in course of erection from the designs of Mr. Chas. Geoghegan, architect. Part of it is already completed, and in it some 700 boys are obtaining advantages from the system pursued there.

TENDERS.

For repairs and alterations to premises, No. 30, Sloane-street and Pavilion-road, Knightsbridge, for Mr. H. M. Harris. Messrs. Brunsden & Henderson, architects. No. 3, Barbican Chambers, Aldersgate-street:—
F. Saunders (accepted).

For reinstating damage caused by fire at No. 1, Faringdon-street, New Swindon. Mr. W. H. Read, architect:—
Barrett, Swindon (accepted) £309 18 0

For the erection of shed for the Swindon Water Company (Limited). Mr. W. H. Read, architect:—
Webb, Swindon (accepted)..... £84 12 5

For the erection of running shed and stable at V. W. H. Repository, Swindon, for Mr. T. Hooper Deacon. Mr. W. H. Read, architect:—

	Running shed.	Stable.
Pettifer	£520 0 0	£320 0 0
Phillips & Powell ...	515 0 0	316 10 0
Barrett	498 17 0	283 10 0
Willshire	430 0 0	250 10 0
Henley, Swindon* ...	419 0 0	210 12 0

* Accepted for shed.

For the erection of stable at Wroughton, near Swindon. Bricks supplied by proprietor. Mr. W. H. Read, architect:—
Barrett £186 11 0
Willshire 174 0 0
Henley, Swindon (accepted) 132 12 0

For billiard-room and other alterations to Stormont House, Downspark-road, Hackney Downs. Messrs. Dunk & Geden, architects:—
W. Shurmur £495 0 0
S. Yardley & Sons 455 0 0
Steel Bros., Dalston 415 0 0

For Wesleyan School Chapel, Sidcup. Messrs. Dunk & Geden, architects:—
Stebbings, Sidcup £1,623 10 0
Adcock, Dover 1,583 0 0
Haisman, Foots Cray 1,490 0 0
Knight, Sidcup 1,490 0 0
Lowe, Chislehurst 1,455 0 0
Eldridge & Gee, Bermondsey 1,400 0 0
Wood, Chislehurst 1,349 0 0
Otway, Chislehurst* 1,327 10 0

* Accepted with slight reductions.

For sundry alterations, papering and painting, at No. 106, Queen's-road, Bayswater, under the direction of Mr. James Mathews:—

		Allowance for old materials.
C. W. Cross	£442 10 0 ...	£3 10 0
Wilson.....	430 0 0 ...	20 0 0
Hardwick	398 10 0 ...	11 0 0
Tucker.....	398 0 0 ...	8 0 0
Langler & Pinkham.....	390 0 0 ...	
Gibbin.....	383 0 0 ...	8 0 0
Barnett	369 0 0 ...	10 0 0
Crampkin	360 0 0 ...	12 10 0
Rutland & Rendell	342 0 0 ...	10 0 0
Baldwin	338 0 0 ...	12 0 0
W. Conway	330 0 0 ...	10 0 0
W. Perkins.....	319 0 0 ...	
Leask	310 0 0 ...	3 0 0
Treweeke	297 0 0 ...	10 0 0
Lack.....	287 0 0 ...	7 10 0
A. Sterling.....	273 0 0 ...	25 0 0
C. Pereria	238 0 0 ...	20 0 0
Love (accepted)	215 0 0 ...	10 0 0
Byford & Cross.....	206 0 0 ...	7 0 0
Pereria	200 0 0 ...	18 0 0
Earl.....	195 15 6 ...	10 0 0

For shop front and fittings to No. 5, The Promenade, Kilburn, for Mr. T. Burkett. Mr. Walter Graves, architect:—
Helman (accepted) £220 0 0

For drainage of Kelsey Park and Wickham-road, for the Beckenham Local Board. Mr. Geo. B. Carlton, C.E., engineer and surveyor to the Board:—

P. G. Pound, Bow-road, N.	£4,991 4 6
G. Stephenson, Market Harboro	4,304 12 7
W. J. Botterill, Cannon-street	3,977 0 0
G. Rayner, Liverpool	3,936 19 0
J. W. & J. Neave, Lewisham	3,928 17 9
Nowell & Robson, Kensington	3,848 5 6
G. B. Marshall, Brighton	3,757 11 10
Whittaker Bros., Leeds	3,710 12 6
H. Streeter, Croydon	3,692 19 5
Mowlem & Co., Westminster	3,615 18 3
J. Smith, Chelsea	3,594 13 4
Woodham & Fry, Catford	3,579 14 8
J. Dixon, St. Alban's	3,510 0 0
E. & W. Iles, Wimbledon	3,461 15 9
J. Young, Skegness	3,259 10 8
W. Carter, Anerley	3,241 16 2
Beadle Bros., Erith	3,132 0 0
A. Palmer, Birmingham	3,187 3 6

For additions to the North Surrey District Schools, Anerley. Mr. A. G. Heanel, architect. Quantities by Mr. J. R. Vining:—

H. Burman	£1,397 0 0
J. F. Sargeant	1,295 0 0
B. Cooke & Co.	1,250 0 0
J. & C. Bowyer	1,248 0 0
J. Marsland	1,247 0 0
Hunt & Challis	1,190 0 0
J. Longley	1,148 0 0
Smith & Sons	1,119 0 0
G. Masters	1,098 0 0
G. Amer	1,080 0 0
Priestley & Gurney	1,070 0 0
Hann & Co.	1,050 0 0
Parker	1,050 0 0
Le Gassick & Co	1,056 0 0
Holt	1,040 0 0
W. Johnson (accepted)	998 0 0
T. Crossley	993 0 0
F. Higgs	976 0 0
R. L. Wood	945 0 0
F. Buchan	835 0 0

For the extension of Penryn-road, Acton, for Mr. George Wright, The Elms, Acton. Mr. C. Nicholson Lailey, engineer and surveyor to the Local Board, Acton,—

J. Narroway, Acton	£1,370 2 7
Nowell & Robson, Kensington	1,247 0 0
W. Nicholls, Wood Green, N.	1,197 0 0
J. Cardus, Acton	1,184 0 0
J. Pizzey, Hornsey, N.	1,175 0 0
R. Finnegan, Northampton *	1,147 0 0

* Accepted.

For the erection of four houses, Lucien-road, Tooting Estate, for the Directors of the Birkbeck Freehold Land Society. Mr. Sydney B. Grosvenor, architect:—

Burman	£3,287 0 0
Lawrence	2,950 0 0
Bassett & Son	2,920 0 0
Mason	2,791 0 0
Craske	2,650 0 0
Coulthard	2,585 0 0
Johnson	2,561 0 0
Hutchens, Streatham (accepted)	2,350 0 0

For the erection of market at Newark-on-Trent. Mr. Charles Bell, architect. Quantities by Mr. H. Lovegrove:—

Contract No. 1.—General Builders' Work.

W. Holdsworth	£1,878 0 0
Chapman & Jollaud	1,738 0 0
T. Woolston	1,710 0 0
J. Bulling	1,530 17 8
Crosby & Son	1,419 0 0
Smith & Lunn	1,400 0 0
W. Duke	1,395 0 0
C. Baines	1,390 0 0

Contract No. 2.—Ironwork.

Young & Co.	£665 0 0
Bammage	524 11 9
Dawnay & Co.	435 0 0
T. & W. Bradley	448 6 10
Williams & Co.	440 0 0
Bridge Roof Company	425 0 0
Duke	420 15 0
Taylor & Parson	414 6 6
Victoria Foundry	383 0 0

For alterations and repairs at No. 20, Upper Wimpole-street, for Madame d'Agostino. Mr. F. Wallen, architect:—

P. Yardley & Sons (accepted)	£699 5 0

For the erection of two blocks of dwelling-houses (C and D) on the Bridge House Estate, Brockley, London, for the Land Development Association, Limited. Mr. W. Charles Evans, 3a, Poets' Corner, Westminster Abbey, architect:—

Wm. King & Son, Vauxhall Bridge-road (accepted)	£3,680 0 0

For alterations and additions to No. 44, Talbot-road, for Mr. J. H. Graves. Mr. Walter Graves, architect. No quantities:—

C. Frost	£791 10 0
H. Davey	725 0 0
Stimpson & Co.	581 0 0
Langridge & Son	555 0 0
J. O. Richardson	535 0 0

For alterations and repairs to No. 102, Southampton-street, Camberwell, for trustees of Mrs. May. Mr. Walter Graves, architect:—

J. O. Richardson	£127 0 0
Oldis Bros. (accepted)	119 0 0

For the erection of stables at Hampstead, for Mr. C. Kilburn. Mr. Geo. Sherrin, architect:—
S. J. Scott (accepted).

For alterations and additions to Brook House, Southgate. Mr. A. R. Barker, architect. Quantities by Messrs. J. S. Lee & Son:—

Foster & Dickson	£5,242 0 0
Kilby	5,223 0 0
L. & W. D. Patman	5,123 0 0
Gardener	5,045 0 0
Higgs & Hill	4,960 0 0
Tongue	4,777 0 0
Horlock (accepted)	4,400 0 0

For alterations, &c., to the Stag Tavern, South Acton, for Messrs. Huggins & Co. Mr. C. H. Thomas, architect, 48, Pall Mall:—

Manley, Regent's Park	£450 0 0
Varden, Notting Hill	370 0 0
Rogers, Turnham Green (accepted)	350 0 0

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VOL. XLIV. No. 2060. SATURDAY, FEBRUARY 24, 1883.

ILLUSTRATIONS.

Plans of Fillongley Castle and Croxall Mound 244
House at Finchley.—Mr. Thomas Newell, Architect 246
The New Stadttheater, Brünn (Double-page Engraving).—Herren Hellmer and Fellner, Architects 248, 249
New Entrances to St. James's Hall, Piccadilly.—Messrs. Emden & Co., Architects 251
Houses in Bell Yard, Fleet-street.—Messrs. Isaacs & Florence, Architects 253

CONTENTS.

The Autobiography of James Nasmyth 231
Wagner 233
A Popular Work on the Renaissance 233
From Abroad 234
New Paris 234
The Sanitary Condition of Houses in the Country 235
The Mosque of Cordova and Kairwân: Royal Institute of British Architects 236
Notes on Professional Practice: Architectural Association 237
St Kew Church 238
Northern Architectural Association 240
Stone of Westminster Abbey 240
The Late Mr. Wm. Snooke 240
Fillongley 241
Croxhall Mound 241
House at Finchley 242
The New Stadttheater, Brünn 242
London Street Architecture: Bell-Yard, Fleet-Street 242
New Entrance Front, St. James's Hall, Piccadilly 242
The Process of obtaining Sanction for Public Works in Great Britain 255
Decoration of the Dome of St. Paul's 257
Portland Cement Concrete 257
The Construction of Theatres 258
Examinations at the Surveyors' Institution 258
Progress of Telegraphy 258
Birmingham Architectural Association 258
The Teaching at Schools of Art 258
The Painting and Decorating Trade and its System 258
Blackmore Park 258
Tabular Statement of the State of Trade and the Labour Market 259
The Sanitat. n of Russian Towns 260
Building Patent Record 260
A Concrete Vault for Heavy Loads 261
The New Technical College at Finsbury 261
House Decorators' Club and Institute Company 261
Smoke and Westminster Abbey 261
An Appeal to the Benevolent 262
Book Keeping Competition 262
Gas v. Vegetation 262
Church-Building News 262
Miscellanea 262

The Autobiography of James Nasmyth.

IN no portion of the duty of the public writer is more anxious, more solemn, and too often more sad, than that which calls upon him to inscribe in his columns the name of some distinguished man whose works on behalf of his fellows have reached their close. It may be the case of a brother student, artist, or workman, struck down in the prime of his vigour; it may be that of the ripe in-gathering of some grey-headed teacher to whom he has been wont to look up for a lifetime. Early or late, the loss comes always too early; and very often the sense of that loss is so profound as to render its expression as difficult as it is painful.

How many occasions of this kind have occurred since the *Builder* first was called into existence! How many even of late years! Whether we have ourselves taken up, with brief but earnest touch, the pen of the biographer, and have put on record a few words as to Barry, Street, Burton, or other distinguished and lamented architects; or whether, under the more impersonal form of reviews, we have spoken of the biography or the autobiography of such men as Brunel and of Brassey, of Rennie and of Fairbairn, a feeling of personal regret has tinged the page. With all the more satisfaction do we hail the occasion of introducing to our readers the narrative of a life long distinguished by its devotion to the service of mankind,—one still rich in vigour, as well as in happiness and in honour.*

The main difficulty that we experience in attempting to give our readers some idea of the life of James Nasmyth lies, not so much in selecting what to say, as in choosing what to leave unsaid. The life was so full, the paths in which the subject of our remarks made his way to distinction were so varied, the hobbies which he rode on holiday seasons were so indistinguishable from the plodding business hacks which did him such faithful work, that we labour under an embarrassment of riches. Let us try to take, in the first instance, such an aspect of the life of James Nasymth as may be most instructive, as well as most interesting, from the builder's point of view.

Born at Edinburgh on the 19th August, 1808, James Nasmyth was the son of Alexander, and the younger brother of Patrick, Nasmyth, each of them well known as a painter. "My father," he says,—he elsewhere says that he was called the father of landscape painting in Scotland,—"did not confine himself to landscape painting, or to the instruction of his classes. He was an all-round man. He had something of the universal about him. He was a painter, an architect, and a mechanic." The late David Roberts, himself a scene-painter of the highest character,—said that his style was founded on that of Nasmyth. Stanfield was another of his friends. On one occasion Stanfield showed him his sketch-book, observing that he wished to form a style of his own. "Young man," said Nasmyth, "there's but one style an artist should endeavour to attain, and that is *the style of nature*; the nearer you can get to that the better." Alexander Nasmyth was addressed as "architect," by the magistrates of Edinburgh. He was the designer of the Dean Bridge, which spans the deep valley of the Water of Leith, north-west of the New Town, and was professionally engaged in laying out the streets of this part of the city. A temple to the Goddess of Health, erected over St. Bernard's Well, and a design for Nelson's monument, are specimens of the taste of Alexander Nasmyth which form two of the beautiful illustrations of the Autobiography.

Michael Nasmyth, the great-great-grandfather of James Nasmyth, was born in 1652, and dwelt in the Grass Market, Edinburgh, in which city he established a business as architect and builder. The name and lineage date from the fifteenth century, and on page 3 of the Autobiography will be found a spirited sketch by the autobiographer himself of the scene in which the name had its origin. Sir Michael Nasemyth, Chamberlain of the Archbishop of St. Andrew's, obtained the lands of Posso and Glenarth by marriage, in 1544. In the fourteenth century a branch of the family settled at Netherton, near Hamilton. The Netherton property was confiscated in the troubles of the reign of Charles II. It is a remarkable coincidence that the ancient crest of the family which produced the inventor of the steam hammer (one of the most formidable implements of the modern Vulcan), should be a dagger between two broken hammer-shafts.

A draughtsman of rare ability, James Nasmyth has thus an undoubted right to say "our history begins long before we are born." The hereditary culture of art, and its effect in giving power to the hand, is well illustrated in this gifted family. Few things are more sure than that facility in the use of the implements, either of war or of peace, is a distinctly heritable quality, although, of course, susceptible of improvement by culture, or of loss by neglect. Speaking of the delicate needlework of his grandmother,—Mary Anderson was her maiden name,—Mr. Nasmyth says, "I am fain to think that her delicate manipulation in some respects descended to her grandchildren, as all of them have been more or less distinguished for the delicate use of their fingers, which has so much to do with the effective transmission of the artistic faculty into visible forms. . . . I can not look at my grandmother's sampler without thinking that she had much to do with originating the Nasmyth love of the fine arts, and their hereditary adroitness in the practice of landscape and portrait painting, and other branches of the profession." We altogether agree with this view of Mr. Nasmyth, and are convinced that it requires several generations to admit of the training of the hand to art. The case of Charlemagne should not be forgotten. That great soldier and legislator is said never to have been without a copy-book at hand, by the aid of which he improved his odd moments in endeavouring to perfect his handwriting, without, however, ever getting beyond a childish scrawl. The neglect of the cultivation of drawing, as an essential element of almost primary education, is one of those grave oversights of our own educational reformers and legislators which does more to keep the workman's children down than most of the board school *curriculum* does to raise them up.

We have been for many years acquainted with the extreme delicacy, as well as force, of the drawings which James Nasmyth turns out with his left hand. In accuracy of delineation they more closely resemble the work of George Cruikshank than any that we can at the moment recall. The grotesque element, however, of which Cruikshank was so well-known a master, is alien to the gentle temper of Nasmyth, from whose pencil come most of the hundred illustrations that adorn the Autobiography. What force do these delicate drawings lend to such a remark as this?—"There was one point which my father diligently impressed upon his pupils, and that was the felicity and the happiness attendant upon pencil drawing. He was a master of the pencil, and in his off-hand sketches communicated his ideas to others in a way that mere words could never have done. It was his graphic language" (p. 57). We advise our readers carefully to study the paragraphs in which James Nasmyth again and again returns to the subject of the utility of a command of the pencil, as well as of the delight which the pursuit yields to its followers. More than any man we can name he thought pencil in hand. That used, the art tool becomes more than an instrument of record. It not only perpetuates and communicates thought, it aids in the process of thinking. On p. 298 will be found "an order for dinner" which, at Upsala in 1842, Nasmyth, unable to speak a word of Dannemora Swedish, made perfectly intelligible to his bright, cheery, jolly hostess, who could not speak a word of English. And it is not to what is usually meant by the word sketch, that the work of the pencil should be, or was in the present case, restricted. Careful and

* James Nasmyth, Engineer; an Autobiography. Edited by Samuel Smiles, LL.D. With a portrait by G. Reid, and numerous illustrations. London: Murray. 1883.

exact, when exactitude was requisite. Nasmyth measured the dimensions of his architectural sketches, no less accurately than those of his drawings of machinery. Going to Elgin, in order to provide his father with materials for two paintings commissioned by the excellent brothers Grant, he "made most careful drawings of that noble cathedral. I endeavoured to include all that was most beautiful in the building and in its surrounding scenery. . . . . I did my best to carry away a graphic sketch of the old castle and its surroundings. I had the pleasure of placing in my father's hands the sketches I had made. He was greatly delighted with them. They enabled him to set to work with his usual zeal, and in the course of a short time he was able to execute, *con amore*, the commissions of the brothers Grant" (p. 195).

What sort of tool the pencil may become in hands trained to its employment is well shown in the illustrations of the Autobiography. We call attention to the delicate drawing of a door-head from an old mansion (on p. 83), to the mural crown of St. Giles (p. 74), to the monument to Alexander Nasmyth (p. 231), to the view of Hammerfield, Penshurst (p. 373), and, as a triumph of imaginative architectural design, to the astrologer's tower (p. 344). Let the reader compare those structural drawings (not forgetting the interiors on pp. 323 and 440) with the numerous diagrams and working drawings on the one hand, and with the landscapes and figure-pieces on the other, and he will see how wide was the sweep of Nasmyth's arm. We should like to know exactly how the beautiful drawings of the moon on pp. 331, 332, and 335 were produced. They suggest the aid of photography; but we find (p. 329), "I made careful drawings with black and white chalk on large sheets of gray-tinted paper of such selected portions of the moon as embodied the most characteristic and instructive features of her wonderful surface. I was thus enabled to graphically represent the details with due fidelity as to form, as well as with regard to the striking effect of the original in its masses of light and shade, I thus educated my eye for the special object by systematic and careful observation, and at the same time practised my hand in no less careful delineation of all that was so distinctly presented to me by the telescope at the side of which my sheet of paper was handily fixed." We rather think that the clear definement and sudden contrast of light and shade in the illustrations that we have cited are superior to those which the borrowed light of the moon would produce through the agency of the camera; and that they represent the surface of the planet as seen through a powerful telescope, and drawn after nature. The vertical shading of the plane parts of the view of lunar mountains and extinct volcanic craters on p. 335 certainly denotes mechanical, as distinct from photographic, treatment. In a second edition (which is certain to be very soon demanded) we hope that Mr. Nasmyth will add a note as to the process by which these very beautiful views have been brought before his readers. The same remark applies to the drawing of the sun spots (p. 384). We also call attention to the quaint beauty of the "extemporised shower-bath"; which will recall to many of our readers one of the finest of Doré's illustrations of "Paradise Lost." But we owe no small apology to Mr. Nasmyth for the suggestion. Neither artist, we feel sure, can have taken the hint from his brother, and the nude figure in the "Paradise Lost" represents the impersonation of the last character to whom it is appropriate to refer in speaking of James Nasmyth.

It will, we think, be clear to the readers of the Autobiography that James Nasmyth had in him the makings of an architect of no inferior order. As to a draughtsman, he had more than the makings, he had the thing made. But this rare gift of the power of the pencil,—like others of which he says nothing,—seems only to be regarded by the autobiographer as one of the elements of his success as an engineer. "It was in the year 1817," says our author,—he was then nine years old,—"that I had the pleasure, never to be forgotten, of seeing the great engineer, James Watt. He was then close upon his eighty-second year. His benevolent countenance and his tall-built figure made an impression on my mind that I can never forget. It was even something to have seen for a few seconds so truly great and noble a man." The impression then produced on the boy seems to have aided in turning his attention from a passion for the collection of views to mechanical pursuits His ideas were formed, and his mechanical education was half unconsciously commenced, among the lathes and tools of his father's work-room. Spinning tops, "peeries," and "young cannon,"—then fashionable playthings among the small people of the High School,—were his earliest productions. Flying kites and tissue-paper balloons were articles that he was famed for producing. To the maintenance of the perfectly still and steady position of a kite when at the highest flight in the air anxious thought and special skill were devoted. Nasmyth says nothing of the tail of his kites. We conclude that he did not anticipate the admirable flight of the Chinese bird kites, which are unprovided with those cumbrous appendages, and which owe their soaring powers to certain little open pockets left in the wings. And here we may mention, for the sake of our younger readers, the splendid effect that may be produced by a hexagonal kite, each sector of which is fastened to a lath radius on one side, and left free on the other. The periphery of the hexagon may be formed of string. This kind of kite requires to be raised by a leader, or upper kite, and when up, revolves with great rapidity, - forming a capricious and beautiful object. The only difficulty is the need of providing strong steel swivels, without which it very soon twists the line in two.

"Jemmy Paterson" and "Tom Smith" were two of Nasmyth's cronies at the High School. The first opened to his comrade the foundry and workshop of his own father. The father of the second had a special genius for chemistry. Thus did the boys become fathers of the men. At seventeen James Nasmyth began with making a small working steam-engine, for the purpose of grinding the oil-colours used by his father in his artistic work. "The result was quite satisfactory. Many persons came to see my active little steam-engine at work, and they were so pleased with it that I received several orders for small working engines, and also for some models of steam-engines to illustrate the subjects taught at mechanics' institutes."

At twenty-one, James Nasmyth had the good fortune, on the strength of the models, and the mechanical and perspective drawings, which he had by that time completed, to be engaged as a personal assistant to Henry Maudslay, head of the well-known firm of manufacturing engineers in London. The account of his introduction is too long to extract, and too charming to condense. No position could have more advantageously tended to foster and bring out the strong mechanical genius of the young man. At that time our primary mechanism had not generally advanced beyond the condition of the village blacksmith's work. No rules or normal dimensions had been laid down for screws, bolts, nuts, or any other of the numerous and constantly recurring elements of machinery. Thus if a bolt was broken, in an important machine, work had to stop while another was made and fitted, to replace it. The very first job that fell to Nasmyth, on commencing his attendances at Maudslay's workshop was to assist in the details of "a machine for generating screws." "This beautiful and truly original contrivance became, in the hands of its inventor, the parent of a vast progeny of perfect screws, whose descendants, whether legitimate or not, are to be found in every workshop throughout the world where first-class machinery is constructed."

There were, however, other legitimate lines of mechanical descent which should not be forgotten. It was in the latter part of 1831 that Nasmyth commenced that business on his own account which not only provided him with an adequate fortune by the early age of forty-eight, but furnished our dockyards and arsenals with the most formidable and useful tool ever wielded by the servants of Vulcan. But in 1817 a man of not unlike acquirement had established, in High-street, Manchester, "a miserable shed, containing a single lathe, which the two partners made with their own hands, and which was turned by their one workman, a muscular Irish labourer." From this modest beginning sprang the important and lucrative business which was transferred to the "Fairbairn Engineering Company, Limited," in 1864. Again, the life of Sir Joseph Whitworth is yet a desideratum. He was elected a member of the Institution of Civil Engineers in 1841, but did not enrich the annals of that important society with any communications of earlier date than 1860, when he exhibited a model of his rifled cannon at a meeting of the members. His little book on "Guns and Steel" is dated in 1875. But in those very departments of exact measurement and exact execution of work, to which Nasmyth justly attaches so much importance, Whitworth must have been a contemporary labourer, and that with a fidelity, genius, and success second to no man living. And the Nestor of the profession, John Ericsson, K.V., born in 1803, came to England in 1826. Of his early life here we find no record, either in the article on his name to be found in *Scribner's Monthly Illustrated Magazine* for April 1879, or in the magnificent quarto "Contributions to the Centennial Exhibition," by John Ericsson, LL.D. (New York, 1876), one of the most splendid volumes on mechanical subjects that ever issued from the press of any country. But in 1829 Ericsson's locomotive, the "Novelty," was a competitor for the prize offered by the Liverpool and Manchester Railway Company, and far exceeded in speed, although not in stability of workmanship, Robert Stephenson's "Rocket," which obtained the 500*l.* prize. Certainly in 1833, probably some years earlier, Ericsson was in partnership with John Braithwaite, at the well-known engineering works in the City-road. He must, we think, have been at work at Warrington at the time that Nasmyth established himself at Manchester. We refer to these matters, not as in the least affecting the claims of Nasmyth to originality, as well as to admirable simplicity and finish of work, but as showing that about the same time the attention of more than one man of genius was specially bent on this very object of making self-acting tools, and of introducing into our manufacturing metallurgy that system to which we are so much indebted for the advance of our practical science. To the names of Ericsson, Stephenson, Braithwaite, Fairbairn, and Whitworth as honourable rivals of Nasmyth, we may add those of the Bramahs, who introduced the same exquisite accuracy of detail into his hydraulic presses, his locks, and other productions. Sir Charles Fox, referred to in the autobiography (p. 435) as a personal friend, had been educated for the medical profession, but commenced his engineering career in the workshop of Ericsson, and afterwards, in partnership with J. J. Bramah, founded the London works at Smethwick, near Birmingham, where the ironwork of the Crystal Palace was prepared.

A chronological list of as many as forty mechanical inventions and technical contrivances, children of the fertile brain of Nasmyth, is appended to the volume. It is extremely interesting to be able to trace the origin of some of these plans, although it is quite possible that they may have been independently invented by different men. The mode of applying steam power for the traction of boats which (without date) is put first, is now in constant use on some of the German rivers. To the American dentist's drill, in which rapid rotary motion is given to a point, which can, at the same time, be guided and applied where required, we have, we think, previously called attention, as one of the greatest triumphs of mechanical genius. We were unaware before that it was an invention of Nasmyth's. The safety foundry-ladle was a great boon to the metallurgist. But the invention by which the name of James Nasmyth will be chiefly immortalised is that of the steam hammer. The account given (p. 239) of the conception and the early testing of this most important tool deserves careful study. It is a very rare instance of an invention, not casually arrived at, but thought out, within a definite and short space of time, for the accomplishment of a definite task. In 1839 there was not a forge-hammer in England or Scotland powerful enough to forge a paddle-shaft of the size that Mr. Brunel required for the *Great Britain* steamer! A photograph of the first drawing made by Nasmyth to supply this serious want is given on p. 241; sketched, the author tells us, in little more than half an hour after his attention was called to the subject. So complete was the drawing that, in April, 1842, Nasmyth, to his no small surprise, was shown a steam hammer, made from his design, at work in the great French engineering establishment at Creuzot. M. Bourdon, one of the partners of that establishment, had been shown Nasmyth's drawings by his partner, Mr. Gaskel, and, while no one in England had realised what a mighty agency was thus offered to the forge, had quietly gone home and made one. Nine

men out of ten would have raised a loud outcry as to piracy. Nasmyth seems only to have been charmed with the compliment! "On inspecting the steam hammer, I found that Bourdon had omitted some important details which led to a few mishaps. I sketched for him, there and then, in full size on a board, the elastic packing under the end of the piston rod, which acted, as I told him, like the cartilage between the bones of the vertebræ, preventing the destructive effects of violent jars. I also communicated to him a few other important details which he had missed in his hasty inspection of my design. Indeed, I felt great pleasure in doing so; as I found Bourdon to be a most intelligent mechanic, and thoroughly able to appreciate the practical value of the information I communicated to him."

As far as our reading goes, the above anecdote is without a parallel in the annals of science. Too often devoid of that practical prudence which is necessary for the acquirement of riches, inventors are, as a rule, an irritable genus. To complete the work of the pirate was, indeed, a noble forgiveness of the theft! It is some comfort to learn that after this, Nasmyth took out a patent for the steam hammer, both in England and in the United States. It must be remembered that M. Bourdon had rendered this step impossible in France. The Russian Government ordered one of these implements twelve months before the English Admiralty did so! The whole of the history of the steam hammer is of the greatest interest, whether as illustrating the genius of the engineer, or the character of the man. Nor can any one hesitate to accept the testimony, "without entering into further details, the steam hammer has advanced the mechanical arts, especially with relation to machinery of the larger class, to an extent that is of incalculable importance."

Dr. Smiles has contributed a short preface, and says that he was requested by Mr. Nasmyth not to spare his pruning knife in preparing the autobiography for publication. It is, however, impossible to distinguish to what extent the work, as it comes before the public, may be indebted to the editor. There are, we must add, not a few errors in slight matters of spelling and of grammar, as to which it is unnecessary here to say more than that we hope they will be removed from the text of future editions of this charming work.

WAGNER.

LAST week witnessed the close of what all must admit to have been a very extraordinary artistic career. We use that adjective advisedly, inasmuch as Wagner was not a musician pure and simple, and if regarded in that light alone his claim to rank as a great genius would be much more questionable than it is. He has left but little music which, as music, apart from any of its associated effects, would attract many admirers, or stand the test of criticism in regard to form and construction. Nor did he, in fact, profess to aim at this. What he did was to discard the idea of using music as an artistic form complete in itself, to which, in lyric drama, the conditions of the poetry and the action were to be subordinated, and to regard and treat the whole of the elements of lyric drama, the poem, the music, the scenery, and the action, as a combined form of art, whole and complete only when so regarded, and in which each element of the effect was to be considered in relation to the others, and to the combination of all towards one grand *ensemble*. In promulgating this view, he allowed himself, as all ardent reformers in art do, to indulge in very one-sided and unjust depreciation of the work which had been previously effected upon the basis of what he considered a partial and incorrect theory. All lyric drama before his own, in fact, was to be considered as abortive failure. It is more than doubtful whether such a judgment could be justified even in regard to the logical question of the relation of the music to the drama in such operas as Mozart's, for instance. All opera, all stage art, is more or less conventional; the attempt at absolute realism on the stage has generally been felt to be a failure in regard to the higher objects of the drama, whether lyrical or spoken; and the ideal in regard to the proper degree of conventionality has varied very much at different times, and in the minds of critics equally competent, but swayed by different views as to artistic principle. Goethe, for instance, when in his younger days he not only wrote for but superintended the Weimar stage, was so strongly impressed with the necessity of a high degree of convention, that he would not even allow the actors to assume a natural grouping on the stage, or to act directly to each other, but compelled them to stand in a symmetrically-arranged rank or semicircle, and deliver their speeches rather to the audience than to each other. We, in the present day, should consider such a system of stage management as painfully formal and ineffective, but it does not follow that Goethe was wrong from his own point of view, only that his idea of the object of drama was different from ours. Similarly, it can hardly be said that the Mozart form of opera was necessarily deficient or artistically incorrect, but only that Mozart and his compeers took a different view of the relation of the music and the drama, and regarded the latter as furnishing characters and situations which were to be the suggestions and incentives to musical expression. The pleasure to be derived from this school of lyric drama is more musical than dramatic; that to be derived from the Wagner school is more dramatic than musical, save in some exceptional scenes here and there; and it will always probably remain an open question whether the highest enjoyment is derived from opera in which the musical development, though paramount, is so beautiful as to furnish the highest musical enjoyment, even apart from its place in the opera, or from that in which the music is more closely blended with, and even subordinate to, the action, but is not of such intrinsic beauty and completeness as to confer a pure enjoyment apart from the stage. What is unquestionable, however, is that Wagner has conferred a distinct gain on the world by initiating a new form of lyric drama instead of merely working on the lines of an old form, and has, by this means, achieved a position as a creator in art which he probably would not have achieved as a musical composer in the old signification of the word. In place of the elaboration of musical expression at certain salient points of the story, connected by passages of semi-musical speech ("recitative"), he has worked out a form of musical drama in which the poem, and not the music, takes the first place, and in which the musical expression and the action are simultaneous in progression, and cohere throughout the work. This of course means the cutting short of the musical development, for which repetition and extension are necessary; and he seems to have been led by the feeling of this necessity to the endeavour to expand the power of the musical expression in another direction, that of instrumental effect, or what is called among musicians "orchestral colouring"; he has given great novelty and intensity to the effect of the orchestra as a whole; and the part played by the band in his operas is that of a stream of richly-toned continuations of sound, varying with the lights and shadows of the drama, and with the contrasted characters of the personages on the stage.

This is practically almost a new form of art; at the least, the suggestion for a new point of departure, of great interest and importance. It is not likely that the works he has actually produced will have the great and permanent interest which the enthusiasts of the school anticipate. It is unquestionable that there are great drawbacks to any permanent and wide-spread admiration for these works in their present form: drawbacks consisting in deficiency of beauty and clearness of form in the music, in the absurdities and extravagances of the poems and of many of their incidents, in their inordinate length, and in the monotony and frequent repetition of effect which cannot but be felt,—which certainly was felt very strongly, far more strongly than was anticipated, by a large proportion of those who were present at the performance of the "Nibelung's Ring" in London last season. It must be felt, too, that a good deal of the musical effect is of that order which appeals to the nerves rather than to the intellect; it is a sensuous art, like that of Rossetti's paintings. Whatever may be the future of Wagner's productions, however, his influence will be felt on the lyric drama of the future (if there is to be any), in leading to a more thoughtful consideration of the relation between the poem and the music, and rendering it impossible for composers to be content, as Rossini was, with setting to music any sort of *libretto*, so long as it will give occasion for the requisite number of airs for the requisite number of leading singers.

Some of the characteristics of Wagner's speech and habits, which have become public both before and since his death, render it impossible to doubt that there was a very strong vein of charlatanism in his nature, and there can be no question that, by his own pen and those of his sworn admirers, he carried the art of blowing his own trumpet to a point which has seldom been equalled. On the other hand, it is impossible not to admire, though with reservation, the indomitable will and energy by which he succeeded in forcing himself upon his generation in the teeth of the opposition of almost all Europe,—a quality which is in itself a great element of genius.

A POPULAR WORK ON THE RENAISSANCE.

IT is one of the unmistakable signs of the turn which public taste in this country has taken, that books in illustration of the Renaissance period multiply so fast at present. The rapidity of the change is bewildering when we reflect how short a time since it is that Mediæval art was everything, and that men so popular and successful among modern architects as Pugin were pouring forth all the contempt that words could express against the period which produced St. Peter's and the Florentine palaces. The work which now claims our notice * is intended as an introduction to the study and knowledge of this period of art, more general and popular in style than others which have appeared. The author says in his preface, "The subject of the Renaissance has been treated by many authors and in various spirits. Mr. Symonds has written a scholarly treatise, taking up its moral, literary, and artistic aspects, each from its separate point of view. Burckhardt has treated of it politically, and with a vast amount of erudition. Mr. Pater has analysed certain fragments; and Mr. Ruskin has woven about it a maze of golden thoughts, drawing some of his most telling comparisons and contrasts between Northern and Southern art." The present author excuses himself for occupying ground previously trodden by such able writers, by the conviction that a more practical and homely view may be useful to a large class of readers "in tracing the many ramifications of art from their parent stock, and in bringing to a focus the different elements composing that complex movement which we call the Renaissance." We are not, as a rule, very much in favour of "popular and practical" treatises on art, which too often may be equally described as partial and superficial. Mr. Scott's volume appears, however, to be an exception to this tendency, and to be at once "popular" (in the sense of being easily intelligible and avoiding too fine-drawn criticism), and trustworthy as a broad general indication of the history and characteristics of the art of the Renaissance. The author, indeed, disclaims for it any so serious an aim as would be implied in the title "a history"; it is rather, he says, a "pictorial guide" through the intricate mazes of the artistic history of the extraordinary period which is dealt with. A quarto volume of more than 350 pages, very copiously and variously illustrated, and written with an adequate knowledge of the subject, may fairly claim its right of existence on such terms.

Mr. Scott starts with the view that architecture is the central art, as leading to and affording place and opportunity for all the others. He gives one practical illustration of this, which is not always noticed, viz., that in the first great era of the Renaissance every one of the nine great architects was also a sculptor; in the second era, of the five leading architects two were also sculptors; while of the eleven professed sculptors, only one,—Ghiberti,—was also an architect, and he not a very successful one. He divides architecture into four main groups,—Military, Religious, Civil, and Domestic, taking their rise chronologically in the order named. Of these, the second is the chief exponent of style, as the class of architecture which rises most above material considerations, and into which, accordingly, the architect has most encouragement and opportunity to put his best thoughts. The critical definition of the phases of Italian architecture

* The Renaissance of Art in Italy: an Illustrated Sketch by Leader Scott. London: Sampson Low & Co. 1883.

in the early days of the Renaissance is very correctly and, at the same time, picturesquely put, especially in regard to the early Lombard churches, with their profusion of sculpture, in which was represented the wild and fierce imagination of the Teutonic element, which, in the early Renaissance days, or rather, the days immediately preceding the Renaissance, exercised such a sway, political, social, and military, over the North of Italy; a subject on which some of the most vivid and striking lights are thrown in various passages in Browning's "Sordello," which same poem reminds one of another point touched on by the author in allusion to the civil architecture of the period; namely, the effect which must have been imparted to the towns by the universal use of towers as adjuncts to every dwelling of importance, at a time when every man's house might have to be literally his castle, and a tower for outlook and for commanding the assailants was a practical necessity. In the tenth century Pisa, Siena, and Florence had each several hundred towers; and thus Browning, who understands that period so well, represents the Pope's legate before he was admitted inside Ferrara, which was in the hands of Eccelin's general, as wondering where all the steeples had gone, —

> "A-tiptoe o'er the fosse
> Look'd Legate Montalungo wistfully
> After the flock of steeples he might spy
> In Este's time, gone doubts by long ago
> To mend the rampart."

Mr. Scott mentions San Gemignano as the only place where the reality of a town of towers is preserved intact to this day. "After the feudal times the tower interest centres in the campanile which adorns every city." Whether we should agree with him on the judgment that the Italians excel all nations in tower-building is another question. The Italian campanile at its best is a very fine and characteristic form of tower architecture, but Ruskin set a fashion of somewhat overpraising it; some of the finest examples are rather impressive by their size, their height, than their design; and a good many of the more average specimens are elegant indeed, but not powerful-looking architecture. The characteristics of the Italian architecture of the first Renaissance era, of the days of Cimabué and Giotto, are well described and sufficiently illustrated by engravings; the development of the peculiarly characteristic Italian façade, the ornamental mask of the real building, is touched upon, and a parallel is suggested between the sculptures of Orvieto and Wells executed about the same time. One of the comments on Orvieto, however, is misleading; the author says, "how different the mode of working was with those earnest artist-architects to that of the present day! A modern sculptor carves his ornamentation on thin marble panels, and faces the brickwork with them,—they are, in fact, only an extraneous ornament. The sculptors of Orvieto built up their façade in solid marble blocks, dovetailing one into another with such precision that they produced a perfectly smooth surface, on which they hewed out their conceptions fresh from their earnest minds. The 'Expulsion from Paradise' is carved right over some joints." This is a little bit of what we should call sub-Ruskinesque rhetoric. Can Mr. Scott say how the sculpture was the better for being carved over the joints? And if he means to convey the idea, which to uninformed readers the passage would convey that the Italian marble architecture of that period was remarkable for its solidity, what of the Duomo and Campanile of Florence, which come into the same chapter? It is, in fact, the most notorious defect of the Italian quasi-marble architecture of the Renaissance, that it is a veneering only, and often a very thin one, and Mr. Scott's enthusiasm has led him into conveying to his readers an idea about Italian architecture which is the reverse of the true one, in that particular.

In speaking of the "mosaic and metal work" of the early period, the author notes that mosaic is a mode of expression which "seems to belong to a low state of art." This will appear a very erroneous judgment to some, but in regard to the representation of the figure it may be said to be true both critically and historically. As to the latter, he points out that in Rome mosaics only came into favour when artistic feeling was dying out, and when more attention was given to the richness and cost of material than to the excellence of art. A great many of the Roman mosaics that have been preserved represent, in fact, the kind of art which, as practised in the later days of the Renaissance, has been called "Rhopography," which in the vernacular may be rendered "the painting of rubbish," incongruous collections of articles worthless and uninteresting from an artistic point of view; and, "in Florence," he observes, "we hear of very few artists who worked in mosaic after the thirteenth century, until in the decline under the luxury of the Medici, when Florentine mosaic arose, and precious stones and marbles were again made a means of pictorial expression. The hardness and impliability of the material forbids its use in the expression of the highest art." This is certainly true: mosaic recommends itself strongly as an architectural decoration from its splendour of surface and its durability, but its successful use in figure subjects can only be realised when these are simple and severe in style, and seen from a considerable distance. The attempt at a too natural and varied expression in the figures brings into prominence the unyielding nature of the medium; a fact which is not perhaps sufficiently kept in mind at present, when there is so much talk about the use of mosaic decoration on a great scale.

The second era commences architecturally with Brunelleschi, upon whose character the author is rather severe, as being selfish as well as ambitious. We do not quite subscribe to this. Brunelleschi was a man of power in his own profession, which he understood better than most of his compeers; and he liked to have his own way (as many architects do), and had it (as few architects have). He remarks on Brunelleschi's apparent foresight in regard to the coming taste for Classic models in architecture, shown in his giving up so much of his early professional days to study in Rome. The part played by architecture in the third and peculiarly Classical epoch of the Renaissance was, as the author remarks, very important; it seems to have been from the remains of Roman architectural greatness that the impulse was given to literature, rather the other way. The literary remains of Rome had to be sought among the rubbish of monkish libraries, and were only recovered piecemeal, and often by happy chances; the architectural remains were there in the face of day, calling openly for recognition. Mr. Scott's judgment of St. Peter's is more favourable than most architectural critics, even now, will be ready to concur in. He does not seem to be aware of the part which Bramante has almost conclusively been shown to have had in the idea of the building, nor can we profess to understand what he means by saying that Michelangelo "disclaimed the heavy support of Bramante's four piers and removed them, boasting that he would raise the Pantheon in the air." This appears to be nonsense as it stands; the dome is supported on four piers, in which Bramante's original piers, as far as carried out, are incorporated. The sentence would imply that Michelangelo carried the dome on nothing, "which is absurd," as Euclid says; the paragraph seems to have been written hastily, and requires revision. But in the main, in spite of the one or two slips we have mentioned, the architectural portion of the subject is fairly well treated, and that is more than can be said for the treatment of the subject in popular works generally.

The account of the various successive schools of painting is clear and readable, and largely illustrated, and among the illustrations are some reproductions of that interesting class of Renaissance work, the outline engravings, of which the celebrated "Hypteronomachia" furnishes the most remarkable examples, and which throw so much light on the social as well as artistic feeling of the period. Ornamental art is somewhat briefly treated, but perhaps as fully as would be possible within the limits of such a book, the subject being really almost endless. Some very good and not very well known illustrations accompany this part of the work. In the chapter on Intaglio and Cameo work, the author would have done well to have given a distinct definition of the precise meaning of the two words, about which many readers of a popular treatise are likely to be uninformed. In speaking of the works of Titian, in one of the chapters on painting, he seems to be in some confusion of ideas as to the painter's well-known work, "Earthly and Heavenly Love." The correctness of this title has been contested by Messrs. Crowe and Cavalcaselle, who suggest a title which we agree with Mr. Scott in disliking, as it implies a disagreeable and somewhat impure *motif* in the work. We forget whether they also suggested the alternative title, "Virgin and Matronly Love," which seems to us the best description of the work, or whether we ourselves suggested it in reviewing their book a good while ago; it has been suggested in these columns one way or the other. But Mr. Scott, taking the old title, assumes the nude figure to be Heavenly Love and the clothed one the Earthly; and though we quite agree that such an interpretation gives the higher meaning, we certainly never heard it interpreted so, nor do we believe that Titian meant it. His age was too lascivious to have understood such a meaning.

As an example of the tone in which the author considers his subject generally, we quote in conclusion his final paragraph, referring to the possible causes of the decline of the art of the Renaissance:—

"In any great artistic movement there seem to be three stages. The first when art is rare and deemed worthy of the highest offices,—when it is, in fact, the handmaid of religion. The second, when the nation gains wealth and art becomes aristocratic, its tone is lowered, its objects widened; it is not only a teacher and means of fame, but a flatterer and means of wealth, it has become the handmaid of ambition. The third is when it becomes universal; inferior artists look upon it as a trade, and in the great struggle for patronage,—the supply being by this time greater than the demand,—they strive to get to the front by startling originality, new methods of handling, bizarre mannerisms, and all kinds of illegitimate art. Patrons are as emulous as artists; each seeks to gratify his own taste, high or low, and art falls to the general tone of the age,—it has become the handmaid of ambition.

Thus it happened that the early painters were high-toned and earnest; those of the culmination, sensuous and of high talent,—those of the decline, mannerists and of low motive: the Artist is Child of his Time."

FROM ABROAD.

The international fine-art exhibition which was opened in Rome towards the close of January has at length assumed a somewhat definite condition of completeness. In spite of the delays accorded, the show was very far from being in readiness when it was thrown open to the public, and no little dissatisfaction was expressed. Whether owing to the serious competition,—for in these commercial days such a word is permissible in speaking of art,—from which in such a city as Rome any exhibition of modern pictures must inevitably suffer, or to other reasons, the first returns of the number of visitors to the Fine-Art Palace erected in the new quarter near the Baths of Diocletian would not seem to point to a very brilliant success. The figures we have seen quoted, of 1,000 visitors daily in the winter season when Rome is crowded, would seem to suggest that the interest cannot be very great. Now that Carnival is over, the last *confetti* thrown, the last *moccolo* put out, and Lent seriously commenced, perhaps the exhibition will, in theatrical language, commence to "draw." After all, perhaps the Romans are right in their indifference, for sad complaints reach us from the banks of the Tiber concerning the condition of Italian art as represented at the exhibition. The simple earnest work of the painters of the Renaissance finds no echo in the heart of the modern Italian artist. The older Italians resignedly agree, with a shrug of the shoulders, that "art is dead"; the modern school have thrown over all the traditions of the past, and hence at the exhibition now open in Rome,—as any one who has had the opportunity of seeing Italian art displayed at our recent international exhibitions can fully understand,—sad are the complaints of the garish exuberance into which the painters of modern Italy have strayed in their study of the great Spanish master, Fortuny. The poetic sentiment of which their country seems the very incarnation, and which has inspired so many a foreign pen and brush, the appreciation of that pathos of neglect so dear to the painter and the poet, and which surrounds each historic site of the Classic peninsula, seems almost entirely deficient, and well can we understand the Italian art-critics bewailing the tendencies of the art of the united Italy of which all good Italians are so proud. Let us hope that Italy will make a more satisfactory show at the Industrial Exhibition which is promised us at Turin for

next year, and for which we learn that the quaint French château-like palazzo Valentino, on the banks of the Po, is being prepared.

It is almost safe to predict that it will be very different with the approaching exhibition to be held in a short time in Amsterdam, the artistic interest in which is daily increasing as fresh promises of the treasures to be displayed are announced from time to time. A project for a generation past discussed, but never carried out, has at length, it is said, been determined on, the union under one roof of the treasures of the Trippenhuis and the Van der Hoop Museum. It is one of the advantages of these international exhibitions, the successful manner in which they stir into emulative life institutions and schemes long neglected; old collections are furbished up, tiresome regulations abolished, and a general preparation made for the reception of the world at large, resulting in a marked improvement for which all future visitors are grateful. In these days of all-invading realism, the still happy band of lovers of the ideal are gleefully looking forward to the treat in store for themselves, the fund of instruction for the world, when next May the treasures of Dutch art will be gathered in the Venice of the North. There are not a few sanguine spirits who look forward to the possibility of a positive revolution being effected in the tendencies of modern art by the study which will once more be devoted to the creations of the great artists of the Dutch school which have rendered the museums of the Hague and of Amsterdam so famous. Those who have visited the so-called land of dykes and canals will be delighted to see once more the scenes which inspired so nobly the brushes of Hobbema and Ruysdael. Those who have never seen the home of the sturdy people whose story Motley has pictured so vividly, will do well to seize this opportunity of visiting the little kingdom which has carved for itself such a niche in the temple of the world's history. In these days when, with red-brick gables rising in every direction, our country is assuming a semi-Dutch appearance, it is scarcely likely that the younger generation of architects will need much inducement to visit a field so rich in the suggestive motives that fill so characteristically the young artist's sketch-book on a ramble abroad.

Exhibitions seem promised us in every direction. Munich is shortly to hold a fine-art exhibition; a minor exhibition of some interest is to be held in Vienna, in April, when an historical collection of works in bronze is to be shown in the rooms of the Œsterreichisches Museum, and rich collections of the Imperial palaces, the Archduke Albert, Prince Lichtenstein, and the Barons Albert and Nathaniel Rothschild, and many other amateurs will be laid heavily under contribution. Though every one is looking forward with interest to our own Fisheries Exhibition, we are promised for a little later in the year, also in Vienna, an exhibition to report on the progress made in electric science within the last few months, an exhibition which will, doubtless, reveal some interesting discoveries.

Among these will undoubtedly take a place the results of the very successful experiments on the transmission of force by electricity, made only a few days ago at Paris, in the workshops of the Northern of France Railway Company, before a distinguished audience of *savants* and scientific men, among whom may be mentioned M. de Lesseps, a large number of deputies, and, representing England, Mr. Wallis, M.P., and Mr. Tennant, of the Great Northern Railway. M. Deprez, two years ago, at the Munich Exhibition, succeeded in showing, in the face of the prediction of scientific men, that force could only be transmitted over about two miles of wire,—that force of half a horse-power could be transmitted some 35 miles with, it is true, a loss of nearly 40 per cent. With the aid of an entirely new dynamo-electric machine of his own invention, — specially adapted to give the utmost tension with the least possible amount of electricity,—M. Deprez has now been able to show how a machine of five-horse-power was able to transmit half of its force over a distance of about 12 miles. Another experiment with a machine of ten-horse-power showed the distribution of half this quantity of force over a distance of 22 miles. The loss of power is found, no matter what the distance, to be about 50 per cent. Serious as is this loss where steam-power is employed, many an at present unemployed and distant waterfall may become immediately utilisable; the Swiss, indeed, have already turned to account, for the cheap production of the electric light in some of their towns, many of their mountain torrents. The experiments of M. Deprez have, it will be seen, opened up a new field of productive force for the future.

To those who may be interested in any way in the approaching Paris exhibition of the *Salon*, the announcement that the works of art are to be submitted for selection a fortnight earlier than usual this year may be of some importance. Pictures and drawings are to be received from the 5th to the 15th of March; sculpture and engravings from the 21st of March to the 10th of April; and architectural drawings from the 2nd to the 15th of April. Our French neighbours are wise in devoting nearly six weeks to the disposal and arrangement of the vast number of works of art which are likely to be submitted to their attention; while they avoid the crowded disorder of the two days accorded by the Royal Academy for the reception of their works of art by allowing more than a month to the artists to send in their pictures, sculptures, and drawings. But the justest of all their arrangements is that of not permitting more than two works to be sent by each artist for admission.

As we have referred to the annual Paris *Salon*, which, we may remind our readers, is entirely managed by the artists themselves, we may further mention that the Government has now finally decided to hold in September next the first of the triennial series of exhibitions which has been the cause of so much discussion in French artistic circles. These exhibitions will remain entirely outside the influence of the artists in general; they will be essentially governmental, and be composed of a selection of the best pictures from each of the preceding three years' exhibitions.

Whatever may be said for and against competition for artistic purposes, and however ill or little artists may agree to work amicably together whenever the design of an architect has to be completed by the aid of the painter and sculptor, in Paris there exists a thorough unanimity of opinion that without the competitive principle, nothing successful in the way of decorative art can be secured. In this respect they have at least the authority of antiquity, and although so many in England are, it may almost be said, disgusted with the frequent failure of competitive contests, it must be admitted that not only have some very successful instances resulted from competition, but that many men who are now eminent and whose names have become historical in the annals of art, first gained recognition by means of a successful competition. A somewhat important exhibition of competitive designs for the decoration of the town-hall of St. Maur les Fossés is at present open in Paris; the designs exhibited represent, in a most marked manner, the contest which is now raging in France between the realistic and ideal schools of conception and execution. But, notwithstanding this lively antagonism which takes so bitter a form, it is impossible to be blind to the effect that modern modes of study have produced, even on those painters who are most virulent in their abuse of the so-called realistic artists. We sincerely hope, however, and believe that in this competition the older school will carry the day. We cannot allow ourselves for a moment to believe that what is called and well understood as the school of impressionists, whatever may be their future, can ever be allowed to exercise their hasty work on the large wall spaces such as the architects afford to the painters, in continuance of the good old traditions of the past.

Alhambra Theatre.—With reference to a statement in one of our contemporaries that "the difficulties with the insurance companies have now been settled," we are asked to say that such is not the case, but that pending the settlement the directors of the Alhambra have made all necessary financial arrangements, and steps are being taken to rebuild at once. The new theatre (which is expected to be opened in October) is to be of fireproof construction, and will contain every modern improvement for the safety and comfort of the public, especial care being taken to provide very capacious and convenient entrances, corridors, and exits. The architects are Messrs. Perry & Reed.

NEW PARIS.*

THE system of co-operation practised so largely on the Continent enables much of what has been done in new Paris to be accomplished with ease, and all share alike in the benefits. If the so-called "strangers' quarter" in Paris is more brushed, swept, and watered than any other neighbourhood, residence within its limits is not debarred to any one, and its beauties are open to all alike to enjoy, a privilege of which the public freely avail themselves. But in every direction the spirit of improvement is manifest; the new houses erected in the most distant and less favourite quarters of Paris differ but little in quality from those erected in the most central; the statues that the municipality purchase so generously at each year's annual exhibitions are scattered about in the pleasant open green squares of the least stranger-frequented parishes, and the trees that form so grateful a shade in the summer, that relieve so successfully the monotony of the street architecture obligatory in a great centre of population, are as freely planted in the outlying districts as in the more central; for if the whole of Paris cannot be as embowered as the delightful and favoured suburbs of Passy and Auteuil (why was not South Kensington built after the same model?) the humblest dweller in the eighth-floor Mansard attic can enjoy in the hottest summer months the pleasure of a seat under the shade of the healthy plane-trees before his door, and the cool ripple of the little rivulet which runs down each side of the well swept roadway. Paris, indeed, in summer, as Mrs. Browning well said, swims in verdure, and feelingly do the inhabitants express their gratitude for the blessings thus conferred on them by the intelligent co-operation of nature and of art. Never have we heard, as in England, one word against the trees, which science has amply proved, in addition to affording rest to the eye and mind in summer, serve largely to absorb the foul air of the city, and give off purifying oxygen.

In no point has new Paris taken a more vigorous stand than on that of the cleanliness of its thoroughfares, and, sad indeed, in this respect is the condition of the streets of London in comparison with that of those of Paris; and here again our Parisian neighbours show their shrewder knowledge of business, for apart from the increased comfort of existence in dusty summer, sloppy autumn and spring, and snowy winter, it is evident that a large source of wealth is derived from the thrifty use of the refuse and dirt gathered *daily* from every house and square yard of roadway and pavement. That the wear and tear of roads is by this cleanliness reduced is unquestionable. Existence in a civilised city seems occasionally, it must be admitted, to assume the air of a farce in London, when a few days of wet weather have reduced our streets to the condition familiar to every one who knows the metropolis. When it is proved by our French neighbours that, in spite of the busy traffic which, it is alleged, prevents in London the possibility of cleaning the streets, the thoroughfares can be kept in order by their being swept at night by special gangs of *employés*, we must not allow ourselves to listen to those who speak of the difficulties of the question in London. Such indignant letters regarding the condition of our streets as from time to time find their just place in our newspapers would be, and are, unnecessary in Paris. It is singular how many of those little points of detail which so essentially render a great city a metropolis have been considered and carried out in new Paris. Drinking-fountains we, of course, possess in London, though we owe their existence to private generosity; Paris, however, is deficient in the cattle-troughs we owe to the same philanthropic association. We do not yet possess, as Paris and Berlin have both possessed for some time, the excellent institution of *châlets de nécessité* in every large open space. Ample means of communication in our metropolis we should certainly not possess, were it not for the underground railway, while, in comparison with Paris, the organisation of our omnibuses remains a positive disgrace to a wealthy city, and a rich company who do not even seem to have been galvanised into action by the competition of late waged with them by a rival undertaking. The much-vexed question of tramways appears to be giving the Parisians none of the trouble noticeable in

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* See p. 210, *ante*.

London, they having, very wisely, altogether discarded the thought of introducing the tram into the highly-frequented thoroughfares, making their termini at such spots as can in no way interfere with the old-established habits of street locomotion. Existence, in fact, in Paris is yearly being robbed of much of that amount of friction which we in England seem merely content to endure, and, in accordance with true British habits, to grumble at.

With so many means of enjoyment as are afforded in Paris to the student, the worker, and the idler alike, well may Paris be willing to be called a city of pleasure. Nowhere can the lounger, the *flâneur*, more easily indulge in his somewhat reprehensible habits, for from morning to night the daily life about him affords him the cheapest means of distraction. On week-days he has always enough to do: in summer military music plays for him in half a dozen of the squares of the capital, and if he is unable to hear the Sunday classical concerts which, for so many years, have been regularly given in the Cirque-d'hîver, the Châtelet, and the Château d'Eau theatres, he can twice a week enjoy the equally refined music of the Garde Républicaine band under the tall trees of the Tuileries gardens, or in the crowded Palais Royal. The museums are open to him to study either the wonders of the industry of the past, or the attitude of the French workman of the present; the rooms of the Hôtel Drouot place gratuitously on view for him the more important sales that are to take place during the forthcoming week; at Saint Cloud and Versailles the fountains play for him; in the summer months the annual *Salon* is open free on the Sundays; the Champs Élysées, the Tuileries, and Luxembourg Gardens are alive with life, and all he has to do is to enjoy himself,—gratis.

Of the numerous other enjoyments, of the theatre, of the music, and of public entertainments generally there is no need to speak, they are even greater features in new Paris than they were in the Paris of the past; the avidity with which all classes appear to crowd the places of amusement in new Paris, as they do in London, and indeed the world over in the present day, certainly indicates either a rapidly-increasing love of enjoyment, or, what is more likely, a growing ability to satisfy its desires.

The shop-windows take, in new Paris, a very conspicuous place; there are very few thoroughfares, if any, in Paris, in which shops are not to be found; it is, indeed, very common for the ground-floor of the *maison de rapport*, or house built to let out in flats, to be utilised for shops, and as in Italy next door to the grandest *palazzo*, a shop will be found in Paris next door to the most stately *hôtel*. Shop-windows, therefore, form in new Paris a very conspicuous feature, and though Paris has long been famous for the skill with which its shop-windows are arranged, the art of the *étalagiste* is carried in new Paris to an even greater pitch of perfection than ever. It is to be regretted that, in certain parts of the city,—those, let it be remarked, to the disgrace of the passing visitors to Paris, chiefly frequented by strangers,—many of the shop-windows still exhibit in shameless publicity works of would-be artistic character, so immodest in their intention and worthless in every way that one wonders not only how tradesmen can be found willing to increase their capital by means so questionable, but that purchasers should be found in a sufficiently large number to keep the trade alive. But if, in respect to what we have referred to, there is very much to condemn, it cannot be denied that new Paris merits in most of its shop-windows the highest praise; such shop-windows are, indeed, not to be found in any other city of Europe.

To the practical builder even, perhaps, more than to the architect, new Paris offers a larger field of inquiry and study: all the great cities of Europe, excepting London, appear perfectly satisfied to make their own modern alterations as much in the spirit of Parisian architecture as can be conveniently adapted to the character of their own cities. Whether, however, the English builder and architect are disposed to recognise the merit of the work done, is a question which they best know; we ourselves cannot but think that new Paris offers many points that we in London and in our other great cities might very successfully study and adapt.

It would be impossible for the professional visitor to Paris, after a pleasant ramble through the metropolis, and more particularly those portions that constitute new Paris, not to admit that we in London have yet something to learn in the matter of urban architecture. A visit to the grandiose neighbourhood of the Parc Monceaux, scarcely yet freed from its scaffold-poles, and the neighbouring *quartier* of the Avenue de Villiers, where the successful painters have erected so many of their picturesque dwellings; a tour through the still progressing area that stretches between the Champs Elysées and the Trocadéro, there as representative of the homes of the wealthier portion of the community; or a visit to any of the outlying districts or the more recently built streets and avenues in the centre of the city, the neighbourhood of the new Hôtel des Postes, the Boulevard St. Germain, the Boulevard Henri Quatre, the Boulevard Haussmann, the Boulevard Malesherbes, or the Avenue de Messine,—a visit to any or all of these representative portions of the French capital will give a stranger a very fair idea of the exterior character of the new metropolis; but it requires the leisure and repose of long acquaintance to fully understand the French capital, and then one discovers how delightfully are mingled in the midst of the whirl of modern life, the traditions of the past and the existence of old Paris, with the many comforts and conveniences afforded to the dweller in new Paris.

THE SANITARY CONDITION OF HOUSES IN THE COUNTRY.

There is probably no truer proverb than the French saying, that it is the first step which is the important one, if we may so paraphrase it; and the fact that public interest in the metropolis, and somewhat to a lesser degree in the large provincial towns, is now aroused upon the subject of sanitary improvements in domestic matters is some guarantee that the hardest days of sanitary reformers are over in the towns. Not that it is time yet to relax any efforts, for there are masses of persons still crassly ignorant and utterly careless of the elements of sanitary science. There can, on the other hand, be little doubt that in provincial towns and in the country districts there is still a great absence of knowledge as to this question. Not only does it exist among owners of large mansions, who, one would expect, would be the first to make sanitary improvements; but it is still more noticeable among the proprietors of small country and provincial town houses, among clergymen, farmers, and other dwellers in rural districts. One reason of this continued neglect of sanitary precautions is the fact that there is so strong a belief in the healthiness of the country, a belief which, however true it may be in itself, becomes nothing more or less than a pitfall, if relied upon as a counteracting agent against the injurious effect of an absence of the elements of proper sanitation. This kind of belief in the value of country air and habitation, as opposed to bad drainage and so forth, may even be found among dwellers in towns, who will relax precautions as soon as they get into the country. There are also other and obvious reasons, just as there are for the fact that in country districts medical science is, in many instances, distinctly behind that of the metropolis and great provincial towns. But the difficulty of impressing country builders and plumbers with the necessity for taking various actual sanitary precautions is quite different from the difficulty of introducing medical improvements. The plumber dislikes and abhors, and has a contempt for the new-fangled ideas; the medical man is only too glad to carry them out if he only had the time and the opportunity for becoming thoroughly acquainted with them. Thus by the combination of various causes there is no doubt that an advance in the knowledge of sanitary principles in the country has not taken place to the same extent as in the great towns.

Yet, as a whole, the improvements which are gradually becoming more common in towns are just the same as are needed in the country. There are only two points upon which there is any considerable difference, one being in respect of the water supply, the other in connexion with the disposal of sewage. In the towns it is simply, as a rule, a question of the best place in which to store water, and the best materials in which to carry it and keep it. But in the country there are not only these points to be considered, but there is the very important one of keeping the water free from contamination either in its inception or in its course to the house. No one with any experience of country houses can doubt that many illnesses are caused by the water being contaminated in a well or during its course from the well. In many houses of a good character in the country, the well which supplies the drinking-water and the cesspool which receives the sewage of the house will be found in such close proximity that the cesspool will at one time or another probably contaminate the well-water. This is a danger which in the towns has less to be considered, but it is one of most vital consequence to any person who owns or lives in a country house. Just as spring is coming upon us, and persons are beginning to think of their country quarters, they should not fail to consider whether or not the water which they use is pure and wholesome. The cause of teetotalism, too, would be greatly benefited if persons interested in it would not only preach the doctrine that water is the best of all drinks, but would do something practical to secure us from being poisoned if we drink it. Again, in regard to the second point, there is no doubt that there are numberless houses with cesspools dangerously close to the dwelling, and that these and foul outside closets are also a cause of much sickness. It is too often supposed that, because one member of a household has alone perished from typhoid fever or diphtheria, therefore the cause of the only individual's illness is not bad sanitary arrangements; but it should always be borne in mind that where one constitution will readily absorb the seeds of disease, other constitutions will prove that they do not suffer, and that in one condition of health a man will pass unscathed through a sanitary ordeal, whilst if he be in another he will quickly succumb. So that the only security which a prudent householder can take is to set his house in order, so that the inmates, whether they be robust or weak, will have no health ordeals to pass through.

But there is a distinct practical point in connexion with this subject which needs to be mentioned, and that is, the best means to increase a knowledge of sanitary principles among all classes of dwellers in the country. It seems to us that it is of the first importance that simple and popular lectures treating of the main principles of sanitary science in connexion with houses, and showing how those principles can be carried into practice, should be given in the various provincial towns. Cookery lessons, and lessons to teach ladies how to bind up wounds and make bandages, are now common in country towns, and lectures both to gentlefolk and tradespeople should be given in every town in England. Then there are the medical men, who should point out to their patients how to keep in health, as well as to cure them when they are ill. They will always in this world have plenty of patients, and medical men should take every opportunity of pointing out the main sanitary principles when they get an opportunity. Then there are the clergy, who can be reached in various ways. For example, what could be more wholesome reading for the clergy of England in the *Guardian*, the *Rock*, the *Church Times*, and such-like publications, than a course of papers on domestic sanitation. The subject is one which must be treated and brought forward so as to catch the attention of all classes, not merely of a few isolated individuals, who sensibly turn their attention to the subject. The improvement of the sanitary arrangement of our country houses, great or small, is clearly a matter of pressing importance, and as yet almost untouched.

The Ashpitel Family.—Last week was laid to rest in the old family vault, Anne, eldest daughter of the late William H. Ashpitel, J.P. Her family was one of the oldest and most respected in Hackney. More than one hundred years ago, when her ancestors were living there, Clapton was a delightful country village, with fine old houses surrounded by orchards and pleasure-grounds. At that time it was deemed necessary for travellers to meet together to go from Shoreditch to Hackney for fear of highwaymen who infested the highways. Of the well-known old family of the Ashpitels there are, we believe, but three survivors, one son, a clergyman in Bedfordshire, one unmarried daughter, and another married to the Rev. W Denton, vicar of St. Bartholomew's, Cripplegate

THE MOSQUES OF CORDOVA AND KAIRWÂN.

ROYAL INSTITUTE OF BRITISH ARCHITECTS.

At the ordinary meeting of this Institute, held on Monday evening last, Mr. David Brandon, vice-president, in the chair.

Mr. R. Herbert Carpenter read an interesting paper, entitled "A Comparison between the Mosque - Cathedral of Cordova and some other Contemporary Arabic Buildings." Mr. Carpenter said he proposed in his paper (which was illustrated by numerous plans, sketches, and photographs, to which constant reference was made) to lay before the Institute some information as to the great Mosque-Cathedral of Cordova, and also some remarks upon Seville Cathedral, both buildings having been left undescribed by Mr. Street in his admirable work on Spain. The communication was the result of a recent visit by Mr. Carpenter to the south of Spain and a part of the north coast of Africa. The author complained of the unreliability of the guide-books, even good ones, such as O'Shea's and Murray's, on the subjects in which he had interested himself, conveying as they did altogether dubious impressions. He would, therefore, refer to the mosques at Mecca, Jerusalem, Damascus, and Cairo, with which these authorities compared that at Cordova, and then to the more primitive type, from which, in his own opinion, its plan was really derived, namely, that of Kairwân, in the newly-annexed French province of Tunis. He accordingly began with that of Mecca, graphically recapitulating the current Moslem traditions relative to that mother mosque of the Mahommedan world. Passing thence to Damascus, history taught us that it was the first great city conquered by the Arab invaders, into whose hands it fell about A.D. 634, followed by Jerusalem a very few years later, and by the North African conquests in A.D. 711. The mosque at Damascus was a curious combination of Romano-Christian and Arabic work, and it had never yet been described in such detail as it merited, partly through the peculiar intolerance of its inhabitants. Mr. Hayter Lewis, however, had carefully examined and noted some of its features, and these were briefly alluded to. Originally a great Roman temple stood on the site. In what way this was converted into the Basilica of St. John the Baptist had not yet been clearly made out; but the massive substructure of the western minaret went back to that date, possibly the beginning of the fifth century, or even earlier, and this portion of the mosque might have formed the campanile of the church. At first, after the Arab conquest, the Christian building was divided between Christians and Moslems; but eventually the Caliph Walid required the whole, and rebuilt it, using the older columns and capitals and other materials of both ancient buildings. The new erection was then described. The El Aksah Mosque at Jerusalem was next spoken of; this stood on the site of the church built by Justinian in honour of the Virgin, as the author thought, although he candidly owned that Mr. Fergusson places Justinian's church on another site. A description of it was given, illustrated by a plan enlarged (by permission of the Council of the Palestine Exploration Fund) from the survey of Major Warren. The author now came to the great mosque at Kairwân, which up to the late annexation of Tunis by France was quite as sacred from profanation by the infidels as Mecca itself still is; so much so, indeed, that when Mr. Rae visited it he was quite unable to do more than glance through the doorways into its interior, and when taking some few notes of the exterior was glad to place himself under the protection of a guard of soldiers granted by the Kaid. Notwithstanding all these difficulties, he got at the main features of the mosque with wonderful correctness, as was proved by Mr. Broadley's "Tunis, Past and Present," whose plan, through the kindness of that gentleman's father, Canon Broadley, Mr. Carpenter was allowed to reproduce on the same scale as was adopted in his own plans of the Cordova mosque, and of those of El Aksah and Damascus. The growth of the Kairwân mosque was then described, from its small beginnings, when it was founded by the Emir Okhbah in A.D. 667. Successive rebuildings or enlargements took place in 691, 727, 777, and 827 A.D. The number of columns inside and outside the building had been variously given by various writers. An old Arab record of the eleventh century gave the number as being 500. According to the French plan there were 501. Mr. Broadley stated the number to be 439, while Mr. Rae gave the number as being 435. These columns are of marble, porphyry, granite, and other stones of infinite variety and beauty. The author's account of this prototype prefaced his description of the grand Mosque-Cathedral of Cordova, famous both for its very considerable architectural and artistic merits, and also as being the only survival in Europe of the primitive style of the Moslem places of worship. As already mentioned, the great Moorish invasion of Spain took place in A.D. 711, supplanting the old Gothic kingdom, after its having lasted two centuries and a half. In that year Tarik, the Moorish conqueror, captured Cordova, and converted into a mosque a large part of the church of San Vicente, which stood upon the site of a former temple of Janus, leaving the rest, with their usual generosity, to the Christians, who however, were afterwards brought out at a cost of 44,000*l.*, by the Caliph Abd-el-Rahman in A.D. 786. The architectural details of this building formed the staple of the paper.* Having gone through them, Mr. Carpenter said that, on comparing with each other the different buildings passed in review, it was clear that the Mosque at Mecca formed no guide for any of the rest, either in form or style. The conditions under which it was built were quite peculiar. It was the centre of worship for the Moslem world. The Kaaba and its surroundings marked the place for the faithful, who were at first simply walled in, and were afterwards shut in by covered cloisters, the dimensions of which were again and again enlarged. But at all other cities of the Moslems the Kibleh, or direction of the Kaaba, was the all-important condition to be observed in building a new mosque or in altering an old one. The Kibleh once fixed, what was left was the provision of proper shelter from the sun for the worshippers. When the Arabs established themselves on a new site, the simplest plan they could follow, after fixing the Kibleh, was to build sheds or aisles side by side, surrounded by walls, adding an open walled court for purposes of ablution. At other places some existing building could be made available. But since a church or basilica ran east and west, whilst the Kibleh of a mosque required, when it was north of Mecca, to be south, and in the southern parts of Europe must necessarily be east or south-east, it was only in some places that the basilicas could be altered or adapted to Moslem wants. In other places the basilicas had to be swept away, since the difference in angle between east and south-east made it impossible to make use of them. An exception was made at Constantinople, where the glorious Church of St. Sophia was spared, and the now existing compromise arranged. At Jerusalem and Damascus the south aisle wall of the respective basilicas very conveniently became the Kibleh wall of the mosque, with more or less adaptation of the building in other respects. At Kairwân there was no already existing building to adapt, and Okhbah fixed the Kibleh, it was said, by supernatural help, and built his aisles side by side. The men of Kairwân, having become the conquerors of Spain, found a church already existing at Cordova, but they had to clear it away, as its south wall did not tally with their south-east Kibleh. They accordingly followed their own indigenous type, and kept to it throughout all their rebuilding. And when people, originally from the same Kairwân, under their General Gouher took Fostât, or Old Cairo, in A.D. 973, and founded El Kahirah, the Cairo of the present day, the Mosque of Azhar was founded and completed by that soldier in A.D. 981, on the same general type of the great Mosque of Kairwân. In after centuries it was rebuilt, but the proportion of its original plan was preserved. Thus the Arab historian Makrizi, who wrote in the latter half of the fourteenth century, related that a great earthquake happened in A.D. 1303, which laid the whole in ruins, so that it had to be entirely rebuilt. Of other Cairene mosques, the older one, at Touloun, founded A.D. 679, was more like that of Damascus, and its aisles ran across it, instead of in the Kibleh direction. The Mosque of Hakem resembled that of the Touloun; but the Mosque of Amrou, when rebuilt (as it is now), followed the Kairwân type. Hence the author thought the Mosque of Kairwân most valuable historically, as being the model of buildings in countries so widely apart as Egypt and Spain. The remainder of the paper was devoted to an account of Seville Cathedral, and its relation to the Moorish epoch of Spanish history.

In the discussion which ensued,

Mr. Percival said he had lately visited the mosque at Kairwân, Mr. Broadley being, in all probability, the only other Englishman who had been there before him. Up to the time of the recent French occupation of Kairwân, the city had been entirely isolated from the Christian world for more than 1,100 years. The Jewish traders who came from Susa had to stop two miles outside the city. The few Christians who were allowed to walk through the city by the permission of the Bey, including Lord and Lady Bective, had to be provided with a military escort. Even Mr. Rae had not been able to see the interior of the mosque. As regarded the interest attaching to the mosque from its great antiquity, there could be no doubt whatever that Mr. Carpenter had proved his case. The mosque at Kairwân was undoubtedly the typical mosque, and was certainly one of the oldest mosques in the world. There seemed to be little reason to doubt that, as Mr. Carpenter argued, the Mosque of Cordova was based upon the same design as that of Kairwân. Another point of special interest attaching to the Mosque of Kairwân was that it was a building which had been erected primarily and entirely for use as a mosque; it had not been converted to use from a basilica or any other building, as was the case with Sta. Sophia at Constantinople. He was once at a grand service in the Mosque of Sta. Sophia during the festival of the Ramazan. The interior was brilliantly illuminated with lamps, and the whole of the roof was lighted up with glorious effect. But the whole effect was spoiled if the spectator looked down on to the floor, for the whole of the worshippers stood in lines across the whole of the building, about 3 yards apart; but these lines of worshippers were crooked, or askew with the lines of the building, for they looked towards Mecca. Of the beauty of material in the columns of the mosque at Kairwân it was impossible to speak too highly. Every kind of marble, porphyry, granite, and all kinds of coloured stones, were used with beautiful and varied effect. On entering the mosque the effect at first was disappointing, for going in out of a brilliant sunshine the whole effect appeared to be poor and dull. Making friends with the custodian of the mosque, however, all the doors were opened one by one, and through the doorways a flood of sunshine came in upon the coloured columns, and the effect was magnificent. The visitor very naturally inquired where all these wonderful columns came from. Some were, no doubt, brought from foreign parts, although the country was itself rich in coloured stones. Tunis contained many interesting remains, including a Roman amphitheatre, the third largest in the world, he believed. There was enough to see, besides the Mosque of Kairwân, to tempt any one visiting Algeria to extend his travels to Tunis.

Mr. Wyatt Papworth moved a vote of thanks to Mr. Carpenter for his interesting paper, and expressed the hope that the Council of the Institute would be able to publish in their "Transactions" all the plans which had been exhibited. Personally he had taken very much interest in the Mosque of Cordova for a great many years, and he thought it was very well known who were the architects of it.

Mr. R. Phené Spiers, in seconding the motion, said he had not seen either the Mosque of Cordova or that at Kairwân, but from the plans exhibited of them he should say that Mr. Carpenter was correct in the conclusions he had drawn, particularly with regard to the Mosque of Kairwân serving as a type for the Mosque of Cordova. Possibly it also served as the type of the mosque of old Cairo, which was supposed to have been founded in the seventh century, although it was doubtful whether any portion of it remained. Of course it was older than the

* We may mention that a plan of the Mosque of Cordova was published in vol. xxxvii. (1879) of the *Builder*, p. 808. This plan was accompanied by a letter from Mr. Carpenter (p. 807), a previous letter from the same gentleman appearing on p. 582. These letters, together with an article on p. 505, and a letter from Mr. Wyatt Papworth on p. 882 of the same volume, may be usefully referred to in connexion with this abstract of Mr. Carpenter's paper.

Mosque of El Azhar at Cairo, for old Cairo was abandoned on the building of New Cairo.

The Chairman, in putting the motion, said it had not been his good fortune to see any of the mosques mentioned, and therefore he could not, without further consideration, venture to say anything upon the subject. But of one thing he was quite sure, namely, that the meeting would concur with him in thanking Mr. Carpenter for the trouble and pains he had been at in preparing and reading his paper, which was one of very great interest. It was, however, a paper which required to be read and considered carefully and quietly before discussing it. He cordially coincided with the suggestion that the plans with which the paper had been illustrated, or at any rate some of them, should be published in the "Transactions," with one or two views, if possible.

The motion having been carried unanimously, Mr. Carpenter said a few words in acknowledgment, and the meeting terminated.

NOTES ON PROFESSIONAL PRACTICE.

ARCHITECTURAL ASSOCIATION.

At the ordinary fortnightly meeting of this Association, on the 16th inst., Mr. E. G. Hayes, President, in the chair, the following gentlemen were elected members, viz., Messrs. W. L. Buxton, A. H. Osmond, J. Upton, A. H. Hercn, A. Miles, C. W. Piper, F. S. Ogilvie, E. Greenup, H. D. Walton, J. Lord, jun., H. Evans, A. E. Mullins, and F. Swinburne.

Messrs. E. J. Tarver, past-President, and Mr. W. H. Crossland, F.R.I.B.A., were elected members by acclamation.

On the motion of Mr. W. H. Atkin Berry, a vote of thanks was accorded to Mr. Gribble for conducting the members over the new Church of the Oratory at Brompton, as mentioned in our last.

Mr. Arthur J. Gale then read a paper entitled "Some Notes on Professional Practice." Disclaiming any intention to go very deeply into any of the details of the various departments of modern architectural practice, the author proceeded to pass in review some of the circumstances which lead up to and influence that practice, and some of the relations in which the architect stands to his work and his employer. Looking back to the beginning, considering the development and education of the average English practitioner, one of the first questions to arise was, "Of what sort are the young men who join the profession in such numbers, and what education have they received before doing so? In fact, what is the nature of the raw material which is eventually to become the qualified practitioner?" The honourable status which, notwithstanding many failings, the profession undoubtedly held; the more or less lucrative nature of the rewards which awaited success in almost every branch; and, to the devoted student, the undoubted pleasantness of the work in most of its phases, drew to the profession men of all grades in life, and almost all degrees of education. To take, however, an average example, a boy came to the profession fresh from school, with a fair acquaintance, perhaps, with Greek and Latin, one or two modern languages, English (in the comprehensive sense of the term), and a well-grounded acquaintance with mathematics,—the latter of such a nature as to carry him successfully through constructive formulæ and calculations. In addition to these acquirements, it was now becoming increasingly desirable that the young architect should possess an elementary knowledge of physical science in some of its branches. These subjects, in addition to drawing, formed a fair ground-work on which to build the future reputation of the young architect. No doubt a University degree was exceedingly beneficial, as maturing the higher studies (which at school were merely begun), and as giving a tone to one's career which was hardly definable; but it was open to the great objection that its attainment prevented the acquirement, during the most receptive years of one's life, of a vast amount of most valuable detail which could only be learned in the up and down trials of active professional work. But, without going to a University, the young architect might pursue the higher studies referred to, such as physical science, concurrently with the acquirement of all that he could learn from office practice, from sketching, class study, lectures, &c. The opportunities now offered to, and so widely made use of by, students at University and King's Colleges and in the Association, were such that the diligent student, coupling them with the experiences of his pupilage, should have no difficulty in accumulating a large store of useful professional knowledge. Without going into the question of how many practical branches of the profession a man might thoroughly take up without detracting from or destroying his artistic merit, the author held that no man could lay claim to or should hope to hold the highest positions as a practising architect unless he was a thoroughly practical man as well as a true artist. Much damage had been done to the standing of the profession in the eyes of a critical public by the fact that, in matters constructive, many architects relied almost entirely upon the practical knowledge of the quantity surveyor, to whose special department such matters were assumed to belong. One great aid to professional excellence was foreign travel. This was a point fully appreciated by the Americans, and it was noticeable that, as a general rule, those who had attained the most genuine success, both in the amount and quality of their work over there, had studied in the schools of Paris and elsewhere, and had travelled in Italy and other parts of Europe. But supposing that the majority or all of these advantages had been enjoyed, and that the future professional man had completed his articles, and had served a year or two as a junior in a good office, and assuming that practice on his own account was for a time out of the question (the public being slow to trust their commissions to young men), he perhaps obtained an appointment as managing assistant to a man in good general practice. Here the thoroughness with which he had pursued his studies in the past would serve him in good stead, and such a position afforded a practical training of the very best kind. Passing on to notice in detail some of the many phases of modern practice which confronted the man who, having work offered him, and who (having passed the new examination) had joined the ranks of the Institute, and was fairly in a position to start for himself, the author observed that possibly such a one would not have sufficient work to keep him profitably employed for the whole of his time; in such case it was a very usual proceeding (and one which both principal and assistant often found convenient) to arrange for half one's time at one's own work, and half at the principal's office. With regard to competitions, although by their means well-deserved and brilliant successes had been gained, yet, even where there was no jobbery at all, the best design, and that most suited in all respects to the circumstances, did not, in a great many cases, win the day. As the result of a long series of discussions at the Royal Institute of British Architects, a new set of rules for the conduct of architectural competitions had recently been promulgated, in place of those issued in 1872, and things were much better than they were some time ago. In dealing with his first building of any magnitude, the architect would meet with many difficulties. The commission obtained, he would perhaps have to advise upon a choice of site, as to which many points would require consideration. Here (as should always be the case in providing for the wants of a client) careful inquiry should be made as to the present and probable future ways of the household, for on that knowledge would depend the success of the plan. In the *Times'* leading article which commented in favourable terms on the late Mr. Street's presidential address at the Institute, architects as a body were accused of building houses for their clients as if they were all physically, intellectually, and in every way alike. Supposing the preliminary sketches to be approved, the next point was the preparation of the working drawings, and as to these it was in all respects false economy to stint expense, for a good set of drawings, at all points carefully worked out, and a specification full and clear, were better safeguards against "extras" than any amount of provisional sums. Before taking out quantities it was desirable that anything the end and solution of which could not be seen to a small scale, should be settled by larger details, and the specification should be written. It was to be regretted that the specification should be so often left entirely to the quantity-surveyor, for the architect himself must know best what he meant the work to appear and to be in each particular case. It was no answer to this to say that the quantity-surveyor was the more practical man of the two. Why should he be? As far as the author's experience went, he had not found any reason to believe it to be improper or inadvisable that the quantities for his own works should be taken out by the architect or under his eye in his own office. That course ensured careful and reiterated attention to the details. The quantities must, however, if taken out by the architect, certainly be paid for direct by the client. Care should be exercised in selecting builders. The contract form of the Royal Institute of British Architects was generally accepted, but if that form were not used, great care should be exercised in the preparation of the document. The regulation form of words was the best, as their power had been tested and found reliable. The selection of a clerk of works was a difficult point, for he might prove to be unreliable in many ways. He might drink, or connive at builders' dishonesty, or if honest and sober he might be incompetent to perform his duties. An energetic architect's assistant (junior, pupil even, or otherwise) might make a very good clerk of works, especially if gifted with tact and business capacity. The clerk of works should be constantly on the works, and not be kept too much in his office making drawings, nor sent away on errands, if it could be helped. He had quite sufficient to do if he properly attended to his duties, without having the care of matters which were better done in the architect's office. A mistake or "scamping" should be checked as soon as detected, and not allowed to cost the builder unnecessary labour after discovery. An honest builder should be treated with all the consideration that could be shown to him. The architect's appearances in public were few or many, according to the nature of his practice. If he were largely concerned as a witness in legal cases, or as architect to public bodies, his opportunities of proving his aptitude for speaking and thinking quickly and well would be numerous. An appearance in the witness-box, even for a man with a clear case to prove for his clients, and with a habit of saying in a few clear words what he wished to convey, was not a thing to be lightly undertaken. It required a clear head and an entire absence of nervousness and flurry. There were few more pitiable spectacles than a nervous professional witness being "turned inside out" by clever counsel, and they mostly *were* clever counsel who were retained in cases where professional witnesses were called. The professional witness should arrange the evidence he intended to give, and his reasons for giving it, clearly and concisely in his mind, ready to answer on his examination and cross-examination. He should have on paper ready for reference figures and data on all the points of the case, so that he might be prepared to answer any question that was likely to be asked. It should be remembered, however, that there was a limit to the use of written data in the witness-box, and that too frequent reference to them was checked by interference from the opposing counsel, and frequently from the presiding judge, presumably with a view to prevent an untrustworthy witness from showing a good case for his own side by means of a carefully-framed fictitious story. *Sanitation* was a question which, after passing through a long period of neglect, was now coming to the front rank of subjects upon which the architect was expected, not only to know something, but all that it was possible to know. As Mr. Cole-Adams had pointed out in his paper entitled "Barnacles," read last session,* the custom of ignoring the subject as beneath notice could not be too strongly deprecated. In reality, ignorance of the subject was an impediment to success. If sanitary details were left to the builder or clerk of works, they were often again delegated to that enterprising purveyor of bad smells known as the English labourer. The consequences of ignorance or neglect in such matters were often likely to be fatal. In considering the arrangements necessary for the drainage of a house, it was, of course, necessary to ascertain the requirements of local authorities entrusted with the supervision of such work, otherwise they would step in and upset all calculations by their restrictions, many of which were just, although others were exceedingly unjust and foolish, while there was often a great want of unanimity in the regulations of different districts. The voracity of the appetite of local authorities, or their surveyors,

* See *Builder*, vol. xli., pp. 750, 800.

in the matter of drawings, was often considerable, extending, as it sometimes did, to the depositing of plans not only of the drainage, but of the buildings entire, including detail drawings and specification! Too great caution and care in the execution of drainage work could not be manifested; if there was any chance offered of mistaking the meaning of the drawings, mistakes would be made. Drains should be finally tested by stopping the lower end and filling with water; and during construction care should be taken to ascertain the correctness of the falls, and the jointing and subsequent clearing of the pipes. The difficulty of deciding upon the respective merits of the various specialities and patented appliances was considerable; one good thing was not suitable for all cases, and the only secret of success seemed to be to become master of the principles, and then to apply them to the peculiar circumstances of particular cases. It was likely that somewhat more would be expected of architects in the future than in the past in the matter of warming appliances. The Smoke Abatement Exhibition must have done good, and if there were not many new things there, and if some of those even were of questionable general utility, there was much of an interesting nature to be gathered from a visit. The present position of affairs with regard to domestic warming seemed to be that the English home demanded an open and visible fire, and had it, but, with it, the disadvantage of utilising only a portion of the latent heat, a great deal of which went up the chimney. Various expedients in the way of reburning the gases, slow combustion, revolving fuel-holders, &c., had been put forward at the South Kensington show, but few, if any of them, seemed to really overcome the difficulty, while some were costly to obtain and complicated to use (the last a fatal objection). We seemed to be on the edge of a step still to be taken, viz., the provision of a fairly-cheap and easily-worked grate which should give the maximum of heat obtainable, and be conveniently regulated, no matter whether it were a coal fire, a gas fire, a fire of anthracite coal, or a combination of gas and coke, so long as it was an open fire. The great question of *ventilation*, in its relation to warming both public and private buildings, was too large to be entered upon in such a paper as the present; but it might be said that while ventilation with a warming apparatus for public buildings was comparatively easy, though by no means always done well, it was quite certain that domestic ventilation had long been at a standstill, and was very capable of improvement. Should not architects lead the way in the matter? An acquaintance with the sources and quality of *water supply*, the difficulties likely to arise in special cases, means of contamination, storage, &c., was too well known to be essential to render it necessary for the author to dilate upon it. *Damp* in buildings was frequently more troublesome and difficult to remedy than many other annoyances. Mr. Ewan Christian's remarks* at a meeting of the Association last year dealt somewhat fully with the matter. Estimation beforehand of the depth at different seasons (and the amount) of the ground-water below the surface was a point requiring careful attention. Inattention to it, and to the kindred one of soil and site, might result only in discomfort to the occupants; but, on the other hand, failure of the foundation, and, by consequence, failure of the whole building, might ensue. *Dilapidations* claimed frequent attention from the professional man. In most cases the repairs due or desirable year by year had, except those specially and by name provided in the lease, been left till the end of the term, and their evil consequences had become the more disastrous. What was, and what was not, fair wear and tear; identification of the original state of the premises; the best way to cope with a failure in construction, so as to do justice both to lessor and lessee,—all these difficulties would arise for settlement, and the work required would have to be priced out in detail, and a total amount settled as a fair claim. Nothing was so helpful to the architect in work of this kind as sound knowledge acquired by previous thoroughness in study and practical knowledge of the carrying-out of buildings. Having briefly referred to questions affecting the management of building estates, Mr. Gale observed that it behoved an architect, when acting for a public body or company, carefully to see that his instructions to act, were in due form and entered on the minutes of the Board meeting at which the appointment was made. Incorporated bodies could contract under seal only. The question of the ownership of drawings had never been settled in a final and satisfactory way. The fairest view of the matter seemed to be that the drawings were merely the vehicle by which the architect provided the client with the building he wanted. The majority of the drawings could be of no real use to the client; legally, however, they must be given up if asked for. With regard to professional charges, the schedule of the Royal Institute of British Architects is generally accepted, and might be followed fairly enough. A good method, if one's charges could hardly be assessed on the Institute schedule, was to keep account of the time occupied on a client's work, and to total-up and price the same at some fair remuneration per hour or per day, according to circumstances or custom. Specialism, or the development of a host of specialists, had been much talked of lately, and there was much advantage to be gained by the profession at large from the special attention of different men to different subjects. It had, however, its dangers. Architects could not, any of them, neglect general knowledge for the study of a speciality, as that would prove a fatal error. It would, however, be of advantage that the profession should be self-contained, and not be invaded by a number of outside men who, in various subjects now-a-days, were reaping the benefits of carelessness and want of knowledge on the part of architects. *Valuations* might be taken as an example of the subjects of which it was necessary for all architects to have at least a general knowledge. With regard to the relations of the architect to the solicitor, the latter had many chances of placing work in the hands of the former, and the young practitioner with several friendly solicitors to give him work need not fear starvation if he were worth his salt. In light and air cases the surveyor was expected to bring to bear a special knowledge of the requirements of various buildings as to light, and an understanding of the principles and practice of the law of easements. It was somewhat unusual for any but men of large experience in this particular direction to be engaged upon light and air cases, since a long and distinguished professional record assisted more than anything else to gain for a witness such a hearing as would tell favourably for his client's case. Still, the younger members of the profession must be fully acquainted with the theory upon which both the physical and legal aspects of the case were founded. The subject was now engaging the attention of the Council of the Royal Institute of British Architects. In conclusion, the author referred to the conduct of arbitrations.

In the discussion which followed,

The Chairman said Mr. Gale had read a very comprehensive paper, touching as it did upon almost all the important matters with which architects had to deal in professional work. Of course some of the qualifications of a thoroughly practical architect were only to be acquired by actual experience and practice. Perhaps, however, Mr. Gale's suggestion as to the employment of pupils as clerks of works was a little premature. A pupil who was out of his time might, no doubt, in many cases, efficiently perform the duties of a clerk of the works. The position held by a clerk of the works was a very responsible one, calling for a good knowledge of building materials and an accurate knowledge of the ways of putting them together. He was glad to see Professor Kerr present as a visitor. Perhaps he would favour the meeting with a few remarks.

Professor Kerr said he always felt very much pleasure in attending the meetings of the Association, and to contribute what little he could to the instruction of the evening. He had listened to Mr. Gale's paper with very great satisfaction indeed; the range of subjects which it had touched upon was very large, and although it was impossible within the limits of a paper to treat all or any of them with minuteness, yet Mr. Gale had successfully called attention to a number of matters which required anxious thought and consideration on the part of those just entering upon the work of the profession. The point to which the Chairman had referred, viz., the employment of architects' pupils as clerks of works, was a very important one, and one well worthy of further consideration. In these days, when the architectural profession was extending itself in respect to numbers so very largely, and when the amount of work to be done was not extending itself in precisely the same proportion, he held it to be the duty of all those who wished well to the profession to promote the cultivation by all possible means of all kinds of architectural knowledge and employment. He was happy to see that in many ways architects were pushing themselves into fields of exercise which formerly were closed against them. With regard to the particular field of operation which was connected with the duties of a clerk of works, the case seemed to be this:—Nothing could be more valuable, educationally, to the young architect than the exercise of the duties of a clerk of works. At the same time, however, he must be competent to exercise those duties. What a clerk of works had to do on average works was to interpret the architect's drawings for the builder or the builder's foreman; this work the builder and his foreman were not, as a rule, quite so able to do as might be supposed. The clerk of works had also to watch over the client's interest in regard to several matters, such as the quality of the materials, the nature of the workmanship, and, generally, the performance of the work judiciously and well with the avoidance of "extras." Now, of course, the young architect was not able to take all that responsible work on his hands at once. But the young man who had passed through his apprenticeship, and who desired to pass a year or so on practical works, could not do better than to go as a clerk of works. Architects were not, as a rule, sufficiently alive to the necessity of sending out their pupils to inspect works in progress. Such neglect was not intentional or selfish. Now, a young man who adopts architecture as a business, to put it plainly, ought to be sent out to see how building work was executed; he ought to be permitted to pick up what knowledge he could out of the office as well as in the office. It was quite true that sometimes young men in architects' offices, when they had an opportunity afforded them of seeing works in progress, did not use it. The pleasant work of drawing in the office was often preferred. There was one other question touched upon in the paper, as to which he should like to say a few words, viz., the relations of architects with lawyers. Now, it unfortunately happened that in this country at the present moment the lawyers were increasing in numbers to a most alarming extent; and inasmuch as lawyers would live, whoever starved, it followed that disputes were increasing in number and in inveterate bitterness. No misunderstanding, it appeared to him, could possibly arise now but it was converted into a bitter quarrel. He wished to speak with all respect of the legal profession, which no doubt had its traditions; but it certainly did seem to him that for the administration of justice in building matters the system of litigation under which the architectural profession at present groaned was very much of a failure. As architects all knew, even the very youngest of them, there was something about bricks and mortar that lawyers could not understand: they never got at it by any chance. A solicitor who was very much interested in his client's position might, after taking a little trouble, possess himself of some vague knowledge of what the dispute was all about; but as to the barristers, they never succeeded in obtaining the faintest glimmer. As he always told them, "You deal with words, and not things; you deal in abstractions, and there are no abstractions in bricks and mortar." Now he wished to say that, in his opinion, all building disputes ought to be settled by architects,—the lawyers ought never to be allowed to come in at all. He said that advisedly. He had been concerned in a great many cases of litigation for a great many years, and he never knew a building dispute settled in a court of law except on a false issue. The way it was done was this: the business of the opposing counsel was to mystify the judge; the business of the judge was to find his way by hook or by crook. They never believed the word of any of the professional witnesses, because they did not understand what they meant, and the easiest way out of a state of total utter darkness was to disbelieve. The process was perfectly simple. One counsel raised persistently one false issue; the other counsel raised with equal persistency another false

* See *Builder*, vol. xlii., p. 158.

issue; and the judge raised a third. When, on the other hand, a building dispute was referred to an architect or surveyor, even though he were only a man in moderate practice, albeit a man of experience, the process, although irksome and tedious, was more satisfactory, and far less expensive, for such disputes were made unnecessarily expensive by the intervention of the lawyers. The arbitrator heard both sides of the case patiently, and gave his decision on practical grounds. Such decisions very frequently consisted in splitting the difference and dividing the costs. That was a thing which the lawyers never did. They must always have one man altogether in the right and the other man altogether in the wrong. It should be borne in mind that the truth was to be found between extremes. In conclusion, Professor Kerr said he thought the time had come when the architectural profession, which was becoming a very important and highly-regarded profession,—ought to take seriously into consideration the way to manage building disputes without the serious litigation which was the bane of this country. It was a question which ought to be taken up by the Institute; but, when he compared the questions which the Institute and the Association had respectively taken up, and found that the Association had been perhaps quite as successful in obtaining its ends as the Institute had been, he saw no reason why the Association should not take up this question, although in a quiet and unambitious way, with the view of leading the Institute to take it up hereafter. The matter was an exceedingly important one, for building disputes would arise, and they ought to be settled as speedily and as cheaply as possible.

Mr. J. Osborne Smith, in moving a vote of thanks to Mr. Gale, deprecated the suggestion of employing pupils as clerks of works. He agreed fully with the necessity which existed for architects to be thorough masters of the sanitary details of their buildings, for his experience of the so-called sanitarian specialists was that they were most impracticable men.

Mr. S. Flint Clarkson, in seconding the vote of thanks, was of opinion that "architect and surveyor" was the correct designation for a man who fulfilled the almost cyclopædic duties enumerated in Mr. Gale's paper as coming within the scope of professional practice.

Mr. F. W. Farrow, in supporting the motion, suggested that the legal difficulty as to the ownership of drawings might generally be compromised by the architect giving his client a plan of the building, showing all drainage arrangements, &c., with, possibly, in addition, a small perspective view.

A Member, whose name did not transpire, expressed his concurrence with the stress which had been laid upon the importance to architects of a thorough knowledge of sanitary matters, so that they might do their own sanitary work without calling in the services of the expensive sanitary engineers, or the plumbers who were so fond of using that designation.

The Chairman having put the motion, Mr. Gale said a few words in reply, and the meeting terminated.

ST. KEW CHURCH.

The restoration of this church, which is one of the finest in Cornwall, is approaching completion. It has been undertaken under the direction of Messrs. Hine & Odgers, Plymouth, and the contractor is Mr. Bone, of Liskeard. The church consists of nave, north and south aisles, chancel with side chapels, a lofty tower at the west end, and a south porch. Originally the structure was unusually rich in carved Perpendicular timber work, but little has been allowed to remain except in the roofs, which are all of the wagon type with carved ribs and cornices, the former bossed at the intersections and with angels at the feet. All these parts in modern times had been periodically coated with yellow wash, and the plain panelled spaces whitelimed. Wood has taken the place of plaster in these spaces, and the carved roof-work has been cleaned and repaired, and the bosses and angels in the chancel have been richly illuminated as they were of old, and in keeping with one decorated figure, which was discovered in the progress of the works, and which has been reset in its original position. All plaster has been removed from the internal surfaces of the walls, and the masonry pointed throughout. The granite arcades and dressings have been cleaned and repaired, but the ancient tool-marks have not been interfered with. A lofty screen of oak, richly traceried, will divide the chancel and chapels from the nave and aisles, and there will be parcloses between the chancel and the chapels. A piece of the ancient screen which had escaped destruction, and which has been worked in, served the architects as a key to the elaborate details necessary for the new screen-work.

Permanent oak seats with carved ends, corresponding with one or two existing old ones, occupy the eastern portion only of the nave. Under these and the chairs, in other parts, the floor will be of wood blocks, laid herring-bone fashion. The choir-stalls, of oak, are traceried and carved from the architects' design. The stall-ends terminate with figures of angels in adoration.

In the east window of the north chapel were numerous fragments of old painted glass, so covered with dirt that nothing could be made of the subjects; and besides, there was a box full of other pieces. These were all entrusted by the architects to Messrs. Fouracre & Watson, stained-glass artists, who have put the pieces together, and successfully deciphered the subjects. The result is a most beautiful and almost perfect window of the fifteenth century, illustrating the life of Christ. Some small parts of the canopies and a few of the inscriptions are alone missing. The legends which remain are in very curious English:

"Here owr Lord rydyth ynto Therlm."
"Here a: washyth hys dicypylys fete."
"Here a: prayyth to the fader:"
"Here O: Lord ys skorgyd."
". . . . . bfore Pylat."

The date of the window is 1469, as shown by an existing entry referring to it in the accounts of the mayor and churchwardens of the neighbouring town of Bodmin.

In another part of the church are remains of a fine "Jesse" window.

The church plate of St. Kew is almost of unique interest and include a hanap or chalice, of English manufacture, of the date 1598. It is of great size, and is a fine specimen of Renaissance work in silver.

In the restoration of this church the Archbishop-designate of Canterbury has taken great interest.

NORTHERN ARCHITECTURAL ASSOCIATION.

The quarterly meeting of the Northern Architectural Association was held on Tuesday, February 20th, in the Old Castle, the president, Mr. John Tilluan, of Sunderland, in the chair. There was a good attendance. Mr. Oliver moved: "That the general rules of the Royal Institute of British Architects for the regulation of architectural competitions be adopted by the Northern Architectural Association, and that printed copies of the same be distributed by the secretary." He said it was pretty well known that the Corporation were about to erect several extensive blocks of buildings in various parts of the city, and that they had volunteered the information that the designing of these should be submitted to public competition. He (Mr. Oliver) being a member of the Corporation could not, of course, become a competitor, but he hoped to be of service in conjunction with both bodies, viz., the Corporation and the Architectural Association. He believed Mr. Laws, the City Engineer, entered heartily into the recommendations of the Council, and, so far as he had been able to learn, every member of the several committees wished to carry out the resolution of October, 1881. The Royal Institute of British Architects, he continued, had given years of attention to the question of competition, and it was one of the great art institutions of the country. He thought they could not do better than adopt their general rules, which fairly met the mere architectural adventurer and gave the balance of influence to the honourable practitioner, at the same time securing the interests of the public. Mr. Oliver concluded by saying that he believed the Council wished to do justice to the architectural profession, and that the legitimate members of that profession were most anxious to do justice to the works entrusted to them, and expressed a hope that the working out of the new *régime* would result in improved art culture, both in the profession and in the public.

This was seconded and carried.

Mr. Newcombe proposed that a copy of the general rules be forwarded to each member of the Newcastle and Sunderland Corporations, with a request that they would give them their best consideration, and adopt them in any architectural competitions they may decide to invite.

After an animated discussion the resolution was carried, and the meeting terminated.

STONE OF WESTMINSTER ABBEY.

The following memorial has been forwarded by the Duke of Westminster to the Home Secretary on the subject of the injury done to public buildings in Westminster by the excessive emission of smoke, especially to Westminster Abbey and the Houses of Parliament, urging a stricter enforcement of the provisions of the existing law, which are believed to be adequate for the suppression of much of the existing nuisance from the potteries. The memorial was adopted at a meeting of the Council of the Smoke Abatement Institute, on the motion of Mr. Ernest Hart, seconded by Lord Algernon Percy, M.P.

Sir, The undersigned memorialists, members of the Council of the Smoke Abatement Institution, and others, are desirous of respectfully calling your attention to the evils attending the excessive emission of smoke and other noxious vapours from furnaces connected with factories and workshops in the metropolis, and especially those connected with various potteries in the district of Lambeth.

Notwithstanding the serious injury to the Houses of Parliament, Westminster Abbey, and other buildings, which must arise from this cause, and of which recent evidence has been adduced, your memorialists have seen with regret that not even the powers of the existing Acts of Parliament passed to restrain this nuisance, are fully exercised.

By the Smoke Nuisance (Metropolis) Act, 1853, and the Amended Act of 1858, expressly including potteries, it is enacted that "the best practicable means for preventing or consuming smoke" shall be adopted, and that any person in charge of a furnace who shall so negligently use such furnace as to cause a nuisance, shall, upon summary conviction for such an offence forfeit and pay a sum not more than 5*l.*, nor less than 40*s.*; and upon a second conviction for such offence the sum of 10*l.*, and for each subsequent conviction the sum of double the amount of the penalty imposed for the preceding conviction.

Nevertheless, in several cases recently tried before the magistrate sitting at the Lambeth Police Court, the prosecutions having been instituted in pursuance of the provisions of the Act, and the offences proved and convictions obtained, merely nominal fines varying from 2*s.* 6*d.* to 10*s.* have been inflicted. In some of these instances former convictions had been obtained.

In some other parts of the metropolis similar leniency had been shown to offenders against these Acts, and the objects of the Legislature have been defeated.

Your memorialists believe that investigation will satisfy you that these industries may be, and are elsewhere being carried on without excessive production of smoke.

Your memorialists pray,

That you will cause investigation to be made of the circumstances here alleged, and that you will take such steps as may seem best to you to cause the Smoke Nuisance (Metropolis) Acts to be effectively carried out throughout London.

THE LATE MR. WM. SNOOKE.

We announce with regret the death, on the 18th instant, of Mr. William Snooke, of the firm of Snooke & Stock, of Duke-street, London Bridge. Mr. Snooke, although calling himself an architect and surveyor, devoted most of his attention to the surveying part of his business, his partner, Mr. Stock, carrying out the architectural portion of the practice of the firm. Mr. Snooke was a man of great integrity and ability, and was much respected by all who knew him. His warm and impulsive nature sometimes brought him in conflict with opponents, but his sympathies were always on the side of the weak and the oppressed, and probably not many men made so few enemies.

Mr. Snooke held the appointment of District Surveyor of Rotherhithe and Hatcham, with a part of Camberwell, since 1847. The gross annual value of the district, as appears from the last return, is about 900*l.*

The Improved Wood Pavement Company (Limited).—The Directors' report, presented to the shareholders at the eleventh ordinary general meeting, held at the Cannon-street Hotel, on the 12th inst., stated that after making proper allowance for depreciation of plant, machinery, &c., the accounts show a balance of net profit of 5,526*l.* 19*s.* 5*d.*, from which the directors proposed to pay the usual dividend of 5 per cent., which will absorb 4,112*l.*, carrying the balance 1,414*l.* 19*s.* 5*d.* to "reserve fund," which would then stand at 7,964*l.* 13*s.* 6*d.* The directors are giving attention to private wood-paving works of all kinds, as also to the employment of the machinery for the trade. The report was adopted, and a dividend declared as recommended.

FILLONGLEY.

THE village and parish church of Fillongley, in the county of Warwick, stand upon the direct and ancient road between Coventry and Tamworth, six miles to the north-west of the former city. Here are the remains of two residences, indicated in the Ordnance Survey as "Castle Hill" and "Castle Yard," the term "castle" being applied, indiscriminately, to both. Castle Hill stands half a mile north-north-east of the church, Castle Yard a quarter of a mile south of it. Both remains are of the military type, and represent defensive works of very different ages and fashions.*

CASTLE HILL, much the older of the two, stands upon ground sloping gently towards the north-west and west, between two brooklets which, descending from the north-east and north-west, from two sides of a triangle, the apex of which, their point of junction, lies to the west. The ground is thus protected on three sides, and towards the north, where the brook lies in a small but deep valley, it has cut for itself a deep channel in the soft red sandstone rock, the protection afforded by which is considerable. On the whole, in a country presenting no very marked features, the position may be said to be well selected.

The earthwork, which bears the name of "the Castle," is somewhat of an oval form, about 180 ft. north and south, by 150 ft. east and west. It is enclosed within a ditch of variable depth and breadth, from 15 ft. to 20 ft. in breadth, and 6 ft. in depth on the southern or most exposed side, to 3 ft. and 4 ft. on the west. Towards the north the ditch is superseded, or nearly so, by a steep slope, falling towards the brook. The contents of the ditch have been thrown inwards to form a bank, which, therefore, is highest and broadest, or about 6 ft. by 20 ft. on the southern face, and is altogether, or very nearly, absent on the northern face. The entrance seems to have been on the north-east quarter, where the ditch is traversed by a causeway of earth, and the river bank cut through. It is probable that this principal work was covered by an exterior bank and ditch to the east and south, for to the west, about seventy or eighty yards beyond the ditch, are the traces of a scraped slope, cutting off the point of the triangle towards the union of the brooks. This was suited to the falling ground. To the south a bank and ditch would be necessary.

Beyond the north brook, a few yards from the earthwork, is a fragment of masonry, connected with a number of loose stones. These have been supposed a part of a castle in masonry, but more probably here was a small mill, and this a part of a dam to keep back the water of the brook. Probably the whole are the remains of a comparatively modern arrangement.

From the character and position of this earthwork it is evident that it is not Roman, and almost equally probable that it is not British. It is too small to have belonged to a tribe, and looks as though it had been the residence of a landowner of the seventh or eighth century who here resided with his family and dependents upon his or their private estate. So far as can be inferred, works of this character mark the fortified house, the *domus defensabilis*, of some early Saxon settler, before the period when the moated mound came into use, or when, for some special reason, it was not employed. Well palisaded round the inner circle, and protected in a similar, though probably less complete fashion, round the outer enclosure, such a work would afford a very fair shelter for the family within the circle, and for the tenants and cattle within the outer court.

THE CASTLE YARD.

This is of a very different character from the earthwork already described, of much later date, and with defences of a different type. This, however, is posted in a similar position to the former work, occupying a small triangle of land formed by the beds and junction of two brooks which flow down from the south and the south-east to meet and form the point of the triangle to the north.

In the space thus protected towards the north, west, and east, was constructed a rudely oval shell of masonry about 50 ft. east and west by 80 ft. north and south, traces of which are seen in five masses of stone rubble-work, of which four are overthrown and a fifth remains in its proper place. A light ridge connects these detached masses, and indicates the line of the curtain of which they formed a part. The fragment standing in its place seems to have been connected with a curved recess, or, perhaps, a well stair, but the others have been overthrown by gunpowder. The whole was on a small scale, and there are no visible traces of towers or gate-house. The earth and rubbish heaped up in the interior of the area may cover foundations, and, no doubt, a light excavation here would disclose the plan of the whole structure and the place of the entrance, which, probably, was towards the east.

Outside the walled area the ground falls slightly, and there are traces at about 30 yards' distance, towards the south, of a ditch and internal bank protecting this, by nature, the weakest side. The valley towards the east is occupied by one of the brooks which flows a few feet only from and below the wall. There is no trace of any second or outer circle of masonry, so that probably the castle was composed of a single ring wall, possibly set with turrets, but if so, of no great size.

The whole castle must have been a very inconsiderable place, though from the steepness of the little valleys between which it stands, and the marshy character of the ground watered by the brooks, it evidently possessed much passive strength, and if garrisoned by determined men, could have held out for some time.

Fillongley is unnoticed in any record older than the Conqueror's Survey. We learn from Domesday that "Filungelei" contained two hides of land, of which one half hide belonged to the Bishop of Coutances, and was held by Lewin; a second by the monks of Coventry; a third by a certain Alsi, who held it from before the Conquest; and a fourth by Robert le Despenser, which, though of less value, contained the church. Alsi may have resided upon the Castle hill. The half hide held by the monks is identified with Old Fillongley, on the western side of the parish, and was held of them in the reign of Henry III. by Gerard de Alspath, whose name is preserved in Alspath Hall, in the south-west quarter of the parish. He held it as a fourth part of a knight's fee. A part of this holding passed in some way from the ownership of the monks, who, in the time of Edward III., held in it one-eighth of a fee of Lord Hastings. Part of Le Despenser's share passed to the Marmions, and thence, it would seem, to the Earls of Leicester, one of whom probably enfeoffed of it either Walter or Hugh de Hastings, one of the earlier members of that family, who long continued to hold it of the Marmions and Le Despensers. Thus the family of Hastings were of Fillongley in the reign of Henry I., and it speedily became their chief residence in Warwickshire, and the nucleus of a considerable estate. With the church was the advowson which, in the reign of Edward III., Lawrence Hastings, Earl of Pembroke, sold to Clinton, Earl of Huntingdon. Fillongley, though it appears in the inquisitions of the Hastings family, is not mentioned as a castle, being, in fact, too inconsiderable to be claimed by the crown, and so entered upon the public records, but it seems to have remained the chief, if not the only, residence of the family, until Henry de Hastings, in the reign of Henry III., married Joan de Cantelupe, who became a very great heiress, so that John, their son, inheriting the Castle of Abergavenny, resided there, as did occasionally his descendants. On the death of the last Hastings, Earl of Pembroke, Fillongley passed with much of his property to the Beauchamps, and so to the Nevilles, who held it when Dugdale wrote his very valuable history.

Fillongley Church contains no monuments of the Hastings family, who buried at Polesworth and with the Grey Friars at Coventry.

G. T. C.

* See plans, p. 244.

Electric Lighting and Ballet-Girls.—The ballet at the Princess's Theatre, Manchester, in which twenty-six ladies take part, has for the past month been danced nightly by the light of small Swan lamps placed in a flower on each lady's head. The current is supplied by a small battery, the weight of which is about 1½ lb., carried on the back of the dancer, as at the Savoy Theatre. None of the ladies are at all frightened; in fact, they like it so much that the principal dancer, Miss A. Holt, has arranged to have her dress covered with the lamps, which will be done ere this is in print. The arrangements have been carried out by Mr. H. Bury, of 46, Market-street, Manchester.—*Electrician*.

CROXALL MOUND.

THE parish church of Croxall stands upon the east or right bank of the Mease, a few feet above its flood level, and about a mile above its junction with the Trent. The Trent, but a few yards higher up, has received the waters of the Tame, each river traversing a broad and flat valley, subject to extensive inundations. In former days, before the land was enclosed or the water-courses kept clear of obstructions, this low and wet tract must have presented an almost impassable barrier, protecting the eastern villages from attacks upon the western or British side.

Of the origin of Croxall nothing whatever is known. Crux or Croc may be the British Crûq or Cric, as in Crickhowall, or there may have been preserved here one of those fragments of the true Cross which were at one time rather freely scattered and believed in, and of one of which Crosston is thought to preserve the memory. "All" is probably the Saxon Hall or "Aula" of the early proprietor. Domesday is silent as to the parish and church, naming only the manor. No doubt the manor or private estate is older than the parish, which, however, may date from the middle of the tenth century; but the church may well be much older, and may have been attached to the original residence of the English lord, and so not greatly later than the establishment of private property in land, and the introduction of Christianity. The Mease is at this time here the boundary between the shires of Derby and Stafford, the church and most of the parish lying in the former; one hamlet, however, lies beyond the stream, in Staffordshire, so that the limits of the parish are probably older than those of the shire.

Croxall is fortunate in having become the subject of a local history. Mr. Ussher's recent and richly-illustrated quarto dives deeply into the descent of the property, and is copious upon the pedigree and heraldry of the lords of the soil, their residences while living, and their sepulchral memorials when dead. He gives copies of their principal muniments, settlements, wills, and inquisitions, large extracts from the parish registers, particulars of the church architecture, plate, and bells, and lists of names of places and of public ways, accompanied by local surveys, together with copies of the tombstones of the humbler forefathers of the parish. Altogether, the volume gives a very full and particular, and, as it is believed, a fairly correct account of this very interesting parish.

The text of the present remarks is the only notable object in Croxall upon which Mr. Ussher has but little to say, and yet it is without doubt older than any other work of man within the parish, and probably older than the parish itself, and as old as the manor or the appropriation of the estate. This object is a small and mutilated, but still distinct, moated mound, which stands on the immediate bank of the Mease, due south-east of the church, and upon the margin of the churchyard. Mr. Usher gives its height as 12 ft., and its circumference as 40 yards. Both dimensions are liberal. The mound stands on the convex side of a bend of the river, and its adjacent or south-west face slopes directly towards the water, rendering a ditch at that point unnecessary. Towards the north the ditch has been, more or less, recently filled up, probably to allow of the carting away of the substance of the mound, which has been cruelly dealt with on this side, reducing the remainder to a crescent in plan, and evidently deducting not a little from its original height. On each side, however, towards the east and west, the ditch is tolerably perfect, and runs out upon the slope as it approaches the river. It is abundantly evident that this has been a moated mound, the moat encircling it on three sides, and giving place to the river on the fourth.

The court, also banked and moated, usually attached to these mounds, if it existed here, must have been placed to the north or east. The ground in each direction is rugged and irregular, and at one point, to the north, bordering on the high road, are traces of what seems to have been a bank and a ditch. Towards the east the ground is still more disturbed. It is said the village once stood in this direction, and that the surface irregularities belong to its foundations. Here, also, it is said, was the camp of a large body of soldiers brought by Henrietta-Maria to reinforce her husband's army in 1643. However this may be, the

aspect of the mound, its ditch, and its position near the church, all point to its having been a motte or burh, such as the Lady of the Mercians threw up at Tamworth in 913, and of which the not distant parish of Sekington presents a very fine example.

It appears, however, that, when opened in 1800, human bones were here found. Had these remains been contained in an urn or cyst, showing that they were of the age of the tumulus, or lain in such a position as to show that the earthen heap was cast up over them, its sepulchral origin would have been clear, but there is no evidence of this kind. For all that is recorded it may have been that the interment was of a date long subsequently to the mound, and connected with the contiguous churchyard. To judge from present appearances, this mound was the site of the timber residence of some Saxon lord of the soil, probably the same, or the descendant of the same, who founded the church and acquired and constituted the estate or manor. G. T. C.

HOUSE AT FINCHLEY.

This house, which is now nearly finished, is being built in Nether-street, Church-end, Finchley, for Miss T. M. Boulton.

The facing bricks are red Bracknell, with Portland stone dressings, and the roofs are covered with dark-coloured Broseley tiles and with Cooper's ridges and finials.

The internal joinery on the ground and first floors is in polished pitch pine, the ground-floor doors having moulded heads. The principal staircase, which is constructed with close strings and newels, is of polished pitch pine, with teak newels, handrails, and mouldings.

The outer strings of this staircase have handsomely-carved pateræ in sunk panels.

The ceiling of the staircase is panelled in pitch pine, with moulded ribs, and the entrance-hall is paved with ornamental tiles.

The stained glass throughout has been successfully done by Mr. Brunton, of Hurley-road, Kennington.

The building has been carried out by Mr. William Goodman, of Hartham Works, Holloway, his contract for the same being 2,699*l.*, from the drawings and under the superintendence of the architect, Mr. Thos. Newell, of Dashwood House, New Broad-street.

THE NEW STADTTHEATER, BRÜNN.

This new theatre, the opening of which took place at the end of last year, possesses features entitling it to a more than passing notice. For example, it was one of the first theatres lighted throughout by electricity. In 1870 the old Brünn theatre, of very modest dimensions, was burnt down for the fourth time,* and it was some time before a beginning was made in rebuilding it. When the matter was once taken in hand, however, under the energetic direction of Bürgermeister Winterholler, the preliminary works were soon completed, and the design of Herren Hellmer and Fellner, architects, was selected for execution. Building operations began on the 18th of July, 1881, and on the 31st of October, 1882, the theatre was finished, at a total expense of not more than 50,000*l.*

The new theatre has the advantage of being built on a slightly rising site, and perfectly isolated, the nearest buildings being at least 50 ft. away from it. It is erected in the style of the Italian Renaissance. The principal front is its chief feature. Upon a balcony resting on pillars, and serving as an approach, rises a pediment supported by six Corinthian columns, which in its turn is surmounted by a semicircular pediment, over which beams the figure of Music, flanked by genii. In the great pediment is represented the triumphal progress of Dionysos, accompanied by the muses representing dramatic art, whilst reliefs between the columns and reclining allegoric figures over the windows point to the artistic destination of the building. All the statuary, both outside and inside the theatre, is executed from designs by the sculptor Friedel, of Vienna; the other sculptural work is by the sculptor Schönthaler. Building operations were superintended by the architect Nebehosteny, of Vienna.

* According to Fölsch, *Theaterbrände*, the first theatre at Brünn was destroyed by fire in 1693.

The interior of the theatre is elaborately decorated in the baroque style. This is apparent already in the vestibule, to which access from the street is gained by seven entrances. The staircase forms one of the chief points of attraction. A display of statuary and arabesques, the spiral forms of stairs* and balusters, and the rich ornamentation of the consoles in the loggias create an impression which may be described as expectant. The auditorium, by the mild light supplied by glow lamps, offers an harmonious and tasteful view. The faces of the boxes and galleries are white, picked out with gold, whilst the background and draperies of the boxes, as well as the cushions of the seats, are of crimson hue. Where the horseshoe form of tiers passes into the circle of the ceiling, six frescoes have been introduced. Finally, the artistically executed curtain, by Leffler, forms a fitting conclusion to the harmonious whole. Sitting-room was at first provided for 1,500 persons, but since the destruction of the Vienna Ringtheater, that number has been reduced to 1,360, the space thus gained being utilised in providing greater facility for egress.

An important feature of the theatre is that, as in the auditorium so on the stage, care has been taken, by the light of recent experiences, to guard against fire. The Brünn theatre has, not one, but two iron curtains, the usual one at the proscenium opening, and the second one separating the back stage from the front. These curtains are, in order to ensure greater stiffness, not flat, but constructed of corrugated sheet-iron. The proscenium curtain is painted with the design of a Persian carpet which hangs down in wavelike folds, so that the deception is complete. The iron curtains are moved by an hydraulic press, the lever of which need only be set to cause the curtain to rise or to descend in between thirty and forty seconds. In case of a fire, however, the iron curtain may be caused to drop instantly from three different parts of the theatre. Gas and smoke find an exit by a chimney ten mètres square, which opens automatically in case of fire. Vaulted corridors with iron doors run between the dressing-rooms, and a party-wall, which, together with the iron curtain, forms an impenetrable whole, separates the stage from the auditorium.

A striking feature of the new theatre is the application of the electric light, which, as already mentioned, has been introduced throughout the whole house. Vestibule and staircase are lighted by five Gramme arc lamps of 1,000 candle-power each; the whole of the auditorium, the corridors, and the stage, by 800 Edison glow-lamps. A most effective play of coloured light is produced by green, red, or blue gelatine skins stretched over the glass bells of the lamps, the display of the various-coloured lights being effected by simply turning different switches. Everything worked well at the opening performance of the theatre, which took place on November 14th last, when Göthe's "Egmont" was produced.

We give in our present issue an exterior view of this model theatre.

LONDON STREET ARCHITECTURE.

BELL-YARD, FLEET-STREET.

The premises, Nos. 7 and 8, Bell-yard, Fleet-street, occupy the site of some ancient timber houses of a type now fast disappearing from our London streets. Though of picturesque effect, owing to their gabled fronts and overhanging stories, they had been so much altered and modernised that no details of interest remained.

No. 7, the building first erected, for Mr. J. K. Metherell, has a frontage of 13 ft. in Bell-yard, and extends a depth of 30 ft., giving another frontage to Crown-court, Chancery-lane, in the rear. It comprises, on the ground-floor, a shop, the full depth of the premises, with basement belonging thereto beneath. The four other stories contain each two rooms, and are let out as offices. The materials used are red Fareham bricks and Portland stone.

Soon after the erection of this building, the freehold of the adjoining site was acquired by Messrs. Maxwell & Son, the well-known law publishers, and the rebuilding of the premises was at once commenced, the building being planned to suit the requirements of their business. The ground-floor contains the public office; the first floor, Messrs. Maxwell's private room; and the upper stories are used as warerooms.

* This sounds more picturesque than safe.

This building has a frontage of 21 ft. in Bell-yard, and a nearly equal frontage in Crown-court. The elevation is of a more decorative character than that of the first built house, and is entirely executed in Portland stone.

The cost of the entire block amounted to 4,341*l.*

The builders for the first portion were Messrs. Patman & Fotheringham, of Theobald's-road; and for the second, Messrs. Scrivener & Co., Fitzroy-road, Regent's Park; Messrs. Isaacs & Florence, of 3, Verulam-buildings, Gray's Inn, being the architects.

NEW ENTRANCE FRONT, ST. JAMES'S HALL, PICCADILLY.

The new entrances of St. James's Hall are erected after the Early English style, without any very strict adherence to old examples. The front is of red Mansfield stone and Luton bricks, with a few mosaics in the panels, the principal work in mosaic representing Music. The top of the tower is over 100 ft. from the pavement. The entrance is divided into three arches, supported upon granite columns, each hewn out of a solid piece of granite. There is a porch, from which the new entrance-hall is entered. This will be in future the principal entrance for the building. The total area of the entrance-hall is about 70 ft. by 30 ft. It is divided by clusters of columns into three aisles, from which spring the arches and the groining of the ceiling. The ribs are executed in Caen stone, the panels of the groining being filled in with blue mosaic, and powdered with gold stars and the various signs of the zodiac. The columns are of Burmantofts china, the caps and bases being Caen stone. The floor is laid with mosaic. The wall panels are filled in under the arches with tiles. In the centre of each panel are the arms, in relief, of the royal houses of Great Britain, and the walls between the columns will be covered by handsome tapestry curtains. In the centre aisle rises the main staircase direct to the great hall. The staircase is constructed of Caen stone and Burmantofts china columns. The steps are of white Sicilian marble. The staircase is flanked on each side with arches filled in with tracery, the openings being filled in with stained glass. Over the upper portion of the grand staircase rise ribs of Caen stone, forming a dome, the panels of which are filled in with stained glass. From this dome the staircase will be lighted in the day, and at night by a corona, executed in nickel and brass. On the left of the staircase will be the entrances into the Moore & Burgess Hall; on the right, the entrance into the upper parts of the Great Hall and the restaurant, Mr. Ambrose Austin's new ticket-office being on this side, next to the entrance-doors.

At the top of the staircase, next the entrance to the Great Hall, will be a new withdrawing-room for the accommodation of the Prince of Wales and members of the Royal Family when visiting the Hall. In the main building, next the street, over the entrances there will be a new small hall, while the floors above will be used for the accommodation of the company, as offices, &c. There is also extensive cellarage. The whole of the new entrance is in fireproof material, and the new staircase, it is asserted, could empty the Great Hall in a few minutes. Appliances for the extinction of fire are fixed in prominent positions over the building. The general contractor is Mr. Herbert Lea, of 4, Warwick-street. The fire appliances are by Messrs. Shand & Mason; the terra-cotta and Burmantofts ware by Messrs. Wilcocke, of Leeds; the mosaics by Mr. Rust; the gasfittings, &c., by the Wheathill Foundry Company; the stained glass is by Mr. Ion Paice; the stonework by Messrs. Mowlem, Chelsea; and the hangings are by Messrs. Maple. The works have been executed under very great difficulties, as the entrance to the halls has had to be maintained open during the whole rebuilding. The chief foreman, Mr. Davis, has had the great weight of this difficulty on his shoulders, and deserves much praise, as well as for moving and placing the heavy girders and stones in an extremely limited space without any accident.

The architects are Messrs. Walter Emden & Co. The quantity surveyors are Messrs. Evans & Deacon.





CROXALL MOUND.

D. DITCH.
E. LATE FILLING UP.
M MOUND.

0. 5. 10. 15. 20. 25. 50

SCALE OF FEET

FILLONGLEY CASTLE.



A. MASSES OF OVERTHROWN MASONRY.
SHEWING THE OUTLINE OF THE BUILDING.
A'. MASONRY IN PLACE.
B BANK OF EARTH.
D DITCH.

Wyman & Sons Printers Fetter Lane



Whiteman & Bass *Photo Lith.* 256 H.g. Holborn

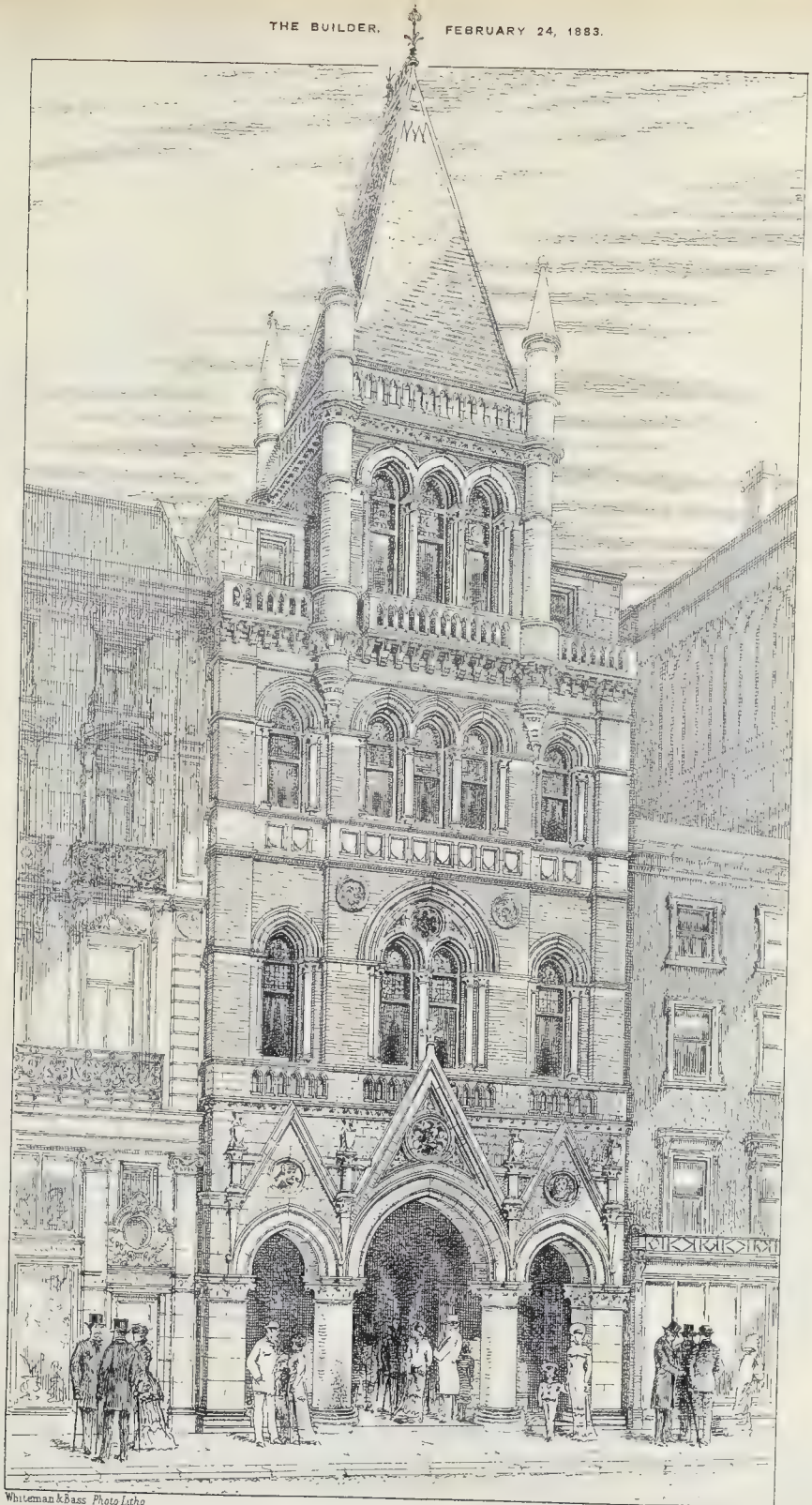
HOUSE AT FINCHLEY.—Mr. Thomas Newell, Architect.



THE NEW STADTTHEATER, BRÜN



HELLMER AND FELLNER, ARCHITECTS.



Whiteman & Bass *Photo Litho*

Wyman & Sons Printers

NEW ENTRANCES TO ST. JAMES'S HALL, PICCADILLY.—Messrs. Emden & Co., Architects.



HOUSES IN BELL YARD, FLEET STREET.——Messrs. Isaacs & Florence, Architects.

THE PROCESS OF OBTAINING SANCTION FOR PUBLIC WORKS IN GREAT BRITAIN.*

BEFORE commencing the subject of the compulsory purchase of property, to acquire which is one of the main objects of a private Act for public works, it will be well to give a slight sketch of the tenures by which the land in England is held.

The land at the Conquest was apportioned to the various Norman knights who joined William the Conqueror in his victorious expedition, and with the grant was imposed the duty of furnishing a certain number of knights in time of war. Thus all the manors in the kingdom were held of the Crown, and it became the principle that the king is the lord paramount and possessor of all the lands in his kingdom.

"All manors and lands, then, were held of the sovereign-in-chief by two kinds of service:—

1stly. Tenants "per baroniam." These constituted the great barons of England, who were bound to attend the general councils of the realm, the forerunners of our present Parliaments, their number being estimated at about 250. 2ndly. Tenants in chief by knights' service. This class was lower than the preceding, and is supposed to have numbered about 750.

"The whole feudal system was rooted in the land, and held on to it like a forest. To have so much land was to be a baron; to be a baron was to be liable to furnish so many knights; to be a knight was to hold land perhaps of the king, perhaps of a great baron."

Such was the ancient system of land tenure which continued in force until the whole of the feudal tenures were abolished at one sweep in the reign of Charles II. But the theory that the king holds all the land in the kingdom, by inference for the general good of the nation, still survives, and the theory is put in practice by the compulsory purchase of land for a public undertaking, which must, however, be of such great public advantage as to compensate the nation for the inconvenience its individual members personally affected may suffer.

Such being a slight outline of the theory of land tenure, we have now to consider the process for the acquisition of powers to construct those public works which have been the cause of the greatness of England of the present day.

Powers for the compulsory purchase of land in the United Kingdom can only be obtained by an Act of Parliament, but there is no limitation as to who may apply for one, and any company, corporation, or private individual may do so. Such a private Act must pass through all the stages of the most important public Bill, a procedure which necessarily entails, especially in opposed Bills, considerable cost on the promoters. In dealing with the various stages through which a private Bill has to pass, the author will only indicate the purely legal proceedings which are almost entirely, and in most cases altogether, beyond the province of the engineer, and with which he cannot be expected to deal, whilst he will discuss at greater length the rules and practice which more nearly concerns the engineering profession.

The procedure before Parliament is framed on the Standing Orders of both Houses, which have been drawn up with the object of giving due publicity to the application; so that all parties who may be in any way affected by the proposed Bill, may have a fair opportunity of stating their objections to the scheme; and these same Standing Orders are the guide to regulate the procedure to be followed in the progress of the Bill through its various stages, until it is either finally rejected or receives the Royal Assent, and becomes a part of the Law of the land.

Let us now suppose that application is intended to be made to Parliament for a private Act, and follow the routine that will have to be observed. Bills are divided by the Standing Orders into two classes. With the first engineers are but little concerned, Bills to authorise the construction of works such as railways, docks, canals, waterworks, &c., being included in the second. Firstly, a notice by advertisement has to be inserted in the months of October and November, or either of them once in the London, Edinburgh, or Dublin *Gazette*, as the case may be, and in three successive weeks in a newspaper published in the county in which the works are to be situate; and if the lands are in more than one county, then, in addition to the publication in each county, in a London daily newspaper as well, or a Dublin or Edinburgh paper published at least twice a week, if the Bill relates to either of those countries. The effect of this Standing Order is that if a branch line joins the existing main line of a great company running through several counties, it will be necessary to insert the notice in a London daily paper, although the works proposed may be all in a distant county. The only part of this advertisement which generally affects the engineer is the description of the termini, which must be stated with sufficient exactness to enable any one interested to identify the spot within a few yards.

In order to avoid omitting the mention of any parish which may be touched by the line of works, it is usual to include every parish adjacent, and state that the works will pass through some, or all, of them.

In the case of tramways, the notices must specify at what points, and on which side of the street it is proposed to lay the tramway, so that for a distance of 30 ft. or upwards a less space than 9 ft. 6 in., or if railway carriages are proposed to be run, 10 ft. 6 in. shall intervene between the curb and the rail of the tramway. The limits of a cemetery, gas, or sewage works have to be specified, and the intention to divert water into any canal or cut has also to be duly noticed, whilst, in the case of tramways, a further intimation has to be given by notices posted in conspicuous places, throughout the streets, in which it is intended to run.

During the months of October and November the engineer's attention has to be devoted to the preparation of the Parliamentary plans and sections, which, with the accompanying book of reference and *Gazette* notice, have to be duly deposited, before eight o'clock on November 30th, at the Private Bill Office, at the office of the Clerk of the Peace of the county or counties affected, and with the various parish clerks along the line of route. Often great exertions have to be made in order to get the work completed in time, and many are the stories told of the exciting rush to get country deposits in before the dreaded hour of eight o'clock strikes, but nothing is more fatal to accuracy than all night work, and many a Standing Order opposition would have been avoided had more ample time been allowed for the preparation of the necessary deposits.

And first as to the plan. The minimum scale allowed is 4 in. to the mile, but unless the whole plan is on a minimum scale of 400 ft. to the inch, enlarged plans of buildings, yards, gardens, and courts have to be added. This necessarily entails a great deal of additional work, whilst in many cases the numbers could not be placed on the general plan, but an enlargement is required. The preparation of these plans is a much easier matter now than formerly. Then the usual practice was to obtain tracings of the parish plans, reduce them all to six chains to the inch, and piece them together; where two second-class parish plans adjoined the work of patching up the junction was one requiring great care, patience, and dexterity. Now, where the Ordnance Survey is published, all is changed, and perfect plans, requiring, however, correction to date, are at the service of the engineer.

The choice will naturally lie between the plan of 6 in. to the mile, which economises much in cost of lithography, for a long line, but necessitates enlarged plans, and the parish survey of 25 in. to the mile. This latter is, in the author's opinion, the best to adopt for all suburban work, or where a large number of enlargements would be required. Larger scales even than this are sometimes adopted for metropolitan work, 88 ft. to the inch being frequently used; but where, on the other hand, enlarged plans are but seldom needed, the 6 in. scale will be the best to adopt. The plans should be prepared with the utmost care, bearing in mind the ordeal to which they will be subjected. Attention should be especially directed to see that all enclosures existing on the ground appear on the plans, that all houses are inserted, of their correct shape and size, and gates across roads, which often divide a public road from an occupation one shown. Often, too, a railway company will have a slip of land outside its thorn fence, of which no indication sometimes exists on the ground, the boundary of which should be shown by a dotted line and a separate number, but which is easily overlooked.

With regard to the rails of tramways, if the public road is referenced as "public road and tramway," it does not seem to be necessary to show them, and on the 6-in. scale it is almost impossible to do so; but when the 25-in scale is employed it may be desirable that they should be inserted.

The line of works, and how it should be marked on the plan, have now to be considered. If a railway, a full line representing the centre line will be marked throughout, with the limits of deviation shown by a dotted line on each side; there is no Standing Order to compel the words "centre line of railway" to be marked on this line, and many engineers omit it altogether; it is, however, desirable, to insert it on the first sheet, and sometimes it is written on every sheet of the plan. "Limit of deviation" should be marked on each sheet on both sides of the line. If it is desired to exclude a road or field, the dotted line of the limits must be taken close to the fence which bounds it, within the adjoining field, which is numbered and referenced. The distances must be marked in miles and furlongs from the commencement, which should be marked "Commencement of railway," and at the end of the line "Termination of railway" should be written, and the total length, in miles, furlongs, and chains, should also be added. Some engineers, however, are in the habit of omitting this latter, considering its insertion on the section a sufficient compliance with Standing Orders: indeed, the author is of opinion that no allegation could be sustained in the case of its being omitted altogether, as there is no Standing Order which requires the total length to be so written. All curves not exceeding one mile radius, must be marked with a memorandum of the length of the radius, in furlongs and chains on the plan. Some engineers mark a mile curve, as "Radius, eight furlongs," or one mile, whilst others omit it, as it is impossible to prove an allegation on this point; it is, however, desirable to insert it. The commencement and termination of the curves are now often marked, especially when the plans are drawn to a large scale; but there appears to be no obligation to insert this information. Tunnelling, if any occurs on the line, must be marked on the plan by a dotted line, the word "tunnel" should also be written along it. Covered way, however, must not be so indicated.

Diversions of roads come next in order. Any such are shown by two dotted lines, indicating the width of the road; the words "road diversion" must be written at the spot. No centre lines are needed in these cases.

We come now to junctions. Here it is requisite to show the course of the existing or authorised line of railway for 800 yards on each side of the point of junction, and a dotted line indicating the centre line is all that is required. The words, "Course of the Great Northern Railway," or whatever the line may be, must be written as well along it. All descriptions of railways should also be written in full, thus:—"London, Chatham, and Dover Railway," not, "L. C. & D. Ry." If the line joined is not the main line of the company, the name of the branch should be added, thus:—"London and South-Western Railway, Sidmouth Branch." It is not necessary to show the lines of rails of the railway with which a junction is effected.

When enlarged plans become necessary, to give details and numbers, as with a small scale general plan they often will, they should, if possible, be placed on the same sheet as the general plan. In 1863 it was decided that all the numbers must be placed on the general plan, and that they must not be referred to an enlargement. This has been reversed for some time, and the numbers may now be placed on the enlarged plan. This should be entitled, "Diagram showing Numbers" (or "Numbers and Details," as the case may be), at 5 miles 3 furlongs, or whatever else the correct mileage may be, on this enlargement, which must have a proper scale attached. "Centre line of railway" and "Limit of deviation" must be written, but the mileage and the radii of curves having been inserted on the general plan, need not be repeated. With regard to the numbering, it is not desirable to insert braces, as was formerly almost the universal custom, and is still very commonly followed, as the omission of one may lead to an allegation.

When a new road or street is to be constructed, it must be duly marked on the plan by dotted lines on the sides, and a full centre line; on this latter, "Centre line of new street," should be written, and "Line of frontage"

* By Mr. H. Michell Whitley, C.E., read at a meeting of the Civil and Mechanical Engineers' Society, on the 18th ult., Mr. R. Harkness Twigg, M.I.C.E., in the chair.

along the dotted lines at the sides. When the section refers to a datum point on the plan, this should be so marked, and the words, "Point for datum" written at the spot. County and parish boundaries have also to be shown, and the name of the county and parish duly written in their proper places.

In plans for tramway schemes, particular care must be taken to show the narrow places in the streets, if any, which had been previously alluded to in the notice. Dock, waterwork, river improvement, and other similar plans require no special mention, as the rules before mentioned are followed where they apply.

The tidal waters on one of the deposited plans (in the case where the work is situated on tidal lands) must be coloured blue, and marked "Tidal waters," for deposit at the Harbour Department, Board of Trade, and on such plans, if they include any bridge across tidal waters, the span, and headway of the nearest bridges above and below the proposed site must be marked.

Having considered the preparation of the plans, we will now proceed to examine the form in which the accompanying sections have to be furnished in order to comply with the standing orders.

The section must be drawn to the same horizontal scale as the plan, and to a vertical scale of not less than 100 ft. to an inch, but larger scales, in proportion to the scale of the plan, are generally used. The height of every embankment, and the depth of every cutting, has to be duly marked; and the datum horizontal line must be the same throughout the whole length of the work, or any branch, and must be referred to some fixed point stated in writing on the section near some part of the work, and in the case of a canal, navigation, road, or railway, near one of the termini.

In the case of a railway forming a junction with an existing line, the level of the rails at the junction is generally taken. This is, of course, not an absolute fixed point, as the level varies from time to time with the packing the sleepers, but custom has sanctioned this datum, which is generally described in the following or similar terms: Datum line 132·27 ft. below the upper surface of rails of the Great Western Railway at the point of junction therewith marked X on the plan. Where the line is divided into two or three lines it will be sufficient to write "Datum same as railway No. 1" (or whatever the number may be) on the datum of the other lines. This was not so at one time; a separate datum point near the termination of the line itself being required, and this was a great convenience, as when a line is several miles in length, it may be requisite to check the levels through the estate of an opposing landowner, to level 40 or 50 miles from the datum point at the far end. At this point of junction, "Commencement of railway junction with Great Western Railway, level unaltered" should be written, and "line corresponding with upper surface of rails" should be inserted once at the commencement of the line.

The distances on the datum line, must be marked in miles and furlongs, to correspond with those on the centre line on the plan, whilst "Termination of railway," and the total length in miles, furlongs, and chains, must be added at the end of the line. The gradients must be marked with heights from the datum at each change, and the heights of the railway over, or depth under, roads, railways, canals, or navigable rivers, with the span and height of the arches of all bridges and viaducts marked; level crossings, if any, must also be noted, and if the level of the road is to remain unaltered, it must be so written on the section.

The extreme heights of cuttings and banks, over 5 ft., must also be written, and tunnelling duly shown, the word "Tunnel," with the length in yards, being inserted, as must also be done in the case of a viaduct, whilst the heights and depths of banks and cuttings at each end must be given in figures. At the point of junction the gradients of the line joined must be indicated for 800 yards on each side of the point of junction. This is generally done by a dotted line, there being no necessity to insert a datum line.

The mode in which the cross-sections are to be prepared is fully described in the Standing Orders, and the only point requiring attention is a recent decision, which, until it is generally known, will probably be the cause of numerous allegations. This is, that the greatest inclination of the present road is not to be taken at the steepest point, within the 200 yards on each side of the line, but between the points within which the road is to be altered. Such is the form in which sections have to be prepared for deposit, under the Standing Orders. These plans and sections have to be accompanied by a book of reference, containing the names of the owners, lessees, and occupiers, but its preparation does not fall within the province of the engineer.

The author has been thus minute in describing the form in which plans and sections are prepared, as it is of so much consequence to the engineer to see that his plans will comply with Standing Orders, and also in the hope that members will contribute, in the discussion, examples of difficult points decided by the examiners, and so aid in the compilation of a list of precedents that will be of the utmost value, especially to the young engineer called on for the first time to prepare a set of plans for some important public work which he knows will be strongly opposed.

The plans, sections, and book of reference, with *Gazette* notice, having been duly deposited, not omitting, in the case of railway Bills, the 1-inch Ordnance map with the line of railway marked thereon, which have to be deposited with the Clerk of the Peace of the county or counties, and at the Private Bill Office, the other deposits in order are,—on December 17th, a printed copy of the Bill in the office of the Clerk of the Parliaments; on December 21st, the petition for the Bill, with Bill annexed, in the Private Bill Office; on December 31st, list of owners, lessees, and occupiers, and the engineer's estimate. The form in which this latter has to be prepared is duly specified, and calls for no particular remark. It will, however, be found well worth the trouble to prepare sketches and take out the quantities of the various works proposed to be constructed, as an estimate so prepared, and based on prices for similar work, paid by the engineer, is extremely difficult to overthrow. This completes the list of documents required to be deposited, and brings us to the second stage of the subject, the procedure in Parliament.

The examiners commence their sittings on January 18th, and memorials complaining of non-compliance with the Standing Orders have to be presented before the date given in the rules issued by the examiners. If it is determined to oppose on Standing Orders, the plan, section, and book of reference are subjected to a critical scrutiny, and allegations are laid against any inaccuracy or misdescription that can be detected. Having so fully discussed the preparation of the Parliamentary plans, it is needless to dwell further on this stage of the Bill. If the examiner reports the Standing Orders are complied with, the Bill is ready for the next stage; but if otherwise, it is "sent upstairs" before the Standing Order Committee, and if it is found that the errors are not of much importance, the Standing Orders are dispensed with, but if otherwise the Bill is thrown out, which brings its career to an abrupt termination.

Assuming Standing Orders safely passed, the Bill is now read a first and second time in the House, and referred to a select committee. Sometimes, however, a Bill which needlessly interferes with great private interests, for a doubtful public advantage is thrown out on the second reading, if its opponents can muster a sufficient number of members; but this case seldom occurs.

In 1865 an attempt was made to ease the labours of committees, in shortening the time required for the investigation of the merits of a Bill, by constituting a court of referees, to inquire into "the engineering details of the undertaking, the efficiency of the works for the proposed object, and the sufficiency of the estimate," but it was found that these courts, whilst raising a cloud of technical engineering objections, which practically presented no difficulty, but yet obscured the merits of the work, doubled the labour of the inquiry, as the same questions were gone into again, under other names, before the committee, and the result being the reverse of what was anticipated. They were abolished after a few years' trial. The Bill now comes before the committee, who have had previously presented to them the petition containing the defects the petitioners allege, and in which they pray to be heard by counsel against the Bill.

Let us now suppose the case of a railway Bill, promoted to supply accommodation to a town distant a few miles from the railway system with which it is proposed to be connected, and which runs for some miles through the estate of a large landowner, and within a short distance of his residence, who has petitioned against the Bill.

The promoters open the case, and their counsel's speech and the evidence are principally directed against the allegations contained in the petition. The principal inhabitants of the town give evidence of the necessity of a railway to them, and their willingness to take shares in the line, as a proof that they believe it will pay; as many landowners as will attend to support the line state the benefit it will be to their property, and evidence is also given to prove the extent of the traffic at present existing between the two towns,—all this portion of the case being directed to prove that a public necessity exists for the construction of the railway. The engineer then gives his evidence and details his instructions he received from the preliminary committee, and the reasons which induced him to choose the line before the committee in preference to any other. The estimates he considers ample, and he has laid out the line with as little interference as possible with the estate of the petitioner, which he considers will be much enhanced in value by the construction of the line. Other engineers confirm this evidence, whilst the surveyor considers there is nothing in the petitioning landowner's case that cannot be fairly met by compensation. The money arrangements are then gone into, and the traffic manager of the railway joined called, if the line is favourable, who states what his directors will do, perhaps work the line at 50 per cent. of the receipts, and guarantee the debentures, and he will probably also state that he sees no difficulty in the way of raising the necessary capital. This will close the case for the promoters. When the opponents open their case and direct their evidence in support of their petition; in this case they would attempt to show that no public necessity existed for such an interference with private property, the traffic estimates would be questioned, evidence would be given that the promoters seriously underrate the damage that the construction of the line would do to the estate in question; that its residential enjoyment would be destroyed, or seriously impaired; that the line is laid out badly in an engineering point of view; that the estimates are totally insufficient; that no return can ever be expected on the capital expended; and that if such a railway is required, it can be so laid out as to avoid the damage to the estate of the petitioner, whilst presenting greater conveniences for the public. With these views clearly before them, the committee decide whether the preamble is proved or not; if the former, the clauses are then settled, and the Bill is through one more stage. The committee of the other House now remains to be passed, where the fight, within a somewhat narrowed limit, can again be renewed, but if successful here, the Bill passes the third reading, and then the Royal assent, when it becomes an Act of Parliament.

Such, then, are the stages through which private Bills have to pass, and it may be asked what,—if anything,—can be done to limit the time and money expended, which in very many cases amount to a most serious sum.

With regard to Standing Orders, some plan would seem to be required which, whilst insuring general accuracy, would not give rise to the interminable and tedious reiteration of trivial allegations, with which engineers have so often to do, and the formulation of a clear list of precedents given with authority is a desideratum towards this end. As to the progress of the Bill through its succeeding stages, the matter is one that is mainly in the hands of the committee itself, and it is difficult to see how an inquiry which has for its object the sanctioning or otherwise of a measure which, whilst admittedly of great public importance, interferes, perhaps necessarily, with private interests of magnitude, can be concluded without full investigation. The question is one of great interest, and the author commends it to the members of this society in the hope that some practical suggestions may be made towards shortening the time consumed in these Parliamentary inquiries.

Ventilation of Theatres.—Messrs. Robert Boyle & Son are at present applying their system of ventilation to the new Grand Theatre, which is in course of erection in Upper-street, Islington.

DECORATION OF THE DOME OF ST. PAUL'S.

SIR, In giving you, in my former letter, my views on the subject of the decoration of St. Paul's, I did not, I find, express myself as fully and unmistakably relative to the dome as I could have wished, and as its importance demands.

Permit me now to say that I still adhere entirely to the scheme which I quoted from my paper of 1853, by which it would be divided neither by parallel circles nor meridional arcs, cutting it up into either zones or vertical segments; supported therein by the teaching of nature in the greatest of all domes,—the glorious firmament above us, wherein its nocturnal ornaments, the stars, every one of which differs from another in glory, causes the orbed expanse the more forcibly to seize on the imagination.

I am, therefore, glad to find the prominent ribs in Stevens's design meet with almost general disapprobation. It is to its consisting of one vast spherical surface, hanging over the void, expressing high human power and energy, that the dome in question is indebted for its attributes of material and moral sublimity; and this highest of all architectural qualities the vertical ribs would have the effect of destroying, and reducing it to the condition almost of a dome on an octagonal base. Undivided, it is sublime; but cut it into numerous parts by ribs, and, though still beautiful, it will be no longer sublime.

But the views I have stated lead me to question the propriety not only of the ribs in Stevens's design, but of all the architectural accessories. It appears to me that the balustrade, which must affect the integrity of the hemisphere, and the "axial thrones" are an error in the same direction, though not to the same extent, as the framework of Thornhill; and that pilasters and pediments forming thrones have no more business on the surface of the dome than pilasters and arches forming arcades; which latter would have been fatal to the grandeur of the dome but for their indistinctness, assisted by the dense atmosphere o [the place. The thrones with their colossal occupants, might, perhaps, in themselves have an imposing effect from beneath, but it would be at the expense of the general effect of the dome, on the surface of which they must appear as so many incisions. Viewing most carefully in imagination St. Paul's dome so treated, I cannot conceive them otherwise than as marring to its unity and simplicity.

As to the care taken by, or attributed to, Stevens to tie the dome to the drum below, that is not half so important as preserving its unity, to which no amount of sacrifice is too much. Columns or pilasters are essential to grandeur below, and the thicker set the better; but ribs corresponding to, or in recognition of them, are not essential to the dome, which, like a garment without seam, is most perfect in one piece, however it may differ, like the dome of the Pantheon at Rome, the decoration of which, such as it is, is on a right principle, from what it spans. I believe the circular frames, with their figure-subjects, are all that is necessary to relieve the surface of the dome, which should be elsewhere covered by some species of delicate Arabesque giving complete repose to the eye.

If human figures are introduced anywhere else, it should be only round the base of the dome, where there would be ample field for patriarchs, prophets, apostles, and martyrs, of about 10 ft. stature. They would have something like the effect from below of the progressive group of the Panathenaic procession from the frieze of the Parthenon. They should have no cornice, moulding, or other architectural feature separating them from the space above, which might be mistaken for the springing line of the dome; and, despite the authority of the so-oft-cited dome of the Cathedral of Parma, no backgrounds. That example seems to have been held up as a model merely because it was the work of an eminent painter, and praised by Titian, who, of course, saw it with the eye of a painter, not of an architect. I readily admit the greatness of Correggio's work, and can point with pleasure to a far higher tribute to it than Titian's. Annibale Caracci, the most distinguished of the three kinsmen of that surname, founders of the Bolognese school, writing to his cousin Ludivico from Parma, says:—"I went to see the grand cupola which you have so often commended to me, and am quite astonished. To observe so large a composition, so well contrived, and seen from below with such great exactness, and, at the same time, such judgment, such grace, and colouring of real flesh; good heavens! not Tibaldo, not Nicolini, nor Raffaelle himself, can be compared with him." Further on, after avowing that he would not exchange one of the pictures he had just seen of Correggio for the St. Cecilia of Raffaelle, he says, "I rage, I weep to think of the misfortunes of poor Antonio; so great a man, if indeed he were a man and not angel in the flesh."

No higher praise, perhaps, could be bestowed on a painter or his works. Yet it does not render the dome of the Cathedral of Parma a proper model for dome decoration. Annibale Caracci, like Titian, being only a painter, would speak of the work as a painter only, without thinking of the architecture. If it does not interfere with the unity of the dome, it interferes with its entity, for which no amount of pictorial beauty can atone; and does so, doubtless, because Correggio felt no architectural solicitude about it, and cared only for the best display of his own priceless painting; which had perhaps, however, been better represented on the frustum of a hollow lofty cone, than on a dome.

Whether it had or not a cathedral dome, though the highest heaven,—the heaven of heavens of the place,—cannot be made to represent the actual heaven of the blest, consistently with what is due to the genius of earthly architecture.

Allow me to add that it is not by any captious spirit that I have been led to make the foregoing remarks; but solely by a consideration of the more or less grievous consequences to a great national monument, that would result from any mistake in the treatment of its crowning and noblest feature. SAMUEL HUGGINS.

P.S.—Since penning the above I have read the letter of "A Painter" in the *Builder* of the 17th inst., asserting the existence of an engraving executed under the eye of Sir Christopher, containing proof that he did not greatly value the smooth uninterrupted hemisphere of the dome, which it shows relieved by panels and ribs. But that engraving shows, at the same time, that he afterwards set as little value on the panels and ribs, since he allowed them to be effaced; and, consequently, that he had no very distinct idea how the dome should be finished. It suggests, I think, the possibility of architects of the present day, with the additional light of two centuries of architectural history, attaining a truer conception of what is due to the dome than its constructor himself had reached.

That Wren, with his fondness for angular geometrical forms, and his sound judgment, approved of the noblest geometrical and architectural feature of his great work being put into masquerade, and made to wear the semblance of another inferior and complex feature, no amount of evidence seems to me sufficient.

As to Correggio, whatever he has been considered by painters, his practice at decoration ran counter to the principles of architecture; principles which guided Giotto in the decoration of his Chapel at Padua, and Michelangelo in the ceiling of the Sistine Chapel. His extraordinary mastery of *chiaroscuro* led him to give to his pictures an air of space and depth which, mocking all limitations, annihilates the architecture it is intended to adorn. S. H.

PORTLAND CEMENT CONCRETE.

MR. HENRY FAIJA, Assoc.-Mem. Inst. C.E., read an interesting paper entitled "Portland Cement and Concrete," before the members of the Southend Mechanics' Institute on Monday evening last, the 19th inst. After describing Portland cement and its manufacture, the lecturer passed on to treat of methods of cement testing, as to which he gave the following short specification to insure the delivery of a true Porland cement:—

SPECIFICATION FOR THE DELIVERY OF PORTLAND CEMENT.

1. *Fineness.*—To be such that the cement will all pass a sieve having 625 holes to the square inch, and leave only 10 per cent. of residue when sifted through a sieve having 2,500 holes to the square inch.

2. Weight per striked bushel to be not more than 116 lb., nor less than 110 lb.

3. Specific gravity to be between 3·00 and 3·05.

4. *Set.*—A pat made with the minimum quantity of water to set in not less than three hours, nor take more than six hours. The increase in temperature during setting not to be more than five degrees Fahrenheit.

5. *Tensile Strength.*—Briquettes which have been placed in water sixteen or seventeen hours after gauging, to carry at the expiration of seven days 400 lb. per square inch without fracture, and at the expiration of twenty-eight days from gauging to have increased in strength at least 25 per cent.

6. *Expansion or Contraction.*—Pats left in air or placed in water to show no cracks or other signs of deviation in form at the expiration of seven days from gauging.

7. *Colour.*—The cement to be of a cold grey colour, and when gauged to show no change if left in either air or water.

If a quicker or slower-setting cement is required, the weight and tensile strength must, of course, be varied in accordance with those requirements, and it must be borne in mind that the apparatus which is to be employed in carrying out the tests must be mentioned, otherwise difficulties may occur even though the cement may be of the required quality.

Proceeding to treat of Portland cement concrete, the lecturer observed that the production of a good, sound, and economical concrete, is dependent on the existence of a proper proportion between the large and small aggregate and the cement, in order that all interstices between the larger aggregate may be filled by the smaller aggregate and cement, so that each piece of aggregate is surrounded with cement; and as the cement is more expensive than the aggregate, no more cement should be used than is sufficient for this purpose. A concrete may thus be considered as composed of two parts, an aggregate and a matrix, the aggregate being the larger pieces which are united by the matrix composed of the cement and sand, or cement and the fine particles of the same material as the aggregate used: thus, a concrete composed of shingle would have sand added, which would be formed into a mortar or matrix uniting the shingle; while in the case of a concrete composed of a crushed stone, the matrix would be composed of the cement and the stone dust, which would unite the larger pieces of stone. The proportion of cement used to the aggregate must depend on the nature of the work for which the concrete is required, and the strength which it is desired to obtain; on the size and form of the aggregate, and on the proportion which the larger and smaller aggregate bear to each other, as well as on the nature of the aggregate used. To determine this proportion, it is usual to fill a bucket or other measure with the larger aggregate, and then fill it up with water, the quantity of water in the bucket will represent the amount of matrix necessary to make the concrete solid, the matrix being composed of the cement and fine aggregate, the proportions of which may be determined by the requirements of the case and the proportion of the fine and large aggregate, which may be ascertained in a similar manner. For many purposes of concrete laid *in situ* twelve of aggregate to one of cement is sufficient, and the Docks at Chatham have been principally formed of concrete in this proportion, with the exception of the outer face, 9 in. or 10 in. thick, which is composed of a better concrete. It seems almost impossible that such a small proportion of cement should give the desired strength, but it must be remembered that if the larger aggregate is separated from the finer, the constructive strength of the concrete is represented by certain large aggregate united by a matrix or mortar, which would be in the proportion of about five to one,—a mortar which is strong enough for almost any purpose. This example shows the economy in the use of cement over a lime concrete, for whereas a lime concrete, for a foundation, for instance, would have to be composed of at least one of lime to four of aggregate, a considerably stronger concrete would be produced with one of Portland cement to eight of aggregate, and the cost would be found to be much about the same; but as the cement concrete has a greater strength, a lesser thickness would be necessary, and consequently an economical result would be obtained.

In conclusion, the lecturer referred to the process recently patented by him for accelerating the hardening of concrete, by which concrete made in the form of paving slabs, sills, ornamental panelling, &c., can be put to its respective uses when only two or three days old.

THE CONSTRUCTION OF THEATRES.

Sir,—From an observation made by Mr. Alex. Graham, in the latter portion of his letter in the *Builder* of last week, the public might be led to conclude that the Metropolitan Board of Works have not yet framed any regulations for the construction of theatres. I should like to point out that the Board drew up a code of regulations as far back as the 2nd of May, 1879, in the exercise of the powers conferred upon them by the Metropolis Management and Building Act Amendment Act, 1878, the Act giving the Board jurisdiction over theatres. These regulations, which prescribe a minimum width for staircases, corridors, passages, &c., and generally control the construction and materials to be employed in the building of theatres, are still in force, and all theatres built since the year 1879 have been constructed in accordance with these regulations.

Recent diasters to theatres abroad having directed the attention of the authorities charged with the supervision of theatres to the necessity of revising the regulations in force for the construction of theatres, which were found in many instances to have become obsolete, fresh and more stringent regulations were framed in the course of last year by the municipalities of the principal cities of the Continent. The Board have obtained translations of these new regulations, and the question of the revision of the present regulations is now under the consideration of the Board. John Hebb.

EXAMINATIONS AT THE SURVEYORS' INSTITUTION.

Of the candidates who had presented themselves for the Preliminary Examination held on the 23rd and 24th ult., the following passed the examination, and have been enrolled by the Council as Students of the Institution, viz.:—Messrs. John Arnott, Woodbridge, Suffolk; Harry Barratt, Stourbridge; Robert Alan Benson, Clifton; Walter de Hoghton Birch, Wootton-under-Edge, Gloucestershire; Herbert Wilson Buck, Worcester; Frank Wellington Carter, Salisbury; Henry Copley Clark, Dorking; Bernard Simon Dunning, Warwick-square; Sydney Newton Glass, Chiswick; William Timothy Hall, Maidstone; Sidney Pryce Harding, St. Albans, Herts; William Vincent Jull, Streatham Hill; Arthur Herbert Kerr, Crookham, Farnham; John Henry Mead, Balcombe, Hayward's Heath; Edward Mixer, Shepherd's Bush; James Pennington, Newbold-on-Avon, Rugby; Philip Edward Pilditch, Richmond, Surrey; John Baseley Selby,* Mornington-road, Regent's Park; John Henry Tiffen, Kingston-upon-Hull; James Bruce Watson, Tetsworth, Oxon; Thomas Willard, Rugby; and Percival Wraight, Anerley, S.E.

Higher examinations, qualifying for the classes of professional Associates and Fellows, will be held in the month of April next.

* Passed at the head of the list.

PROGRESS OF TELEGRAPHY.

In the course of a lecture on this subject at the Institution of Civil Engineers on the 15th inst., the lecturer, Mr. W. H. Preece, F.R.S., said,—The growth of business since the telegraphs have been acquired by the State is enormous: 126,000 messages per week have grown to an average of 603,000; but the mileage of wire has not increased in anything like the same proportion, the excess of traffic having been provided for by the great improvements made in the working capacity of the apparatus. In 1873, the average number of messages per mile of wire was 147, it is now 256. It is in press work that the greatest increase has taken place; 5,000 words per day at the time of the companies, have grown to 934,154 words per day now. 340,966,344 words of press matter were delivered in the year ending 31st March, 1882.

The development of railways has necessitated a corresponding increase in the telegraphs required to ensure the safety of the travelling public, and while 27,000 miles of wire in England, Scotland, and Wales were used for that purpose in 1869, at the end of December, 1882, the total had increased to 69,000 miles, equipped with 15,702 instruments, against 4,423 in 1869.

The growth of business is equally discernible in the great Cable Companies. In 1871, the number of messages dealt with by the Eastern Telegraph Company was 186,000; in 1881, it was 720,000. This growth is equally striking in all civilised countries, and even in Japan, 2,223,214 messages were despatched, of which 98 per cent. were in the native tongue. The mode of transacting the trade of the world has been revolutionised, and while wars have been rendered less possible, their conduct has been expedited, and their penalties alleviated.

BIRMINGHAM ARCHITECTURAL ASSOCIATION.

On Tuesday evening a meeting of this Association was held at the Queen's College, under the presidency of Mr. W. H. Kendrick, at which Mr. J. M. Gething, of Kidderminster, delivered a lecture on "Some Errors of Construction," illustrating the subject by a series of drawings. Messrs. Morgan, Bailey, Jones, Cleve, Mantel, Scruton, and F. Cross (hon. sec.) took part in the discussion which ensued, and supported a vote of thanks to the lecturer.

Mr. Gething considered the erection of an ordinary building, and following it, step by step, pointed out errors which had come under his observation:—*Foundations.*—Necessity for a uniformly yielding bottom, and spreading of the load; invert arches, their utility and best form; useless if they do not spread load better than the wall with its ordinary bond would do it, should be in cement because their duty commences at once. *Walls.*—Defects of incongruous materials; methods of dealing therewith considered; instances of failure; injury by plugging. *Floors.*—Trimmer arches; danger of fire. *Roof.*—Necessity of tie; disadvantage of severing the wall-plate; king-post trusts; parallelogram of forces as shown therein; the load being known, a scale made on one of the struts (extended) with which to measure the resultant strain on the king-pin, thrust at foot of principal rafter, cross strain on tie-beam, occasioned by footing the principal rafter off the wall. *Roof coverings.*—Tiles and slates; proper pitch and lap; necessity for bedding tiles, — bedding should not extend below the lap, because of retaining moisture. *Gutters.*—Lead, zinc, and iron; necessity for providing for expansion; drips in lead and zinc; sockets in iron; failures instanced,—in one of which, a wall coping, eighteen consecutive lengths were broken, by compression, at fixed standards. But out of between two and three hundred lengths not one was broken except at standards. *Beams.*—Compound and truss beams, joists a source of weakness; loss of elasticity and strength in flitch-plated beams; tension-trussed floor-beams, unfit to carry machinery because of their want of rigidity; difficulty of getting dissimilar materials to act in unison; homogeneous beams recommended. *Joiners' work.*—Necessity for allowance of shrinkage of panels, and, where exposed to damp, for expansion also; common failures and defects noticed; springing moulding into panels; difficulty of dealing with bolexion mouldings; split panels, &c.

THE TEACHING AT SCHOOLS OF ART.

The following letter is one among others that have been addressed to the Secretary of the Royal Commission on Technical Education, and will explain itself. We shall refer to the subject in uor next:—

Sir,—In reply to your letter dated the 8th inst., making inquiries as to the influence of the existing Science and Art classes available in this district upon the industry in which I am engaged (interior decoration in its various branches), I have to state my opinion as follows:—

(1.) Although a general advance has been made during the last thirty years, both in the taste of the public demand and in the design of objects produced, there is still a lamentable want of sound technical knowledge of the principles and practice of decorative art, particularly as applied to decorative painting.

The advance made is probably due to several causes.

1. The opportunity of comparison afforded by international exhibitions, and by the increased facilities for foreign trade and travel.

2. The establishment of museums and the exhibition of collections of applied art.

3. The establishment of Science and Art classes.

4. The influence of a few earnest and enterprising artists and employers.

The weak point in the advance is, that it is not accompanied by any extended knowledge of art; nor by such a sound knowledge of style as to facilitate healthy criticism; nor, in the case of decorative painting, is it accompanied by any advance in technical facility of execution. It is almost impossible to find a student in the schools of art with any competent knowledge of how to paint ornament for interior decoration, nor have the masters and teachers themselves the knowledge requisite for instructing them. In the schools of art the masters are interested in the encouragement of those studies which secure prizes or grants. The present tendency of the departmental system is to encourage the preparation of prize-winning drawings or other works, often at great sacrifice of time. Still-life painting receives too much attention and reward. There is a general want of training in rapid freehand drawing of ornament on a large scale.

(2.) As to the means of rendering the schools of art more useful.

a. The schools should be kept more closely to their original purpose as schools of design. Less encouragement should be given to the special preparation of laboured prize-drawings, and the most valuable awards should be made on a student's collective work for the year.

b. All Departmental prizes should be such as to assist an earnest student in prosecuting his work,—not such as to encourage the vanity of *dilettanti* students.

c. The number of petty prizes should be diminished, and "local scholarships" and "travelling studentships" multiplied; the local scholarships should be attainable in the several grades; and the higher-grade prizes should be open to those students only who show proficiency in the application of art to decorative purposes.

d. It would not at once be possible, but I would look forward to the time when it should be the necessary qualification of any head master of more than 100 students that he should have taken a travelling studentship, and spent not less than three months in the study of decorative art abroad. I entertain the strongest conviction (one which is shared largely by the principal employers of art workmen in London), that the present system of work in the various schools of art connected with the department requires extensive remodelling before it can render any real help of importance to art workmen or their employers. John G. Crace.

THE PAINTING AND DECORATING TRADE AND ITS SYSTEM.

Sir,—It is quite time that the attention of the nobility and gentry should be drawn to the above, and the deceptive manner in which it is carried on in London. In an excellent article in your valuable journal you drew the attention of the public to the present system of drapers' establishments taking to the above trades; but there are other firms, such as cabinet-makers, upholsterers, and house-furnishers, who profess to be painters and decorators, and even builders, and take the work to do, at the same time knowing that they have not one man of the building trade in their employ. After they obtain the contract or order for the work, they give it, or sublet it, to what is known as a trade shop. Should there be any new building or extensive alterations, that part is let to a building firm; by the time the work is finished there have been three or four fingers in the pie, which means a very heavy percentage above the ordinary charges of a firm employing all their own labour. Two or three firms could be mentioned that take thousands of pounds' worth of work annually; and it is all given to one firm that does the work of seven or eight other spurious decorating establishments. I am quite aware that there are several old-established cabinet-makers, &c., that take the above work; but they employ all their own labour under their respective foremen, with credit to the firm; at the same time I could mention nearly a score of these wrongly-termed decorators within a radius of three miles of Oxford-circus.

The profit that these firms make by doing the work in this manner is oftentimes enormous, and with no serious outlay themselves. But my lords and dukes are told, "We keep a special staff of men for that kind of work," and it answers the purpose. I should like to see or know the firm that keeps a staff of workmen when they have no work for them to do, or that will keep more cats than will catch mice. A Poor Painter.

BLACKMORE PARK.

Sir,—As subscribers to your paper, we hope you will find room in your next issue to mention that the firm of Bromwich, Foster, & Co., mentioned in yours of the 17th inst., as the builders of Blackmore Park, is the same firm as Foster & Dicksee. When the Blackmore contract was undertaken the firm *was* Bromwich, Foster, & Co.; when it was finished the firm was Foster & Dicksee.

Foster & Dicksee.

	State of Trade.	In what Branch.	Supply of Labour.	In what Branch.
Aberdeen	Fair	All, except plumbers and plasterers dull	Good	In all branches, and painters abundant.
*Ashton-under-Lyne	Slack	All, except painters and plumbers, moderate	Good	All.
Alderley Edge	Quiet	All, except masons, bricklayers and joiners, slightly improved	Plentiful	All.
*Altrincham	Slack	All, except bricklayers, middling, and masons very bad	Plentiful	All.
*Beverley	Slack	All, except plumbers, middling	Plentiful	All, except plumbers, sufficient.
Birmingham	Bad	All	Abundant	All.
Bradford	Dull	All	Plentiful	All.
Bristol	Active, but	without prospect	Exceeding demand	All.
*Barnsley	Very bad	All, except painters, moderate	Plentiful	All, except painters, rather scarce.
Barrow	Slack	All	Ample	All.
*Bolton	Quiet	All	Plentiful	All.
*Blackburn	Slack	All, except painters, moderate	Good	All.
Cambridge	Unusually slack	All	Plenty	All.
*Canterbury	Bad	All	Abundant	All.
*Chatham	Dull	All	Above the demand	All.
Coventry	Very quiet	All	Abundant	All.
Cardiff	Fairly good	All	Plentiful	All.
Cirencester	Slack	All	About sufficient	All.
*Cheadle	Very quiet	All, except painters, good	Moderate	All, and masons, joiners, and plumbers plentiful.
Carlisle	Dull	All	Plentiful	All.
*Chichester	Fairly busy	All	Plentiful	All.
*Croydon	Good	All, except bricklayers, fair, and joiners very good	Good	All, except bricklayers and joiners, greater than demand.
Cupar, Fife	Masons very dull, joiners and plumbers quiet, slaters busy, and plasterers fair	All	Above demand	All, except painters, not plentiful.
*Chorley	Bad	All	Plentiful	All.
Crewe	Improved	All	Good	All.
*Crieff	Brisk	All, except painters, very dull	Sufficient	All.
Dalkeith	Very dull	All	Plenty	All.
*Darlington	Very bad	All, except painters, good	Abundant	All.
Derby	Very slack	All	Abundant	All.
Doncaster	Average	All	Plenty	All.
*Dover	Dull	All	Good	All.
*Droylsden	Masons and joiners dull, bricklayers, slaters, and plumbers, moderate, plasterers bad		Good	All, masons abundant, and joiners in excess of demand.
*Devizes	Bad	All, except plumbers and painters, moderate	Plentiful	All.
Dorchester	Very bad	All	Greatly in excess of demand	All.
*Dudley	Very quiet	All	Ample	All.
*Dundee	Painters slack	Painters plenty	Good	All.
Durham	Very dull	All	Plentiful	All.
*Dunse	Bad	All, except slaters and plumbers, good	Greater than demand	All.
*Eccles	Slack	All, except painters, moderate	Good	All.
Edinburgh	Very quiet	All	Abundant	All, except masons, fair.
Folkestone	Bad	All	Plentiful	All.
*Guildford	Very dull	All	Plentiful	All.
Gloucester	Quiet	All, except joiners, fair	Plentiful	All.
Glasgow	Dull	All, except slaters fair, and bricklayers brisk	Plentiful	All.
Greenock	Middling	All	Plentiful	All.
Galashiels	Dull	All, except painters, fair	Good	All.
*Halifax	Masons, carpenters, and plumbers, very slack	Masons, carpenters, and plumbers, good		
*Helensburgh	Dull	All, but masons and bricklayers very dull	Plentiful	All, except plumbers, moderate
*Holmfirth		Carpenters fair, masons dull, and plasterers fair	Good	Only carpenters, masons, and plasterers given.
*Hawick	Masons moderate, joiners and plasterers very slack	Painters bad, and plumbers and slaters fairly busy	Good	All.
*Hartlepools	Masons and bricklayers moderate, joiners improving, plasterers and plumbers good, painters dull		Plenty	All.
*Hartford	Slack	All	Good	All.
Hastings	Dull	All	Generally in excess of demand	All.
*Hull	Slightly improving	All, except plumbers, very quiet, & painters moderate	Plentiful	All.
Hamilton	Very slack	All	Plentiful	All.
Huddersfield	Bad	All	Good	All.
Inverness	Very slack	All	Scarce	All.
*Kidderminster	Very quiet	All	Abundant	All.
London	Very bad	All	Ample	All.
*Leicester	Exceedingly dull and quiet	All	Ample	All.
Liverpool	Quiet	All	Abundant	All.
Lancaster	Slack	All	Plentiful	All.
Lewes	Exceedingly dull	All	Plentiful	All.
Leith	Very quiet	All	Plentiful	All.
Lincoln	Depressed	All	Abundant	All.
Leeds	Bad	All, except plumbers and painters, moderate	Plentiful	All.
Macclesfield	Quiet	All	Good	All.
Manchester	Slack	All	Plentiful	All.
*Mirfield	Quiet	All	Good	All.
Montrose	Slack	All	Good	All.
Northampton	Slack	All, and masons very slack	Abundant	All.
*Northwich	Slack	All	Good	All.
*Newport	Very bad	All	Plentiful	All.
Nottingham	Good	All, plumbers very busy		Plumbers plentiful.
North Shields	Slightly improving	All	Plenty	All.
*Oxford	Slack	All	Ample	All.
Oldham	Slack	All	Plentiful	All.
Perth	Dull	All, except plumbers and joiners, fair	Ample	All.
Portsmouth	Quiet	All	Equal to demand	All.
*Pontefract	Very bad	All	Exceeds demand	All.
Preston	Moderate	All	Moderate	All.
Plymouth	Quiet	All, except plumbers, good	Ample	
*Paisley	Dull	All, bricklayers and slaters good, and joiners and plumbers fair	Plenty	All, except joiners, good.
*Radcliffe	Middling	All	Plentiful	All.
*Runcorn	Bad	All, except plumbers, middling	Plentiful	All.
Rochdale	Slack	All	Good	All.
Reading	Moderate	All	Plentiful	All.
Rugby	Dull	All	Plentiful	All.
*St. Andrews	Quiet	All, except painters, fair	Good	All, except painters and slaters, fair.
*Salisbury	Depressed	All, except carpenters, fair	Plentiful	All.
Scarborough	Bad	All	Plentiful	All.
*Staffordshire Potteries and Newcastle District	Very dull, and no prospect of revival		Masons and bricklayers plentiful, & carpenters in excess of demand	
Southampton	Little doing	All	Plentiful	
St. Helens	Moderate	All	Plentiful	All.
Shrewsbury	Fair	All	Abundant	All.
*Stirling	Dull	All, except plasterers and slaters busy	Plenty	All.
*Staleybridge	Bad	All, except plumbers and painters, fair	Plentiful	All, except plumbers and painters, moderate.
South Shields	Middling	All	Plenty	All.
Southport	Very quiet	All	Abundant	All.
*Sunderland	Fair	All, except plasterers, masons, and bricklayers, very slack, and painters good	Plentiful	All, except joiners, good, and painters fair.
Sheffield	Very bad	All	Abundant	All.
*Taunton	Slack	All	Sufficient	All.
Wolverhampton	Very bad	All	Plentiful	All.
*Weston-super-Mare	Fair	All	Plentiful	All.
*Widnes	Very slack	All	Plentiful	All.
Walsall	Slack	All	Plentiful	All.
Wigan	Very slack	All	Plentiful	All.
Weymouth	Slack	All	Abundant	All.
*Wakefield	Slack	All	Plentiful	All.
Winchester	Not stated	Not stated	Plentiful	All.
Warrington	Moderate	All, except masons slack, and bricklayers and joiners fair	Plentiful	All.
*Worcester	Slack	All	Plentiful	All.
*Whitehaven	Bad	All	Good	All.
West Bromwich	Slack	All	Plentiful	All.
York	Slack	All	Plentiful	All, except slaters, scarce.

Notice of Alteration in the Rate of Wages and Hours of Labour.—Birmingham.—The bricklayers demand advance of ½d. per hour, and sundry alterations in working rules, including notice of abolition of arbitration. The bricklayers' labourers demand an advance of ½d. per hour, and joiners an advance of ½d. per hour, and sundry alterations in working rules, including notice of abolition of arbitration. The plasterers demand an advance of ½d. per hour, and alteration in working rules. The employers have replied by handing back existing rules as counter-notice.

THE SANITATION OF RUSSIAN TOWNS.

The question of sanitation, so important to the densely populated cities of the West of Europe, was not, up to quite recently, one concerning which even large Russian cities troubled themselves much. Russian towns, as a rule, are straggling, and cover a large area. The houses are mostly one or at most two stories high, and a large yard being attached to each house, they are built at some distance from each other. The streets are very broad; in the very centre of towns there were (and in the smaller towns there are up to the present day) large uncultivated and unused spaces. With the exception of St. Petersburg, Moscow, Odessa, Kieff, and a few others, up to within quite recent years even the larger cities had neither pavement nor a water supply. Even in the cities mentioned (excepting, again, Odessa, which may be called a pattern Russian town, as far as order is concerned) the state of the paving and the supply of water are not at all satisfactory. All this explains sufficiently why the subject of sanitation was, until lately, a matter unknown in Russian towns.

The question became a burning one first for St. Petersburg, built, it is well known, on a vast morass, the statistics of mortality of which are so abnormal that, were it not for the continuous immigration from the provinces, it would long ago have been a deserted city. After a great portion of the town had been supplied with Neva water, and the use of water-closets had become general, the evils attaching to the traditional night-soil wells became more striking. While subterranean wooden or stone channels exist for carrying off surface water into the Neva, the night-soil accumulated in the wells is daily moved out of the city in barrels, and deposited outside its boundary. The level nature of the ground on which the capital is built and the high level of the underground water present very great difficulties, and point to the pneumatic system as the only true solution. An experimental station was, with this view, erected on Semyonoff-square, and trials were made on M. Liernur's plan, in the first place, with the barracks there. The results were very satisfactory; but, although the system tried found much favour, the authorities do not appear to be in a hurry to apply it to the whole of St. Petersburg, on the ground, seemingly, that it has given rise to much complaint in some small Dutch towns. Another sanitary engineer, M. Bouroff, is also experimenting in St. Petersburg with a pneumatic system, differing from that of Liernur only in detail. Thus he does not connect the street sewers direct with the closets, but with the night-soil wells. He also employs a steam aspirator, for creating a vacuum, &c.; but nothing definite has as yet resulted from his experiments. The question is consequently still in the experimental and controversial stage at St. Petersburg.

Moscow has made greater progress in this respect. There it was at once recognised that the flushing system was the most practicable. Preliminary inquiries have been made in detail, and the city authorities are even said to be in possession of a plan prepared by Baurath Hobrecht, of Berlin. But its execution does not seem to progress very quickly, for Prince Dolgoroukou, the governor-general, has requested the central government to take charge of the important question of a sewerage system for Moscow, and to appoint a commission consisting of representatives of the city, the county (*zemstvo*), the government, and technical societies.

Odessa, which enjoys the reputation of being the best paved city in the whole of Russia, and which possesses a capital water supply, is also the best drained city. Its sewers are constructed on the flushing principle, but it is a cause for regret that the system does not comprise the whole of the city, the outer parts of the town not being included in the network of canals. The fact is, the system is not obligatory, each house-owner being free to adhere to it or to continue in his house the old abominable plan of cesspools; in the former case, however, he has to subscribe to certain conditions of a technical nature. But all the good that is effected by the excellent sewerage of Odessa is almost rendered nugatory by the circumstance, that the outfall of the main sewer is in the middle of the harbour, close to the public bathing establishments!

In the oldest of Russian cities,—venerable Kieff,—serious attention was first drawn to the question of canalisation a few years ago, when it was found from the death-rate statistics of the town (which is situated in a most charming position on the high hills bordering the river Dnjepr, here both wide and rapid in its course) that the rate of mortality was unusually high,—over 38 per 1,000 in a population of nearly 200,000 souls. A commission, consisting of engineers and physicians, was appointed by the municipality in 1879, who submitted an exhaustive report, in which they embodied the following resolutions:—(1) That the sanitary condition of the city was one full of apprehension. (2) That the cause of this state of things must be sought in the pollution of the soil and the underground water by night-soil wells. (3) That a flushing system is the best mode of cleansing the hilly town of Kieff, although the preparation of irrigation areas would cause difficulties. (4) That the annual outlay for keeping the sewers in order, and for interest and amortisation, would be less than the present cost of removal. (5) That a separate network of sewers is to be constructed for carrying off surface water, but only in the principal streets. (6) That the question of expense could be solved correctly only after the completion of the preliminary works, but that it might be stated that the total cost would not be more than 2½ million roubles (15 to 20 roubles per head of the population).

The town council agreed to this report of the special commission, and ordered preliminary works to be commenced. During last summer those works, of a topographical, geological, and statistical nature, were actively prosecuted; and at the present time plans and tables are being prepared with a view of drawing up the final project. Thus the matter of sewerage is in a fair way of being settled at Kieff. There is, however, a law in Russia which forbids the pollution of public water-courses. Now, the municipality of Kieff is on the point of asking permission for carrying the sewage of the town to a certain distance below it, and there construct an outfall into the Dnjepr. If it is considered that this river has a velocity of 0·75 mètre with a volume of water of over 200 cubic mètres per second, and that its riparian population is very thinly scattered, it is thought that such a proposal will carry no hidden danger. On the other hand, the preparation of irrigation areas, available only far from the city and at a height of nearly 80 mètres above the collecting basin, would increase the expense to such an extent that it may well be said that the next phase of the canalisation of Kieff depends upon the decision of the Government, in regard to which it may be said that a similar consent was given in the case of Warsaw.

In that city the works for a system of sewerage by flushing, with an outfall into the Vistula, are in course of execution, after plans by Mr. Lindley. At Warsaw, as elsewhere, the subject gave rise to much discussion, and it remains yet to be seen whether the solution of the question by an outfall into the river is the correct one. Grave doubts are entertained on that point, but, at any rate, Warsaw will soon have a rational system of sewerage in operation, and defects, should there be any, will probably be satisfactorily remedied.

The question of sanitation has been mooted in several other smaller Russian towns,—at Charkoff, for instance, and elsewhere; but it has not yet emerged from the stage of municipal discussion. But there is no doubt that the public interest has been aroused, and a number of engineers are working hard to keep it alive, to extend it, and to cause it to bear practical results. Lectures on the sanitation of towns are being delivered in scientific circles; the organs of learned societies are full of papers on the subject, which are partly reprinted in popular form in the daily journals; and everything is being done to promote a movement upon which depend the health and well-being of the populations of Russian towns.

We are indebted for the above particulars to a valued German contemporary, the *Gesundheits Ingenieur*.

Hygienic Dress.—An exhibition of hygienic dress, decoration, and sanitary domestic appliances, under the auspices of the National Health Society, is to be held in June next, in the Knightsbridge Hall. Miss Lankester, of 44, Berners-street, will give any information desired.

BUILDING PATENT RECORD.*

APPLICATIONS FOR LETTERS PATENT.

705. W. Russell, Pandleton. Kitchen ranges and stoves. Feb. 9, 1883.

712. G. Ermen, Holcombe. Fireplaces, stoves, and grates. Feb. 9, 1883.

714. S. Deards, Harlow. Apparatus for warming houses. Feb. 9, 1883.

753. J. H. Johnson, London. Machinery for sawing, polishing, &c., stone marble, &c. (Com. by G. Westinghouse, Pittsburg, U.S.A.) Feb. 10, 1883.

762. A. Codd, London. Prevention of water waste and flushing cistern. Feb. 12, 1883.

803. W. Mullett, Brierley Hill. Construction of walls for buildings to prevent damp. Feb. 14, 1883.

812. H. Thompson, London. Domestic stoves and grates. Feb. 14, 1883.

826. W. Blakely, Bournemouth. Preventing the radiation of heat through the roofs of houses, &c. Feb. 14, 1883.

NOTICES TO PROCEED

have been given by the following applicants on the dates named:—

Feb. 13, 1883.

4,980. H. McRuer, Glasgow. Cooking-ranges. Oct. 19, 1882.

5,124. A. W. L. Reddie, London. Alarm-bells for doors, &c. (Com. by E. J. Masseron, Paris.) Oct. 27, 1882.

5,301. R. G. Hodgetts, Birmingham. Manufacture and ornamentation of metallic furniture. Nov. 6, 1882.

Feb. 16, 1883.

4,875. E. Guattari, London. Preventing the surreptitious opening of doors and windows. Oct. 13, 1882.

ABRIDGMENTS OF SPECIFICATIONS.

Published during the Week ending February 17, 1883.

2,973. R. Boyle, London. Ventilators for buildings, &c. June 22, 1882. Price 6d.

This consists of various arrangements of the deflectors in ventilators.

3,000. G. Dawson and C. Butcher, Thorncliffe. Kitchen ranges. June 24, 1882. Price 6d.

This consists in making these ranges self-contained and independent of any brickwork, and allowing air to pass through the furnace-door to circulate round the oven, &c.

3,034. F. A. Bonnefin, London. Receiving and collecting excrementitious and other foul and waste solid and liquid matter in houses, &c. June 27, 1882. Price 6d.

The solid and liquid matters are divided from one another, and collected and separated in a receiver in the bottom of the house.

3,096. H. Conolly, London. Water-waste preventers. June 30, 1882. Price 6d.

The cistern is fitted with a syphon consisting of the discharge-pipe rising up through the bottom of the cistern, covered with a cap which forms the short leg. The top of the cap is enlarged by a shoulder which prevents the water falling back noisily into the cistern when the flush is ended, and a small pipe descends from this shoulder to allow air to enter the syphon when the flush is nearly ended, and gradually to finish the same. The displacer is a floating body formed round a tube rising up in the cistern, and the pull passes through the bottom of the cistern up through this tube, and is connected to the top of the displacer. When the displacer is pulled down into the water the syphonic action is established. The supply-pipe is led to the bottom of the cistern to obviate any noise from the inrush of water.

3,110. J. Brownrigg, Windermere. Door furniture. July 1, 1882. Price 4d.

A spring washer is passed over the spindle on to the adjusting nut, and the knob is screwed up tight against it.

3,116. E. V. Emery, London. Venetian blinds. July 1, 1882. Price 2d.

The cords pass through pieces of indiarubber attached to the laths, so that when the cords are pulled the latter are lifted, and collect at the top instead of at the bottom of the blind. (*Pro. Pro.*)

3,127. G. Hodson, Loughborough. Manufacturer of artificial stone or concrete. July 3, 1882. Price 2d.

The stone is made with Portland cement coloured by natural oxide of iron. (*Pro. Pro.*)

3,145. C. Priestland, Birmingham. Rack-pulleys for blind-cords. July 4, 1882. Price 6d.

The rack-teeth are cut in the sides of the carrier slides in which the tooth of the pulley-frame engages.

3,168. M. Kellow, Merioneth. Cutting and dressing stone. July 5, 1882. Price 2d.

The cutters are square bars of steel mounted on a disc which is rotated. (*Pro. Pro.*)

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* Compiled by Hart & Co., Patent Agents, 186, Fleet-street.

3,191. W. C. Gibson, Newcastle. Manufacture of bricks, &c. July 6, 1882. Price 2d.

The bricks are coated with glaze in their damp state and then pressed. (*Pro. Pro.*)

3,316. W. R. Lake, London. Conduits for gas and water, &c. (Com. by A. Kerandt, Essen, Germany.) July 12, 1882. Price 2d.

These are made of corrugated metal tubes or cylinders.

5,197. W. R. Lake, London. Apparatus for flushing water-closets, &c. (Com. by J. Cooper, Boston, U.S.A.) Oct. 31, 1882. Price 4d.

The tank is divided into two parts by a horizontal partition. A double-faced valve fits the seats on the partition, and on the bottom of the tank. When this is lifted it allows the water in the lower part to flow down to the closet, and when the valve is released it is checked in its descent by the air in an annular cylinder surrounding the discharge-pipe from which the air is only allowed to pass out very slowly. The water from the upper part of the tank, therefore, also passes down the discharge-pipe.

A CONCRETE VAULT FOR HEAVY LOADS.

THE drain of a manufactory at Gernsbach (Baden) has just been covered in with a vault constructed of concrete, of unusual dimensions, and intended to bear a very heavy load. According to the *Deutsche Bauzeitung*, the vault is 184 ft. long, in the form of a three-centred arch of a span of 24 ft., has a rise of 8 ft., and a thickness in the crown of 1 ft. 10 in. In the spring of the arch, an upper as well as a lower boarding was employed in making it. The vault was constructed in lengths of 15 ft. The concrete was stamped in as nearly as possible in the radial direction of the arch. The mixture used consisted of one part of Portland cement, five parts of broken granite, and two parts of clean sharp quartz sand. The cost was about 21s. per cubic yard. For the abutments and the inclosure walls, another mixture was employed, which consisted of one part of cement, seven parts of broken granite, and two parts of quartz sand, and cost 15s. per cubic yard. Upon the face of the arch rises the facing wall of the building erected on it, which, including the roof, represents a weight of 42 tons. The vault is loaded, further, by a steam boiler and a soda boiler to the extent of nearly 2 tons per square yard of surface.

THE NEW TECHNICAL COLLEGE AT FINSBURY.

THE New Technical College which has been erected by the City and Guilds of London Institute in Tabernacle-row, City-road, was opened on Monday last, when Mr. Philip Magnus delivered the inaugural lecture. The building is of brick and stone, solidly and practically designed by the architect, Mr. E. N. Clifton, who built the Cowper-street Schools, in the rear of the college, which have served for some time past as a temporary habitation for the large and increasing body of students. In special details the architect has been assisted by the suggestions of the director of the Institute and present principal of the college, Mr. Philip Magnus, and the professors at the head of the various departments. One of the rooms set aside for delicate physical experiments is worthy of remark as being fitted with isolated tables or piers rising through holes in the floor, from which and the rest of the building they are entirely disconnected, with the object of avoiding any disturbance to which the general edifice may be subjected. This room is situated on the ground floor, which is divided into numerous large rooms for various departments of physics, for the making and alteration of apparatus, for drawing of various kinds, and so forth. Most of the rooms have plain granitic brick walls, without plaster or ornament of any kind to distract the attention from study. In the so-called brewing-room, the room for metallurgical work, and other apartments of the basement, the walls are lined with white enamelled brick, for the double reason that the surface resists humidity and reflects instead of absorbing light. The basement is fitted with the gas and steam engines, boilers, and furnaces necessary for the lighting, warming, ventilation, and general service of the building, all this machinery being arranged in ample space, so that students may be instructed in its management and taught to draw and thoroughly understand its various parts. The lighting of the building will be divided between the Siemens' gas and the electric light on the Edison system. The upper floors are devoted to class-rooms, lecture-rooms, each capable of holding 200 students, and to the great chemical laboratory already described. The amount of labour required to plan and construct a building for the special purposes already enumerated can hardly be over-estimated; yet the work has not only been done well but quickly. It is not two years since the building of the college was finally decided upon, and only a year and three-quarters since the Duke of Albany laid the foundation-stone. We may have more to say about the building on a future occasion.

Mr. Magnus, in the course of the opening lecture, before mentioned, said that the majority of people took a very narrow view of the extension of technical education, while others were unable to understand the different kinds of training to which it was applicable. He proposed to call that training, education, or instruction, technical which had direct reference to the career of the student who received it, whether he were engineer, weaver, manufacturing chemist, or cabinetmaker. If he were asked to state in a word what had given rise to the necessity for technical education in the narrower signification of the term, he should answer, the invention of the steam-engine, as it was to that primarily that we owed production on a large scale, which, in its turn, had lead to the breaking-up of the apprenticeship system, thus necessitating some other kind of training. In the development of this scheme of technical education, every improvement made in elementary and intermediate instruction would facilitate the work, and he thought one important step would be to have drawing better taught to the children in primary schools; while in Manchester a good example had been set by the children being practically instructed in the use of ordinary tools in woodwork. The college would consist really of a day-school which would fit the student for engineering or the workshop, and an evening-school, which was intended to help those already engaged in the various industries in understanding the processes underlying their daily work. It would also receive pupils from the middle schools, and while the majority of them would complete their education there, the others would be enabled to proceed by means of scholarships to the central school at South Kensington. It was not to be a school where any actual trade would be taught, but a means by which workmen might supplement their education and their knowledge of the work in which they were engaged. Every pupil on entering would declare to what industry he wished to apply himself, and then he would find a course of instruction drawn out for him on the indicated lines.

HOUSE DECORATORS' CLUB AND INSTITUTE COMPANY.

THE second annual general meeting of this company was held on Thursday evening, the 15th inst., in the large billiard-room of the club, 19, Howland-street, Tottenham-court-road, the necessary alterations to the general meeting-room not having been completed; plans for these alterations have been generously given by Mr. Lewis P. Crace, of Wigmore-street.

The report, showing that the club had been opened since January 1st, and that no liabilities had been incurred up to the date of report but what were doubly covered by the calls on shareholders now being made, and that their success was largely due to the aid given by the trustees, Messrs. J. G. Crace and J. H. Donaldson, was, after some discussion, adopted, the directors explaining that the high salary now paid to the secretary was to be only during the organisation of the club. The secretary, treasurer, and auditors were then re-elected; a sum of 30s. being voted to the last-named for their services.

The board of directors was reduced to twelve, three of the retiring directors and others being elected to complete that number. A hearty vote of thanks was given to the directors, they refusing any remuneration for their services.

The Chairman (Mr. J. H. Donaldson), replying to the usual vote of thanks, said he was very pleased to have met them in their own place, and he had additional hope for their ultimate success from the careful manner in which they had discussed their balance-sheet that evening. He was very deeply interested in the welfare of the working-man, as, with a large number of them his own interests were at all times bound up. He would endeavour to secure for them the services of gentlemen of ability to deliver lectures on matters connected with their trade, and meanwhile would call special attention to the very interesting lectures on the history of ornament about to be delivered by Dr. Zerffi at the Painters' Hall, under the auspices of the Painters' Company. He has ventured that day to send them a number of book as the nucleus of a library, and he would promise to follow this up by sending works of a technical character selected with a view to place within reach of all the members the best obtainable information relating to their trade.

After the meeting the members visited the reading-room to see the books referred to,—a goodly array of thirty-one volumes of the works of Dickens, together with the poems of Scott and Hood. The poems of Burns have already been presented by a member, while over the chimney-piece is a neatly-framed illustration from the *Builder* of the staircase at Mercers' Hall, given by one of the members engaged on the work there.

The Phœnix Society and the Society of United Brothers, two of the very oldest benefit societies connected with the trade, now hold their weekly meetings at the club.

The co-operation of employers or operative decorators is invited either by taking up shares or becoming members of the club.

SMOKE AND WESTMINSTER ABBEY.

SIR,—The Council of the Smoke Abatement Institute have forwarded a memorial to the Home Secretary, requesting him to urge upon the magistrates the necessity of using to the full the powers they possess of inflicting fines and repeated penalties on offending manufacturers, who are responsible for the rapid decay of the stone of such buildings as the Abbey, Lambeth Palace, and the Houses of Parliament. If Sir W. V. Harcourt and his ædiles will enforce the prayer of the petitioners, it is certain that a clearer atmosphere will result. But what then? Will not the *invisible* gases which are known to result from coal combustion, salt glazing of pottery, gas-making, and numerous other operations, be more destructive than ever to buildings constructed of calcareous stone? It is true that the memorialists mention noxious vapours from workshop furnaces as well as smoke, but, as far as I am aware, they have hitherto confined their most laudable efforts solely to the complete combustion of coal. To the general public this would, doubtless, appear an all-sufficient boon. The Duke of Westminster, Mr. Hart, Lord Algernon Percy, and the other memorialists, however, refer to the rapid destruction of the public buildings by these powerful gases,—hydrochloric, carburetted hydrogen, sulphuric, ammonia; and if they are to be protected from further injury, I apprehend that special means beyond the perfect combustion of fuel are necessary.

The unconsumed carbon deposited on our public edifices, though very injurious to their architectural effect, and very offensive to the eye, is a comparatively innocent offender in destroying them. The gases I have referred to are the real culprits. When Dr. McCormack in 1872 analysed an old piece of stone from Lambeth Palace, it was hydrochloric acid,—an invisible enemy,—that he discovered some inches below the surface, and to that extent the cementing ingredients had been entirely destroyed. Analysis would show the same result with stone from the Palace and Abbey in Westminster, and all other buildings of calcareous stone.

There can be little doubt as to the possibility of destroying these invisible enemies to the architect and his works, but I fear that if Mr. Hart and his friends should clear the London atmosphere of smoke they will, naturally enough, feel that they have completed their difficult task; but then our freestone buildings will still go on decaying.

As, therefore, under the most favourable circumstances, it must be years before the London atmosphere will be restored to something like its normal purity, I venture to invite the rising generation of architects to turn their attention to the use of materials of known durability in London and of an appropriate pre-Renaissance style, the characteristic of which must be colour as opposed to carving and moulding, and of which Italy and the East furnish numerous examples. The materials I refer to lie, so to speak, at our very doors, and indeed are occasionally used for special architectural effect. If these red, white, and grey granite, porphyries, green serpentines, and black basalts were applied in construction in a manner similar to ornamental brickwork instead of the present Greco-monolithic method of using them, an architectural style, not only novel but of everlasting durability, and without extra cost when compared with carved and moulded stonework

would be the result. The importance of some such movement as I venture to recommend is strongly enforced by the statement of the Chief Commissioner of Public Works, Mr. Shaw-Lefevre, that 2,500*l.* are annually spent in repairing the stone of the Houses of Parliament.

Henry Travis.

AN APPEAL TO THE BENEVOLENT.

Sir,—Knowing how widely your paper is circulated among those who know only too well the dangers attendant upon sewer work, will you kindly allow me, through the medium of your columns, to appeal to the sympathy and generosity of the benevolent public of a wider sphere than our own immediate neighbourhood for assistance towards the relief of the widow and fatherless children of the late William Young, who met with an untimely death on the 6th inst. by a quantity of earth falling upon him when working in a sewer heading.

He had been in the service of the Folkestone Corporation for many years, and was highly respected both by his employers and fellow-workmen. He was a temperate, industrious, energetic, and skilful workman, ever ready to lend a helping hand (especially in cases of emergency), and indefatigable in his services as a fireman.

His awfully sudden death is, I am sorry to have to state, not the only cause which awakens our sympathy; the poor fellow went home to his tea at five o'clock, when he found his wife had been confined in the afternoon; he returned to his work, and shortly after six p.m. was a corpse, thus leaving a widow with seven children totally unprovided for. She naturally will not be able for some little time to contribute anything towards their maintenance, but I feel sure, she being a hardworking woman, will, with the assistance of kind friends, fill the place of the deceased towards her children.

His Worship, the Mayor of Folkestone (Mr. J. Sherwood, 3, Sandgate-road), and the Rev. R. Foster Jeffrey, 25, Brockman-road, have kindly offered to receive subscriptions, and which I most earnestly solicit on behalf of the widow and orphans.

They will also be thankfully received by me, at my Office, Dover-road, and duly acknowledged in the public press.

A. W. Conquest, *Borough Engineer.*

Folkestone.

BOOK-KEEPING COMPETITION.

Sir,—In consequence of a notice in your paper of a prize to be offered by the Royal Agricultural Society of England, I sent in a plan of book-keeping suitable for farm accounts.

I now enclose the circular of the judges, who have found that none of the plans were good or simple enough to meet the requirements of the ordinary farmer.

May I be allowed to point out that the failure in this, as in so many competitions, arises from the want of distinct regulations or information as to the actual requirements of the case?

You will observe that there are but two short heads, and having got the plans, the judges then proceed to lay down two more rules which should have appeared at first, viz.:—

3. That the accounts be adapted to a mixed farm of 200 to 300 acres.

4. That they be on the columnar system.

I venture to suggest that if they will offer another prize with these additions they will meet with success.

Accountant.

GAS *v.* VEGETATION.

Sir,—Mr. Killingworth Hedges, C.E., appears to have forgotten that there are a large number of gas-heating and cooking stoves, &c., and many hundreds of gas-burners alight daily in the Crystal Palace, besides the suspending lamps used for lighting the south nave, &c.; in fact, there is sufficient gas consumed in the building daily to properly light many such buildings. I do not agree with Mr. Hedges's remarks respecting cheapened gas-lighting; they may be correct as far as regenerative burners are concerned, but these are mostly used for street-lighting. If Mr. Hedges will test them he will, I think, find that an improved flat-flame burner does not produce so much heat as the old fish-tail burner, although it gives much more light with the same amount of gas.

Arthur Clarke.

CHURCH-BUILDING NEWS.

Balsall Heath.—The church of St. Thomas-in-the-Moors, Cox-street West, Balsall Heath, has been opened for Divine worship, but its consecration by the Bishop of Worcester has been deferred until the building has been enlarged and an ecclesiastical parish constituted. The church was built out of funds bequeathed for the purpose by the eminent surgeon, the late Mr. Sands Cox. The foundation-stone was laid about fifteen years ago, but little progress was made until two or three years afterwards, when Mr. Sands Cox died, and left the sum of 3,000*l.* to complete the church, provide a memorial east window, and form an endowment for the future incumbent. When the church was built, grave difficulties at once presented themselves, arising out of the fact that Mr. Sands Cox had executed two trusts, one relating to the site and the other to the patronage. As the former trust included the church, it was found necessary to amalgamate the trusts, and in order to do this, application had to be made to the courts of law. A considerable time elapsed before sanction was obtained for placing the patronage of the fabric in the hands of the same trustees, but eventually this object was accomplished. At present the building, which is a plain brick structure, only consists of the nave and aisles, with a small chancel and vestry, and the accommodation is very limited. It is proposed to extend the nave and chancel, and, if space allows, to add transepts and an organ-chamber. Increased accommodation will be provided for 200 more worshippers. About 1,000*l.* is the sum required to enlarge the church, and it is expected that it will be finished by Midsummer.

Plymouth.—A parclose screen has just been added to the internal fittings of St. Peter's Church, Plymouth. It stands upon the south side, and fills the whole of the eastern bay of that arcade. The extreme height of the screen is 23 ft., and its width 15 ft. The lower portions,—that is, the columns and carved capitals which surmount them,—are of red Corsehill (Scotch) stone, whilst the dwarf wall below them, and all the rich tracery work above, are of Bath stone. The style of work is, of course, of the "early" type which pervades the whole building. The screen, like the alabaster and metal rood-screen recently erected, is the handiwork of Mr. Harry Hems, of Exeter. A third screen is in Mr. Hems's hands, and will be fixed after Easter immediately in front of the organ. It is of similar character to the one just finished. These screens have been carried out from the designs and under the personal supervision of Mr. George H. Fellowes Prynne, architect, London.

Miscellanea.

New Harbour Works at Genoa.—The defective harbour accommodation of Genoa has long been a subject of complaint. To meet this want most extensive works are in course of execution. At present the quays of Genoa Harbour are only 26 ft. wide, and its moles narrow, so that vessels are compelled to unload into smaller lighters in the open roadsteads. It is proposed to construct six new moles, each 660 ft. long and 330 ft. wide, and to widen the quays to 495 ft. Large warehouses are to be erected on the quays, and connected by a branch railway with the central terminus of Genoa at San Pier d'Arena. The estimated cost is 1,560,000*l.*, 800,000*l.* of which are covered by a legacy left by the late Duke of Galliera. The works are expected to be completed by 1888. The need for enlarged harbour accommodation for Genoa will be understood when it is stated that in 1880 the tonnage which entered the port was 1,200,000 tons.

The International Electric Exhibition, Vienna, 1883.—His Imperial Majesty the Emperor Francis Josephus has been pleased to order the artistical establishment of Carl Giani to produce a pavilion for the electric exhibition. This pavilion is, according to the intentions of his Imperial Majesty, for the purpose of demonstrating the effects of electric light on richly-worked draperies and embroideries. According to the plans, already in progress, this pavilion, for which the exhibition is entirely indebted to the munificence of his Majesty, will be of considerable dimensions, and carried out in a pure architectonic style well suited for the purpose, and richly decorated with precious stuffs. It will be arranged for the alternate application of different systems of electric light in order to show their relative effects.

A New Hospital for Darlington.—As will be remembered by some of our readers, we called attention some three years or so ago to the unsatisfactory state of the present building, and we have now much pleasure in stating that a new hospital is to be erected forthwith. At a largely-attended meeting of the committee, held on the 16th inst., it was moved and seconded that local architects be invited to submit designs in competition. The motion was, however, lost, and Mr. G. G. Hoskins was appointed architect for the new building.

The Bedford Park Estate.—Mr. J. Donkin writes from the Bedford Park Estate Office, Chiswick, to correct a statement of *The Medical Press*, to which we gave publicity last week under the head of "Builders' Eccentricities." He says the statement that the larders are invariably next water-closets, and that in the majority of cases the doors opening into the injecta and ejecta respectively are directly contiguous, is untrue. In no single instance that he knows of are the doors of such places planned contiguous or near each other.

School Board Schools in Glasgow.—New Board Schools in Dennistoun and John-street, Bridgeton, in the east end of Glasgow, were opened on the 10th inst. by the Right Hon. Lord Young. From a statement made at the meeting by Mr. Fife, convener of the Property Committee, we learn that the site for John-street School extends to 3,989 square yards, the whole of which is available for building. Mr. William Landless, architect, by the plans prepared has utilised the ground as follows, namely:—School buildings, 1,012 square yards; playground and offices, 2,977 square yards—total, 3,989 square yards. The total accommodation provided is for 1,149 scholars, allowing 8 square feet for infants and 10 square feet for the older scholars. This school and the one at Dennistoun are the first schools that have been built in the city according to the most recent requirements of the Scotch Education Department. The plans were transmitted to the Scotch Education Department on the 1st February, 1881, and returned, along with the specifications approved of, on May 15, 1881. Offers for the principal artificers' work were accepted on June 17, 1881, viz.:—1, Mason work (Mr. Alex. Muir), 4,599*l.*; 2, joiner work (Messrs. Macaulay & M'Gibbon), 2,640*l.*; and other trades bring up the total to 9,561*l.* 3s. 5½d. Mr. Landless, architect, has added to this amount—for furniture, architect's fees, &c., the sum of 1,200*l.* The cost of the buildings will be equal to 9*l.* 7s. 7¾d. per scholar. The site for the school cost, including legal expenses, the sum of 7,047*l.* 9s. 11d. The total cost of the site and buildings is 17,808*l.* 13s. 4½d., which is equal to 15*l.* 9s. 11¾d. per scholar. The site for Dennistoun School extends to 4,529 square yards, of which 3,300 are building ground. Messrs. James Salmon & Son, architects, by the plans prepared have utilised the building ground as follows, namely:—School buildings, 1,000 square yards; playground and offices, 2,300 square yards—total, 3,300 square yards. The total accommodation provided is for 1,050 scholars—allowing 8 square feet for infants and 10 square feet for the older scholars. As already stated, this school, and the one at John-street, Bridgeton, are the first schools that have been built in the city according to the most recent requirements of the Scotch Education Department. The plans were transmitted to the Scotch Education Department on May 19, 1881, and returned, along with the specifications approved of, on June 11, 1881. Offers for the principal artificers' work were accepted on September 26, 1881, namely:—Mason and brickwork (Parker & Dick), 3,372*l.*; wright work (William Lightbody), 2,468*l.* 10s. 3d.; and other trades bring up the total to 8,391*l.* 8s. 0½d. Messrs. James Salmon & Son have added to this amount for furniture, architects' fees, &c., the sum of 1,901*l.* 6s. The cost of buildings will be equal to 9*l.* 16s. 0½d. per scholar. The site for the school cost, including legal expenses, the sum of 3,888*l.* 14s. 3d. The total cost of the site and buildings is 14,181*l.* 8s. 3¾d., which is equal to 13*l.* 10s. 1½d. per scholar.

Slaughter House Reform.—At the usual monthly meeting of the Sanitary and Economic Supply Association, held on the 17th inst., in the School of Science, Gloucester, the Bishop of Gloucester and Bristol in the chair, after a discussion on the above subject, introduced by Dr. Wright, F.R.S., Medical Officer of Health for Cheltenham, the following resolution, proposed by Dr. Bond and seconded by Mr. S. Bowly, was unanimously adopted: "That this meeting desires to express its warm approval of the principle of public slaughter-houses as conducive to the interests of economy, health, and humanity; and its earnest hope that the local authorities of this neighbourhood will, with as little delay as possible, take such steps as may be in their power to provide for this most pressing want."

Chandler's Patent Supply Cistern. Our advertisement columns give a representation of a supply cistern for kitchen-range boilers, which is of a neat design, besides possessing several improvements over the old-fashioned square cistern. For example, the old-fashioned cistern possesses no facilities for fixing, but requires either a brick pier to be set on, or a niche in the brickwork, whereas this cistern has four lugs by which it can be fixed with screws or nails, and being of a neat appearance it can be placed in sight. It is fitted with ball-valve, connecting-screw, and union complete, and deserves to be looked at.

Sunday Schools, King's-Lynn.—On Tuesday last, a bazaar was opened at the Athenæum King's Lynn, Norfolk, in aid of funds for building the Wesleyan Sunday Schools. The buildings are approaching completion and the accommodation will consist of lecture-hall, 60 ft. by 40 ft. and 26 ft. high, with panelled boarded wagon-roof. The room will be lighted by three large windows with traceried heads; the artificial light will be supplied by a sunburner, and by brackets at the sides. Five class-rooms are provided, opening directly into lecture-hall and are divided from it by sliding doors; each classroom is well lighted by a large three-light window, glazed with lead lights, and will have plastered ceiling and cemented dado. The library adjoins the class-rooms and is similar in all respects. The buildings will be heated by Messrs. Bacon & Co. on their small-pipe principle. The buildings are designed in the Perpendicular style, and are constructed of stock bricks faced with Bracknell red bricks; the mullions to windows and all dressings are of Ascelles's concrete; the roofs are boarded and slated. The cupola, which rises to a height of nearly 60 ft., is covered with lead, and the sides with oak shingles. Mr. Brown, of Lynn, is carrying out the works, and Mr. Lock, of Norfolk-street, Lynn, is providing the stained glass. The buildings have been designed and are being carried out under the personal superintendence of Mr. Hatchard Smith, architect, of Moorgate Station-buildings, London, with Mr. Tilliam as clerk of the works.

Messrs. Crosby Lockwood & Co. have in active preparation and will publish, it is hoped, in the autumn, an extensive work on British mining by Mr. Robert Hunt, the well-known Keeper of Mining Records. The book will, we are informed, comprise a practical treatise on the metalliferous mines and minerals of the United Kingdom, dealing comprehensively with the theories of mineral deposits, the history of mines, their practical working, and the future prospects of British mining industry. The work will be fully illustrated.

The Late Earl of Beaconsfield. — In memory of the late Earl of Beaconsfield a simple memorial tablet of brass has been erected in the Church of St. Wystan, Bretby, Derbyshire, by the Countess of Chesterfield, with "a record of a much-prized friendship, and a lasting regret." The brass, which measures 2 ft. 4 in. by 2 ft., has been executed by Messrs. Thomas Pratt & Sons, Southampton-street, Strand.

Value of Land.—The *City Press* states that land in South London has increased enormously in value. At Norwood a plot which was valued at 500*l.* ten years ago is now worth 5,000*l.* And this is not exceptional.

New "Sportsman" Office.—The constructional ironwork in these premises, described in our last issue, was supplied by Messrs. Chas. Williams & Co., of the Ferry Iron Works, Cubitt Town.

TENDERS.

For the erection of Infants' school, Bromley, Kent. Mr. Richard Creed, architect:—

Humphris, Sutton, Surrey	£1,518 0 0
Somes, Bromley	1,398 0 0
Smith, Bromley-common	1,239 0 0
Arnaud & Son, Bromley	1,180 0 0
Crossley, Bromley	1,166 0 0
Balding, Bromley	1,150 0 0
Stewart, Wallington, Surrey	1,128 0 0
Payne, Bromley	1,120 0 0
Satchell, Bromley	1,113 1 8
Grubb, Bromley	1,105 0 0
Yates, Bromley-common (accepted)	1,071 2 0

For rebuilding the ancient tavern of the Old Five Bells, Bromley-by-Bow, for Messrs. J. Carter Wood & Co., The Limehouse Brewery, Westminster. Mr. John Calder, architect. Quantities by Mr. Edward Crutchloe:—

Richards & Son	£3,385 0 0
Boyce	3,150 0 0
Calnan & Co.	3,073 0 0
Falkner	2,957 0 0
Curtis	2,900 0 0
Merritt & Ashby	2,900 0 0
Gregory	2,880 0 0
William King & Son	2,840 0 0
Crisp	2,783 0 0
Stilling	2,742 0 0

For the alterations to the Victoria Dock Tavern, Canning Town, for Messrs. J. Carter Wood & Co., The Artillery Brewery, Westminster. Mr. John Calder, architect. Quantities by Mr. Edward Crutchloe:—

Richards & Son	£555 0 0
William King & Son	415 0 0
Stilling	378 16 0

For extension to factory in course of erection for Mr. Hedk. Foster (Contract No. 2), Hoxton. Mr. Spencer Grant, architect, 63, Finsbury-pavement:—

Atherton & Latta (accepted)	£450 0 0

For the St. Leonard's-road Schools for the School Board for London. Mr. E. R. Robson, architect:—

Wood	£18,883 0 0
Boyce	17,700 0 0
Brass	17,513 0 0
Kirk & Randall	17,389 0 0
Grover	17,372 0 0
Jerrard	16,983 0 0
Shurmur	16,965 0 0
Perry & Co.	16,448 0 0
Harris & Wardrop	16,438 0 0
C. Cox	16,420 0 0
Atherton & Latta	16,200 0 0

For cabinet and counter fittings to the Nun's Head, Nunhead-green, for Mr. F. J. Johnson. Mr. W. H. Jervis, architect:—

	In pine.	In mahogany.
Gill	£261 0	£291 0
Lewis	196 0	246 0
Rissel	190 0	210 0
Pierce	159 0	199 0
Taylor (accepted)	186 0	196 0

For alterations and repairs to No. 38, Park-lane, exclusive of decorations. Messrs. William Wallace & Flockhart, architects, 27a, Old Bond-street. Mr. F. Thomson, architect:—

J. McLachlan & Sons	£1,40[illegible] 0 0!
Thos. Fox & Co.	1,089 0 0
W. & E. Curtiss	875 0 0
M. Manley	785 0 0
P. S. Robertson	764 0 0!

For warehouse, Lower Clapton. Mr. Tillett, architect:—

W. Shurmur	£893 0 0
Goodall	675 0 0

For the erection of nine houses at Walthamstow. Mr. W. A. Longmore, architect:

F. & F. J. Wood	£9,178 0 0
Bentley	8,547 0 0
W. Shurmur	8,169 0 0
Reed	7,986 0 0
Morter	7,867 0 0
Fuller	7,510 0 0
Palmer & Sons	7,450 0 0
Parrish & Hawker	7,200 0 0

For building house and factory in Radford-road and Ward-street, Sculthouse, Nottingham, for Mr. Wm. Walker. Mr. Charles Wright, architect. Quantities supplied:—

Wheatley & Maule	£2,150 0 0
Enoch Hind	2,056 0 0
Dudson Parish	2,018 0 0
Lynam & Kidds	1,965 0 0
Collinson	1,940 0 0
Joseph Caulton	1,930 0 0
Henry Vickers	1,887 0 0
George Smith	1,871 0 0
Baines & Turton	1,860 0 0
John Jelley & Co.	1,850 0 0
J. R. Morrison	1,845 0 0
William Taylor	1,730 0 0

For pulling down and rebuilding Nos. 54 and 56, King-street West, Hammersmith. Mr. George Saunders, architect. Quantities by Messrs. Franklin & Andrews:—

Scott	£6,197 0 0
Hunt	5,890 0 0
Jarrett	5,860 0 0
Adamson & Sons	5,789 0 0
Hall, Beddall, & Co.	5,784 0 0
Macey & Sons	5,776 0 0
Lucas & Son	5,773 0 0
Gibbs & Flew	5,755 0 0
Fish, Prestige, & Co.	5,690 0 0
Oldrey	5,600 0 0
Chamberlain Bros.	5,469 0 0
Nye	5,220 0 0

For alterations to London and South-Western Bank, Forest-gate Branch. Messrs. James & J. S. Edmeston, architects:—

Lucas & Son	£692 0 0
Atherton & Latta	675 0 0
Smith & Son	623 0 0
Ballerini	615 0 0
Cox	610 0 0
Hallock	545 0 0
Crisp	523 0 0

For general repairs, painting, &c., at Radnor Lodge, New Wandsworth, for Mr. James Neal. Mr. W. P. Miller, architect:—

E. Dormer (accepted).

For two warehouses in Barbican. Mr. Bunkell, architect:—

Geo. Crabb (accepted)	£5,000 0 0

For new buildings and alterations to shoe factory at Leicester, for the Co-operative Wholesale Society (Limited). Mr. J. Tait, architect:—

Section No. 1.—Excavator, Bricklayer, Slater, Plasterer, and Stone Mason.

Jewsbury (accepted)	£1,091 0 0

Section No. 2.—Carpenter, Joiner, and Ironmonger.

J. Cox (accepted)	£2,520 0 0

Section No. 3.—Plumber, Glazier, and Painter.

Norman & Underwood (accepted)	£566 16 0

Section No. 4.—Ironfounder.

Illston & Arnold (accepted)	£533 14 6

For new Sunday School Memorial Hall at Leicester. Mr. J. Tait, architect:—

Section No. 1.—Excavator, Bricklayer, Slater, Plasterer, and Stone Mason.

J. Holmes (accepted)	£615 0 0

Section No. 2.—Carpenter, Joiner, and Ironmonger.

H. T. & W. Chambers (accepted)	£475 0 0

Section No. 3.—Plumber, Glazier, Painter, and Ironfounder.

Norman & Underwood (accepted)	£198 10 0

For gardener's cottage at Maplewell, for Sir W. H. Salt, bart. Mr. J. Tait, architect:—

Wesley (accepted)	£520 0 0

For rebuilding Nos. 107, 109, 111, and 113, Ossulston-street, Somers Town, for Mr. Colchester. Mr. Benjamin Tabberer, architect:—

Patman & Fotheringham	£4,785 0 0
Jarritt	4,550 0 0
R. Conder	4,550 0 0
Sabey & Son	4,498 0 0
Steel Bros.	4,480 0 0
Mark	4,430 0 0
Lawrence	4,389 0 0
Downs	4,342 0 0
Spencer & Co.	4,295 0 0
Jackson & Todd	4,075 0 0

For the erection of a small house and shop (exclusive of shop fittings), Markhouse-road, Walthamstow, Essex, for Mr. Marx Gross. Mr. W. F. Potter, architect:—

C. Dearing & Son, Islington	£520 0 0
F. & C. Hersee, Peckham	450 0 0
T. Probert, Walthamstow	440 0 0
R. Shaw, Leyton	390 0 0
G. Rayner, Walthamstow (accepted)	382 0 0

For additions and alterations, Woburn House, Bucks. Mr. Arthur Vernon, architect, 26, Great George-street, Westminster, and High Wycombe, Bucks. Quantities by Mr. W. L. Vernon, Hastings:—

Holland & Hannen	£4,287 0 0
Woodbridge	3,994 0 0
Hunt	3,839 0 0
Silver & Son	3,794 0 0
Loosley	3,600 0 0

For putting in new shop-fronts and making other alterations to premises, Nos. 21, 22, 23, and 24, Fleet-street, Coventry, for Mr. F. W. Poole. Mr. Herbert W. Chattaway, architect, Trinity Churchyard, Coventry:—

G. Storer, Coventry	£375 0 0
C. Haywood, jun., Coventry	328 0 0
J. Brown, Coventry	312 0 0
F. Makepeace, Coventry	309 0 0
A. Waters, Coventry	307 0 0
T. Mayo, Coventry (accepted)	305 0 0

For pulling down old premises and building new shops in Market-square, Bromley, Kent, for Messrs. Collins. Mr. E. J. Thomas, architect. No quantities:—

		Allowed for Old Materials.
Priestly	£3,450 0	nil.
Payne	3,348 0	£100 0
Crossley	3,255 0	45 0
Redman	3,220 0	65 0
Arnaud & Son	3,155 0	nil.
Jones	2,917 0	100 0
Balding (accepted)	2,818 0	130 0

For alterations and repairs to a warehouse, No. 11, Curtain-road, Finsbury, for Messrs. B. Cohen & Sons. Messrs. Hammack & Lambert, architects:—

T. Boyce	£1,470 0 0
J. H. Johnson	1,307 0 0

For the rebuilding of the Black Horse public-house, Bethnal-green, for Mr. Zabell. Messrs. Hammack & Lambert, architects:—

J. Walker	£1,049 0 0
R. Marr	995 0 0
Steel Bros.	939 0 0
W. R. Cubitt	848 0 0
J. H. Johnson	837 0 0
S. W. Hawkings	708 0 0

For additions, &c., at Hill House, Ipswich, for Mr. J. C. Ranson. Mr. Brightwen Binyon, architect. No quantities:—

Girling	£3,560 0 0
Grimwood & Sons	3,347 0 0
Bennett Bros. (accepted)	3,175 0 0

For additions to hotel, Beckenham, Kent. Mr. H. H. Collins, architect. Quantities supplied:—

Astell	£7,882 0 0½
Cooper	7,596 16 7
Graham	7,393 0 0
Grimwood & Sons	6,987 0 0
Burrows	6,830 0 0
Abraham	6,657 0 0
Bentley	6,489 0 0
Merritt & Ashby	6,333 0 0
Croaker	5,634 0 0

For new work-room, &c., at Limes Villa, New Cross, for Mr. F. Swinburn. Mr. T. Hunt, jun., architect:—

Rodwell	£142 0 0
Mark Redman	139 0 0
H. L. Holloway (accepted)	135 0 0

For the erection of market hall, public offices, and shops at Ebbw Vale, Mon., for the Ebbw Vale Market Company (Limited). Mr. E. A. Johnson, Abergavenny, architect:—

		Extra for white pressed bricks.
E. Stephens, Abergavenny	£2,760 0 0	£107 3 4
J. G. Thomas, Abergavenny	2,700 0 0	113 0 0
T. Foster	2,521 0 0	96 10 0
Morgan & Evans, Pontnewydd	2,500 0 0	—
Bowers & Co., Hereford	2,500 0 0	112 10 6
David Davies, Cardiff	2,490 0 0	96 9 0
John Williams, Merthyr	2,480 0 0	—
Jones & Son, Newport	2,449 0 0	100 0 0
J. Isaac, Swansea (accepted)	2,300 0 0	123 12 0

For the erection of a mission room adjoining the Church of St. Barnabas, St. Peter Port, Guernsey. Messrs. Noltey & Trollope, architects:—

Gervase Peck (accepted)	£1,130 10 0

For alterations to St. Sebastian's Vicarage, Wokingham, Berks, for the Rev. A. Carr. Messrs. Morris & Stallwood, architects, Reading:—

R. Conder	£1,610 0 0
Silver, Sons, and Filewood	1,447 0 0
A. Sheppard	1,318 0 0
Joseph Norris	1,222 0 0
Botterill	1,194 0 0
Spear & King	1,041 0 0

For repewing and restoration of St. Lawrence Church Towcester, Northamptonshire. Mr. J. L. Pearson, architect:—

Thos. Heath, of London and Towcester (accepted).

For alterations and repairs to residence in Harrington Gardens, South Kensington. Mr. W. H. Collbran, architect, 91, Gloucester-road

McLachlan & Sons	£1,558 0 0
Martin, Wells, & Co.	1,300 0 0
H. Smith	1,029 0 0
Cowland & Co.	979 0 0
J. W. Falkner	973 0 0
Toten & Sons	970 0 0
W. H. Smith	929 0 0
Styles & Holdstock	862 0 0

For residence at Westcombe Park, Blackheath, for Mrs. E. A. Mallings. Mr. W. H. Collbran, architect. Quantities by Mr. W. H. Strudwick.—

Higgs & Hill	£2,344 0 0
Martin, Wells, & Co.	2,185 0 0
Cowland & Co.	2,158 0 0
Perry & Co.	2,089 0 0
Evers & Simpson	2,087 0 0
Jerrard	2,073 0 0
Huey	2,063 0 0
Tongue	1,989 0 0
Nightingale	1,977 0 0

For alterations to Nos 93 and 95, Fulham-road, for Messrs. Bowman & Co. Mr W. H. Collbran, architect:—

Pilkington	£929 0 0
H Smith	753 15 0
Styles & Holdstock	619 0 0
Wilkins	613 0 0
W. H. Smith	532 0 0

For alterations and repairs to residence in Harrington-gardens, South Kensington. Mr. W. H. Collbran, architect:—

Higgs & Hill	£1,390 0 0
Toten & Sons	1,383 0 0
H. Smith	1,227 0 0
Cowland & Co.	1,227 0 0
W. H. Smith	1,221 0 0
J. W. Falkner	1,210 0 0

For alterations and repairs to Nos. 82, 84, and 90, Fulham-road. Mr W. H. Collbran, architect.—

Oliver	£425 0 0
Toten & Sons	405 0 0
W. H. Smith	397 0 0
H. Smith	389 0 0

For the erection of stables, Gloucester-grove, South Kensington, for Mr. R. King. Mr. W. H. Collbran, architect:

Toten & Sons	£398 0 0
R. Smith	397 0 0
Andrews	375 0 0
W. H. Smith	374 0 0
H. Smith	365 0 0

For works required in the formation of road, drains &c., about 170 acres building, in laying out the White Swan Estate, Birstal, for building purposes, for the Birstal Local Board

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Wm. Barrowclough, Birstall, near Leeds	1,761 4 0
John Slinger, Cleckheaton	1,759 0 0
J. & T. Oldroyd, Batley	1,533 2 11
G. & R. Naylor, Scholes, Cleckheaton	1,487 0 0
Wm. Harrison, 154, Bradford-road, Huddersfield	1,317 2 8
Brier, Sons, & Wilson, Savile Town, near Dewsbury	1,310 0 0
Egan & Pearson, Manningham Lane, Bradford	1,214 10 0
Alfred Law, Birstal, near Leeds	1,164 7 8
Mathews Hall, Dudley Hill, near Birstal	1,055 8 2
James Rhodes, Birstall, near Leeds	1,027 9 5
Parker & Sharp, Birstall, near Leeds (accepted)	1,100 0 0

For shop and premises, Bromley, Kent. Mr. Fred. Stocker, architect:—

Rabbet	£988 10 0
Wall	987 0 0
Kennard	977 0 0
Jones	920 0 0
Jerrard & Hallis	911 0 0
Lyley	895 0 0
J. Baxter	880 0 0
Marr	857 0 0
Burditt	795 0 0
Cox	794 10 0
Holloway	771 0 0
Stayner (accepted)	737 0 0

For completing eight houses, Tournay-road, Walham-green, for the Middlesex Land Company, Limited. Mr. George Edwards, architect.—

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Scharien & Williams	1,911 0 0
Green	1,810 0 0
Hunt & Freeman (accepted)	1,680 0 0

For alterations to No. 78, Westbourne-grove, for the Albion Bakery Company, Limited. Mr. George Edwards, architect

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Reading	594 0 0
Drew & Cadman	575 0 0
Smith	570 0 0
Stimpson & Co.	545 0 0
Jay	533 0 0
Scharien & Williams (accepted)	510 0 0

For alterations to No. 19, Soho-square, for Messrs. Burroughes & Watts. Mr. Rowland Plumbe, architect:—

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Goodman	2,787 0 0
R. Conder	2,760 0 0
Bangs	2,600 0 0
Lawrence	2,548 0 0
Ashby Bros.	2,486 0 0
Patman & Fotheringham	2,473 0 0
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VOL. XLIV. No. 2091. SATURDAY, MARCH 3, 1883.

ILLUSTRATIONS.

Tomb outside Cairo 278
Belgian Towers 289
Chalet Residence, Harrow Park (Double-page Engraving).—Mr. J. T. Walford, Architect 282, 283
A House in the Strand.—Messrs. Archer & Green, Architects 285
Djakovar Cathedral, Croatia.—Carl Rosner, Vienna, Architect 287

CONTENTS.

The Teaching at Schools of Art 285
"The History of Freemasonry" 286
Ankles and Wrists, Feet and Hands 289
Exhibition of the Royal Scottish Academy 271
Lead Poisoning: The Huddersfield Water Case 271
The Story of the Ashburnham MSS. 272
Archæology in Yucatan 272
Election of a Surveyor for the Diocese of Norwich 272
Lectures in Architecture at the Royal Academy: Colour 273
The Pandora Theatre: Visit of the Architectural Association 274
Art-Revival in Russia 275
A Practical Co-operative Association 275
An Old Fleet-street Tavern 276
A New Croatian Cathedral 287
Tombs at Cairo 289
A New House in the Strand 289
Chalet Residence, Harrow-on-the-Hill 289
Belgian Towers 289
The Ancient Resting places of the Dead 289
An Architect on Lawyers 290
Architectural Questions in Glasgow: Glasgow Institute of Architects 290
Fire-resisting Plastering 291
The Historical Development of Ornamental Art 291
Leeds Architectural Society 292
Builders' Clerks' Benevolent Institution 292
The Decoration of the Dome of St. Paul's 292
Early Recollections of Westminster Hall and the Law Courts 293
The Sanitary Assurance Association 294
The Building of Factory Chimneys 294
Mortar for Fire proof Walls 294
Sale of Property at the Auction Mart: Value of City Freeholds 294
The New Buildings on the Whitefriars Priory Site 294
The Inner Circle Completion Railway and the Demolition of City Property 295
The Victoria Buildings, Manchester 296
Building Patent Record 29-
Compensation Case: Inner Circle Completion Railway 295
British Archæological Association 296
What is a new Street? 2 6
Light and Air Case: Strickland v. Kingwell 296
Workhouses 296
Smoke Abatement Tests: An Asserted Oversight 296
Condition of Houses in the Country 296
Light out of Dirt 296
The Superintendence of Buildings 296
"A Doctor's House, Bedford Park" 297
Cheltenham Gas Offices 297
Sanction for Public Works 297
Church-Building News 297
Dissenting Church-Building News 297
Stained Glass 298
Variorum 298
Miscellanea 298

The Teaching at Schools of Art.

SOME of our readers will have observed the letter by Mr. Crace which was printed in our last, one among several which have been addressed to the secretary of the Royal Commission on Technical Education. The subject is one of too much importance to be passed over in our columns without some more special comment, both in regard to the deficiences which are complained of by Mr. Crace and others who are practically interested in decoration, and the possible means by which those deficiencies may be remedied.

The admission that has been made in the letter referred to, that there has been a great advance in public taste of late years, and also in the design of the objects produced, seems at first sight at variance with the complaint that there is no adequate supply of competent decorative workmen to be had from the schools. If it is admitted that there are better things produced than before, who designs or draws them? might seem the natural answer. Probably one reply to this would be that a great deal of decorative work produced at present is mainly imitative of a few types, and these types have been brought into notice and adoption chiefly by the influence of those "few earnest and enterprising artists" who are referred to in Mr. Crace's letter. It is certain that at present there is a great deal of fairly good decorative work produced, any specimens of which would strike us as good when seen separately, but which when seen together appear too obviously the production of a habit of repetition rather than of any original power in regard to either design or execution. And probably this would be the case even if there existed among decorative workmen more innate and original power. The public are mainly to blame for this. Art and artistic things have become a fashion like dress, and a fashion to be just as rigorously followed; and when it is established that this or that style of design is the best thing, every one asks for it, and would feel out of the running without it, and the philosophy of good or bad taste is settled as summarily as we once heard a tailor settle the question of taste in dress: "What's in fashion is good, sir; and what's not in fashion is not good."

This we imagine (with the fact that assistants are obtained elsewhere than from the schools, including foreign countries) to be the explanation of the apparent anomaly, that in spite of an acknowledged improvement in public taste and in production, there is so little power of originating or of working on principle to be found among the decorative workmen of the day. Without very much innate power of design, men can with a moderate amount of ability learn to assimilate and reproduce the forms of decorative work most in vogue; and consequently we see shop after shop filled with the same kind of work, and house after house decorated and furnished in the same style, as if there were no such thing as individuality of taste at all. This is only, however, an offshoot of the real question at issue, which is, why the now rather large and extended means of art-education in England do not avail to produce a higher class of artistic workmen than it appears they do produce. There is a great ramification of art schools all over the country, and a very elaborate system of rewards for various kinds of proficiency, but yet the master decorators affirm that no results are perceptible from all this in the work of the men who come to them from the schools.

It is suggested that the cause lies in the want of special attention directed to the study and practice of ornamental design in the Departmental art schools of the country, both in London and the provinces, and this, we imagine, has a great deal to do with the matter, though we should not be surprised to find that some of the most active of the official coadjutors in the Government system of art-education are of quite a different mind, and would consider themselves much injured by any accusation of attaching too little importance to the study of decorative design. There is no question that the South Kensington Museum has had a great influence upon those who have been brought within its range as a place for study and observation of examples, in promoting a knowledge of and feeling for decorative art; the vast majority of the works purchased and under continual exhibition there, or lent from time to time to provincial exhibitions, are examples of decorative art; sculpture and painting occupying but a very small proportion of the works acquired. In some cases that we have known of, the study of some of these examples has had the effect which it ought to have, in stimulating the attempt to produce new forms of design based upon old ones, but not mere copies; only the other day we were looking at some lace designs from Nottingham, based upon forms of Indian ornament, and produced under that inspiration by an operative in a lace-mill. Unfortunately, it is to be feared that these are rather rare instances; but the fact that there are any such instances shows that there may be the material for producing the proper result of study from existing examples of past schools, if only it were fully and rightly directed.

Why is it not, then, rightly directed? Some of the authorities at South Kensington, we have reason to know, are strongly impressed with the necessity for special study of decorative design, as a branch of art quite different in its conditions from imitative art, even as represented in the highest class of sculpture and painting; requiring special study and special exercise of thought to apprehend its conditions and to work them out to adequate results. But it does not appear that this is sufficiently appreciated by those who have the principal voice in the direction of the studies enjoined, and in passing judgment on the work done. The mistake which is made appears to lie in carrying too far the conviction that the study of nature, and especially of the figure, is the highest end of art, and that this will alone give the power to apply the faculty of draughtsmanship, thus gained, to the production of design in the lesser arts. The production of high-class figure design, in painting or sculpture, is no doubt in one sense the most intellectual branch of graphic art. But the production of equally good decorative design, though it may be a less intellectual form of art than this, is a problem different in kind as well as in degree. It does not require the same degree of intellectual grasp and of training in draughtsmanship which the execution of pictures and sculpture requires; but it does demand a special branch of training, for its own especial ends, which those do not demand. Decorative design does not consist in imitation of natural forms, but in the adaptation of these as suggestions for design, not to be copied as they stand in nature, but to be created anew as decorative treatment. Now, the study of the figure alone, and even the possession of the power of imitative drawing and colouring of all objects, however complicated and delicate, as they are seen by the outward eye, will not give of itself the power of assimilating and modifying these forms for use as decoration, nor even the right understanding of what that use should be. That it will not do so is evident from the fact, of which we see frequent instances, that painters and sculptors of very high power constantly fall short when they attempt decorative design, and produce work in this latter class which is feeble in execution and false in taste. A prominent example may be named in the case of what is in the main one of the finest and most powerful works of modern English art, the Wellington Monument. The figure-sculpture in this is exceptionally fine and powerful, and the general design of the monument grandiose and effective; but a good deal of decorative detail, such as the twisted knots of rope round part of the pedestal, and the medley of implements of war huddled together in other parts, represent an entirely false and, artistically speaking, a vulgar taste. And we should surmise, from

some of the expressed opinions of the eminent painter who is the responsible examining head of the Departmental art schools, that he himself attaches too little importance to the study of decorative design for its own sake.

If the reply is suggested that in the period of Renaissance art there were great paintings, and great decorative work done by the same men, our rejoinder would bring us just to the point we wish to come to. In the first place, we would say, as a matter of fact, that those who are generally considered the greatest of Renaissance artists, the great names of its latter period, were not the best of decorative designers. The architectural details produced by Michelangelo and Raffaelle, those of the former especially, are not their happiest efforts. The period of the finest decorative work was before their time. And the reason, in part at least, was that in the earlier days decorative art came first, and sculptors and painters ascended from that to the higher arts. They had mastered the decorative side of design in the first instance. When the human figure came to be the first object of interest with every artist, the decorative design was passed over more lightly as a secondary interest. As we trace out the treatment of decorative art in any class of work,—say in silversmiths' work,—from the earlier to the later days of the Renaissance, we find a constant increase in the use of the figure as a decorative adjunct, and a progressive development in the freedom and power of its treatment, accompanied by an almost equally marked retrogression in the taste and suitability of the minor details. Mere cleverness of execution increases; good taste and the sense of fitness (so important in decoration) become deficient. And we imagine this will be so whenever the attention is entirely concentrated on figure work, on imitative work whether of higher or lower class, to the exclusion of any systematic study of decorative design for its own sake.

It is in relation to this view that one of Mr. Crace's suggestions as to the causes of the deficiency he and those whom he represents are complaining of has especial point. He has observed that too much stress is laid, in the Departmental schools, on the study of still life; and the evidence of the annual exhibitions of students' work at South Kensington goes to confirm this. A great many prizes are offered for this class of work, and a great deal of time is obviously spent often over single drawings, in finishing them up to the point which will secure a prize. It is a good deal to the not always healthful influence of Mr. Ruskin's writing and teaching that we suspect this is to be traced. He has largely dwelt upon the importance of finished and precise manipulation in painting. Now, it may be freely admitted that no class of study tends so much to progress in manipulation, in regard to painting more especially, than the study of still life. The objects to be studied are stationary and little subject to change of form or tones, and the art of reproducing them in pigments can be carried out with more patient minuteness than in any other branch of imitative art; but it seems undeniable that while no study exercises manipulation more, none exercises thought and intellect so little, and the exercise is almost contrary to that required for decorative design. Its object is entirely realistic; the object of true design is never realistic, usually far from it; so that here the training on which so much stress is laid is directly adverse to what should be one of the main objects of artistic teaching for the many.

It is a question whether, even apart from this, there is not in the Government schools of art too much time spent in the manipulation of special drawings rather than on what would tend to develop the power of drawing generally. We have observed on this before in speaking of the prize-drawings when exhibited, and we have it confirmed in various reports in regard to the system of work in the art schools. We know that weeks or months are often spent by a student in stippling at a drawing of a head or a figure from a cast, in order to get a medal or a mention for it; and the same time is even spent on drawing from casts of much more uninteresting subjects,—reliefs in plaster of fruit and flowers, &c. Such drawings are not artistically, in any sense, an end in themselves; no one really cares for such a shaded drawing from the round for its own sake; the only ultimate value it has is for the student who gets a medal for it, and hangs it up in his or her home as a trophy, and the allowance it may obtain for the school. The object of making studies of this kind is to acquire the power of drawing and the knowledge of the structure of the objects drawn, and this may be acquired and exhibited far better by half a dozen or a dozen drawings, not so prettily finished, but showing the result of the study of the same object in different lights and aspects, than by one minutely stippled example, which may be produced at the cost of much less real observation and draughtsmanship than is often shown in less finished work. More especially is this the case when we regard the study of drawing as a preparation for decorative design. To a decorative designer the knowledge of the figure is essential, but not the power of representing it in highly-finished relief; that seldom or never comes into decoration. What is wanted is the power of drawing it in all positions when required as an accessory to the design, and to this, multiplicity of study is much more requisite than mere finish of one or two specimens. This points out the direction in which figure-study should be modified, as it appears to us, to be subservient for an education towards the art of design rather than the art of painting pictures; and that, after all, is what the majority of those who study in Government Art Schools can do most good with. There is room for a much more numerous body of art-workers in the decorative arts than in the production of works of painting and sculpture. The latter are the top and flower of art, but the demand for them is limited; whereas decoration, of more or less elaborate type, is wanted almost everywhere.

Prizes are, of course, given for decorative design, in the Government schools, but the results are not of the highest class. In architecture the designs sent in, and for which prizes are awarded, are generally very poor, sometimes absurdly so; the subject is evidently not understood, and does not receive sufficient encouragement to bring out any but very mediocre work.

Looking at the means to be adopted for rendering the Government schools of art more productive of the sort of power which is in request, and for which there is apparently at present such an inadequate supply, it appears to us that no better suggestion can be made than one of those which is made in Mr. Crace's letter before referred to, viz., that the higher grade prizes should be open only to those students who show proficiency in the application of art to decorative purposes. We do not say that the production of original painting and sculpture of the highest class is not a higher object still, but it is not the real business of the Government schools to produce these. Those who want to become artists of this type must go through a different training from any which the departmental schools can well supply, except as a mere initiative. As it is, the highest and most coveted prizes are given for studies of the figure from the life and from casts, and for still-life paintings. Let the mere manipulation be less encouraged by lowering the scale of prizes for it, and let the highest prizes be given for work which shows thought, not in mere imitation, but in the adaptation of natural objects, including the figure, to original decorative design, and to such design even apart from the adaptation of natural objects. The Government schools would then be in reality, what they are certainly not now, schools of *design*, not merely of drawing; and under such a system there would be the best chance that, after reasonable time, results would be shown in the turning out of a more trained, thoughtful, and original class of decorative designs. As an initial step, it is certainly also of importance that those who preside over departmental schools, in the provinces especially (where there is no South Kensington Museum), should be more proficient in decorative art than they, we imagine, often are. We have certainly ourselves known local teachers who were very well up in drawing and painting in one sense, very well able to direct and criticise the labours of a life class, and so on, but who were destitute of any notion of what constituted good or bad design in ornament; nor in South Kensington itself is there at all the right attention given to discriminating between what is good and bad in taste,—witness the overlaudation, on which we before commented, which has been bestowed on the work represented in the Jones Collection. Decorative design means thought applied to the choice and treatment of forms in their application to various materials and objects, and it is this side of artistic study which specially requires stimulating and directing.

"THE HISTORY OF FREEMASONRY."

The design of the author of this work,* of which the first volume out of six is now published, is to embody in a single publication the "legendary" and the "authentic" histories of the Craft. The work by Herr Findel (of Leipsic), published in 1861, is considered to be the first history at all worthy of the name, of the Masonic Craft, which had been compiled; and in 1876 G. F. Fort published the "Early History and Antiquities of Masonry," discussing the legendary or traditional history of the fraternity. These two works Mr. Gould, and his friends associated with him in his laborious undertaking, have not considered wholly satisfactory, "dissenting very materially from these writers both as regards the facts they accept, and the inferences they have drawn." The actual "History" will be considered from the commencement of the Lodge records. In Scotland some minute-books of the lodges commence in 1599, while in England only the records of a single lodge (Alnwick) range between 1700 and 1717, the date of the formation of the first Grand Lodge.

That a correct "History" is required is evident from the following statement in a publication of authority:—"No man can give any account of the Order of Freemasonry, of its origin, of its history, of its object, nor any explanation of its mysteries and symbols, which does not leave the mind in total uncertainty on all these points." Again, "There are so many various theories concerning the Origin of Masonry that each student may select his own favourite without prejudice to any other" (Mackenzie, "Royal Masonic Cyclopædia," p. viii.). The "sources," writes Mr. Gould, "to which the mysteries of Freemasonry have been ascribed by individual theorists," are very numerous. "Some of the more curious" are briefly described by him, and herein we are at once led to perceive the learning, and the great candour of the writer in his investigations; but as it is impossible now to follow him in all his details, the reader must perforce be referred to the work itself. He proceeds to summarise "what is actually known of certain systems or sects, in order that by a careful comparison with the authentic records of Mediæval Masons," it may be determined "how nearly or how remotely the usages and customs of the 'Ancient' and the 'Modern' Organisations correspond, and ascertain what grounds exist for attributing to the Masonic Institution any higher antiquity than is attested by its own documents; for however flattering to our pride may be the assumption of a long pedigree it by no means follows that it will bear the test of a strict genealogical investigation." The consideration of these certain systems or sects, entitled, "The Ancient Mysteries, The Essenes, The Roman Collegia, and The Culdees," forms Chapter I., and is contained in over forty pages, but whether they do correspond or not must be left for a time, as our author makes a skip of some centuries, and lands us in England in the fifteenth century, or thereabouts. It is not usual in "histories" to work back, but it is in genealogical records. The son, from his father works back to his grandfather, and so on, picking up where he can connecting links from other pedigrees until he reaches some pre-historic period in which so much is assumed. We could have wished that in this inquiry the history of Freemasonry had been first described from, as above stated, the formation of the Grand Lodge in 1717,—then its predecessors as far back as the few facts and traditions would help,—then the course during the Middle Ages of what is assumed to be Freemasonry, but would of course be Operative Masonry, and thence to these "Ancient Mysteries," if it be desirable to consider them as their predecessors. Is not the cart put before the horse in the volume under consideration? The heading of this First Chapter must here be sufficient for its own

* The History of Freemasonry: its Antiquities, Symbols, Constitutions, Customs, &c. Embracing a Investigation of the Records of the Organisations of the Fraternity in England, Scotland, Ireland, British Colonies France, Germany, and the United States. Derived from Official Sources. By Robert Freke Gould, Barrister-at-Law, Past Senior Grand Deacon of England. Vol. I 4to., 252 pp. London: Thos. C. Jack, 45, Ludgate-hill.

explanation; the forty pages comprise a very laborious investigation of the subjects, with ample quotations of authorities and references, ancient and modern, for the benefit of the captious. "According to Mackey" ("Encyclopædia," *s.v.* Talisman), "an instance of the transmutation of Gnostic talismans into Masonic symbols, by a gradual transmission through Alchemy, Rosicrucianism, and Mediæval architecture," is described. But what has Mediæval architecture to do with all these? Our author intends to treat his subjects fairly, but still occasionally he appears to us to be somewhat prejudiced. The moot point is ably discussed as to whether "English gilds are of English origin," or, as stated by Coote, "this trivial word (gild), due to the contributions upon which the (Roman) colleges had from all time subsisted, betrays their constitution; and we find them also where we ought to expect them,—in the Roman cities of Britain." It has been observed that "the colleges, the Collegium Fabrorum, which dwelt in the Civitates Regnorum, remained in this country throughout the imperial rule, and with the provincial inhabitants survived the Anglo-Saxon occupation of Britain,—that this is the true origin of the English guild it will not be very difficult to demonstrate" (Gould, "The Four Lodges," p. 38). "The truth is," writes Pike, "that the guild system existed before and after the Norman Conquest, but that there is no historical evidence of its beginning." The theory,—one of many,—connecting the Culdees with the Freemasons "advanced in 1844 by the Hon. Algernon Herbert, has been characterised by Dr. Reeves 'as a strange combination of originality and learning joined to wild theory and sweeping assertion.'"

We must pass on to Chapter II., comprising "The Old Charges of British Freemasons," first expressing our regret at the insertion of them in this first volume as being out of sequence in the "History," and also remarking that it is not shown that these "Old Charges" belonged to Freemasons other than of the operative class. This very interesting chapter may probably have been mainly contributed by Mr. W. J. Hughan, whose publication on the same subject appeared in 1872, but not then brought forward as a speciality for the first time, as in my two lectures read before the Royal Institute of British Architects as long since as 1860 and 1861, the one "On the Superintendents of English Buildings in the Middle Ages," and its continuation, "Collections for an Historical Account of Masons, their Customs, &c.," I had shown what was the connexion of these "Old Charges," in relation to the inquiry.* "The so-called Constitutions are peculiar to England and Scotland, and contain legends or traditional history, which are not to be found in the regulations or working statutes of the latter country, nor do they appear in the Ordinances of the Craft in either France or Germany. . . By no other craft in Great Britain," adds Mr. Gould, "has documentary evidence been furnished of its having claimed at any time a legendary or traditional history." This very important statement may occasion some controversy hereafter, but the extensive range of his reading has, no doubt, given Mr. Gould ample grounds for the conclusion at which he has arrived. The ten MS. copies of a Charge, quoted by me in 1860 have since been increased by diligent researches to more than double (*i.e.* thirty-one) that number. "No two of the manuscripts are exactly alike (except one duplicate) though there is a substantial agreement between them all, and evidently they had a common origin, just as they were designed to serve a common purpose." Each of the old Masonic or operative lodges probably had a copy amongst its effects; this was perhaps read to an apprentice on his introduction, so that possibly many others may yet be discovered. We must here take exception to the title these authors, Messrs. Hughan and Gould, have given to these charges, as belonging to Freemasons, leading their readers to suppose that they tend to prove that modern Freemasonry is the same thing as the old Operative masonry, to lodges of which craft these "charges" undoubtedly belonged, and are therefore more applicable to a yet unwritten "History of Architecture," or a "History of Building Trades," than to a history of a subject whose connexion with them has not yet been proved. We regret to have to point out that in describing the No. 29 Charge or "Papworth Manuscript," the author has omitted to state (though quoting "the motto") that at the commencement of the MS. is drawn the *coat of arms of the Masons' Company!* By a careful perusal of the interesting observations made upon each of the thirty-one Charges recovered, we find it stated that this coat of arms appears on only two of them, one being Charge No. 23, dating 1686, which has the royal arms with those of the City of London and of the Masons' Company, and the second being Charge No. 24, having the same two coats of arms. A few only of these Charges have been identified as belonging to a Lodge or Lodges in London, another perhaps to Chester, six to York, and one perhaps to Warrington, and so of some interest in connexion with Ashmole's installation as a "Freemason." Only two of these thirty-one Charges are ascribed to "late sixteenth century," the remainder (all but two) to the seventeenth. These two are of very high interest and are exceptional, and are two of those described by me in the lectures before referred to. One is considered to be of about the middle of the fourteenth century, and the other early in that of the fifteenth. These two originals speak of "Masonry" not "Freemasonry." No. 4 Charge, dating 1583, is the first in which the latter word is said to occur, and again occurs in another dated 1650. The No. 23 copy already referred to is signed as "written by Robert Padgett, Clearke to the Worshipful Society of the Free Masons of the City of London," to which is a footnote taken from Kenning's "Masonic Cyclopædia," p. 457, that "Robert Padgett, we are assured on competent authority, did not belong to, nor is his name to be found in the books of, the Masons' Company." Several cases of this sort of unfortunate difference or contradiction could be named (as in No. 28). No. 25, dated 1693, has a word which it seems has raised a controversy, whether the passage *hee or shee that is to bee made a Mason* is not really *hee or they*; the grammar of the passage is so bad that either would do; but it also raises the other and important question of women being admitted Masons! In this particular Charge occurs "An entered apprentice's obligation to protect the interests of his master or dame," *i.e.*, mistress, clearly indicating that at that time, or in that Lodge, it was customary for females, in the capacity of employers, to execute mason-work. Hence it would seem to indicate that *this Lodge* was an operative as distinct from a Lodge of Freemasons, if any such existed at that date. Females could be, and are still, made Free of Guilds; they cannot be, I presume, of the Freemasons' fraternity. Besides these thirty-one manuscripts, there are found about twenty other late transcripts of the old Charges or printed copies, extracts, or references. The No. 8 Charge is in itself of great interest, being dated 1607, and possessing a drawn frontispiece of masons at work, with the words "Inigo Jones delin." at the bottom. A very remarkable assertion, printed in italics by the author, assures his readers that "All the Scottish versions of these Charges are evidently of English origin"; and in the second work by our author ("Four Lodges," p. 20) it is stated, "The practice existed in Scotland of individual brethren to make Masons out of Lodge."

After a style, or special proportion of design in building, had continued in fashion a few years, the builders (or masons) of the Middle Ages "gradually invented and adopted another, which was generally more ornamental than the former. It is, however, a very interesting and remarkable fact that nearly all the ecclesiastical edifices of this country, which are of contemporaneous ages, are of a corresponding or a very similar style. From Durham in the North, to Cornwall in the West, and in the intermediate counties, a coincidence of system will be found to be very generally if not always manifested. It is not easy to account for this uniformity in the architecture of churches at places remote from each other, by any other clue than by considering that each new style originated at, or emanated from some convocation or assembly of the monastic builders or Freemasons of each respective era." So wrote John Britton, in 1829 ("Gloucester Cathedral," p. 49). We most heartily trust that Mr. Gould's future researches will enable him to show in what manner the Master Mason and the Master Carpenter were taught, and in what town or towns the Head Guild or Guilds existed. The statute of 1360-61 (34 Edward III., cap. ix.) uses the words, "all alliances and covines of Masons, and Carpenters, and Congregations, Chapters, Ordinances, and Oaths betwixt them made, or to be made, shall be from henceforth void and wholly annulled"; and the famous statute of 1425 (3 Henry VI., c. i.), which declares that, "the yearly Congregations and Confederacies made by the Masons in their general Chapiters assembled," together with the "Constitutions" themselves, appear to prove that there must have been an annual assemblage of the Masons, either under a governing head or Grand Lodge, or under some chief of a district or locality. As we are still in complete ignorance as to the exact manner in which the transitions of style in Mediæval architecture were effected, architects as a profession must be grateful to Mr. Gould for the elaborate inquiry and the careful comparison he has made herein of these Charges preparatory, we trust, to the other discovery; not that they yet materially help the question, but a few references are useful.

"The ceaseless progress of the building art," writes Mr. Gould, commencing Chapter III., "The Steinmetzen of Germany," "throughout the strife and turmoil of the Middle Ages, is a remarkable phenomenon which at once arrests our attention and challenges our research. Prince and bishop, kaiser and free city, wage their eternal feuds; nations rise, fall, amalgamate, or dissolve. All Europe is in a ferment, and yet throughout the greater part of it the mason quietly and unceasingly plies his trade. . . . . By degrees the face of the land became dotted with those monuments of architectural skill, the very ruins of which testify to the cunning of the builders. And who were these builders?" The early monasteries, and even the castles, may have afforded the means of acquiring skill in the manipulation of building materials, and furnishing large numbers of artificers and experienced master-masons. We know that each cathedral possessed its own complete set of workmen, as masons, carvers, carpenters, plumbers, glaziers, and labourers, while the monarch had a similar set, forming part of his household (and he did not disdain occasionally to press workmen), headed by the supervisor, and later, by the surveyor, and the architect. This latter set continued down to about 1836, when this branch of the household was reformed into the office of Woods, Forests, and Land Revenue. In the towns arose the craft guilds, for mutual assistance. The above Constitutions or Charges afford ample evidence of the three degrees of Master Mason, Fellow-craft, and Apprentice, and of a general assembly to be held annually at one place or another, for the "correction of faults, errors, and trespasses." It is very remarkable, however, that no *evidence* has been yet obtained of any such meetings, not even at the traditional York. The mayor of the city or alderman of the town in which the assembly was held was to be "felaw and sociat" to the master of the assembly, "in helpe of h'y ayenst rebelles and upberying ye ryght of the reme." This would appear to do away with all *secrecy* in lodges; while "in no trade of the Middle Ages, not even among the *Steinmetzen* of Germany, is it possible to find the slightest trace of a sign, or of anything approaching thereto," are two remarkable conclusions at which our author has arrived in the work before us. In commenting on the copy of Charge No. 12, Harleian, 2,054 (1650, or later), he writes, "We have here the earliest known mention of words and signs." Was Randle Holme, jun. (the former owner of the manuscript), a Freemason of the modern order? Again, it is said, "Did he (the apprentice) receive no token by which he could prove himself a brother? In the very nature of things we might expect that he did,—a sign, a word, a grip,—but not the faintest traces of these exist. The statutes do not even enjoin secrecy, but merely that "he shall keep every point and article."

A few observations on the Foreign branch of this subject must suffice. The insertion of the Chapters III. and IV. is explained in the passage:—"It is somewhat remarkable that French Masonic writers have not been tempted to seek the origin of the institution in their own past history, and in the traditions and usages of their own land. German authors, from Fallou onwards, have seized upon every trifling circumstance, every chance coincidence, tending to show a German origin of Freemasonry, and when a link was wanting in the chain of evidence, have not scrupled either to forge one, even to the extent of inventing ceremonies, or to placidly accept, without inquiry, the audacious inventions of their predecessors." On

* These two papers were printed in our volumes at the time.

p. 202 is given "The Statutes, &c., of Montpellier," dated 1586, in which occurs "*maistres massons*"; and "the craft of *maçon architecte* was of the sworn (incorporated) trades of the city as it is of the other cities of the kingdom."

The code, or constitutions, or ordinances, of the *Steinmetzen* of Germany date only from 1459, Ratisbon; 1563, Strassburg; 1462, Torgau; meetings were held at Speyer, Strassburg, and Ratisbon; though Strassburg, Cologne, and Vienna, and later Bern, are also mentioned as the chief lodges. "The Brother Book of 1563" is given in a translation, with also "The Torgau Ordinances of 1462." The *fraternity* was quite a new departure;—the fraternity was agreed upon as something new; the *usages*, being ancient, were *confirmed*. The same division occurs, in these, as in the English Charges, of master, fellow, and apprentice. "We may therefore conclude," writes Mr. Gould, "that the chief lodge, the fraternity, and the ordinances, were all the direct result of the decline of the Craft, which decline may be attributable to the fact that the chief cathedrals were already finished, and that those in course of construction were being slowly prosecuted, and in some cases temporarily abandoned . . . . work was becoming scarce, ordinary masons were acquiring the technical skill of the *Steinmetzen*. . . . The masons were thrown upon civil employment . . . . their work became subordinate and supplementary to that of the ordinary builder . . . . the number of small masters would increase . . . . the highest class of workmen . . . . would develope into artist sculptors; thus the fraternity, being more and more subdivided and bereft of its most skilful members, gradually assumed a form closely resembling that of the other craft guilds,—the invention of printing, and the resulting increase of knowledge, enabling an architect to study elsewhere than in the lodge, all the materials are present for a practical dissolution of the fraternity, as we have learned to know it."

Here we will leave the consideration of this chapter III., and pass on to Chapter IV., "The Craft Guilds of France." We can but praise the carefully-selected historical account now presented. Several of the codes of the fraternity of the mason's trade,—as of Amiens, 1407, and Paris, 1260,—are given, the latter including many of the building trades. In two paragraphs near the end it is stated that the plasterers and masons are liable to the watch duty, but the mortarers and stonemasons are not liable. The reason assigned by the *prudhommes* to Boileau was that it had been traditional from father to son that they had been exempt ever since the time of Charles Martel (715-740). We thus see that as early as the thirteenth century a tradition was current in France that Charles Martel had conferred special favours upon the stonemasons, and that this tradition was sufficiently well established to ensure very valuable privileges to the craftsmen claiming under it. With but one exception, all the old Charges of British Freemasons (or Guild or Lodge Masons?) "pointedly allude to the same distinguished soldier as a great patron and protector of Masonry." Was this, then, an importation from France? Mr. Gould then offers some observations on this remarkable allusion, and in a paragraph in his following and last chapter, suggests that "Maître Jacques" of another French legend may be the "Naymus Grecus" mentioned in the English Constitutions to which attention has been already drawn, "as having been at the building of Solomon's Temple, whence he came into France, and taught the science of masonry to Charles Martel"; or "Naymus Grecus may be the 'M. Soubise,' his companion in Jerusalem, and which name may be a corruption of Sabazius, one of the many epithets applied to Bacchus. . . . . The Anglo-Saxon workman on first hearing the name might naturally ask for an explanation, and receive for reply that it was a Greek name. From 'Greek name' to 'Naymus Grecus' or 'Naymus the Grecian' is no great step." Not having studied the Anglo-Saxon language, I am not able to form an opinion on this play of words. Another celebrated personage in these French legends is "Hiram." "I have endeavoured to show," writes Mr. Gould, "its probable existence amongst the 'Companions' of France from a very remote period. Candour, however, demands the acknowledgment that in Freemasonry we meet with but sparing allusions to Hiram until the early part of the last (*i.e.*, eighteenth) century." But "Freemasonry,—according to the most zealous historians,—was only introduced into France in 1715," and the Hiram legend of the "Sons of Jacques" is asserted to be derived directly from Freemasonry. But also, 1726 is the more correct date of its introduction, and the legend far anterior, but still posterior to the "Sons of Solomon," — two bodies to be explained presently.

Chapter V., "The Companionage, or Les Compagnons du Tour de France," broadly stated, means the associations formed by the journeymen of France for mutual support and assistance during their travels. . . . . Bloody battles arose out of the enmity between the various corps. . . . The survivors were condemned to the gallows! The "Sons of Solomon," the "Sons of Maître Jacques," and the "Sons of Maître Soubise"; these comprise nearly all the building trades. The Masons, not to be confounded with the Stonemasons, and some other trades, never belonged to the Companionage. The "Legend of Maître Jacques" is given, which in its way is, at least, as marvellous as that given in the English Charges. The ceremony of a "Companion" leaving his master after his apprenticeship is over, and on leaving the town in order to travel, and his return, are each pleasantly described. In 1726 the city of Lyon was contested between the rival stonemasons . . . . the "Sons of Jacques" lost the day, and retired from the town for one hundred years. . . . They then deemed themselves entitled to return, when another battle was fought, resulting in their being again defeated, when they retired to the quarries at Tournus; the "Sons of Solomon," however, not being content, endeavoured to drive their competitors still farther away. Another great battle was fought, but who were the victors is, unfortunately, not recorded by the French narrator Perdiguier. This in 1826! An amusing story of the contest in workmanship by the locksmiths of Marseilles is likewise told; and the great battle of 1730, when "the list of killed was very large, and it was with the utmost difficulty that the military were able to restore order." "No study of the *Campagnonnage* at all worthy of the name has yet been made; Perdiguier attempted nothing of the kind; he merely stated what was usual in his own time." We are, therefore, greatly indebted to Mr. Gould for the great learning he has exhibited in elucidating this new and interesting portion of the history,—whether it be called of the Building Trades or of Freemasonry. It is admirably worked out, and is very suggestive of his view that the "Sons of Solomon, Companions de Liberté, free companions, may be Freemasons . . . . the acknowledged principles of the two institutions . . . . rest upon a common foundation," and he gives forty-one coincidences as worthy of particular consideration in support of his views. These cannot here be considered in detail; should there be any reader sufficiently tempted, by what we have here quoted, to read the chapter, he will be further amused by the description of the history and working of "a set of ignorant present-day workmen, who were only known by means of public reports continually detailing their revolting battles, and of whose inner constitution absolutely nothing was known to the general public previously to 1841."

I would suggest to the author his reading the prefaces and texts in the two publications of the celebrated French architect, Philibert de l'Orme,—the one brought out in 1561, the other in 1567, which "pitch into" the French workmen of that period with very strong gusto. De l'Orme, "believing himself to be justified in assuming the title of architect, made no peace with the incapacity of workmen, the ineptitude of master masons and master carpenters, the tricks of clerks of the works, the dishonesty of surveyors, the fallacies of draughtsmen, or the presumption of carvers and sculptors, producing enmities" which caused him to be superseded by Primaticcio in the official post, which he had held for fifteen years, two days after the accession of Francis II., as noticed in the "Dictionary of Architecture," *s. v.* "Orme."

Have the building operatives of England been influenced in their practices by foreigners? I do not gather that this is touched upon in the chapters on the working men of France. The tradition of Charles Martel in the English Charges requires further consideration. I do not gather that our very diligent author has referred to the "importation" of a vast number of artists and workmen from Italy into Germany and France previously and especially during the reign of Franço Premier, and even later; and he has y to consider and prepare an equally caref chapter to those he has already given, on t peculiar practices of the masons of Spa by a study of the works of Caen Bermud the chief authority for the valuable chapter the working of the masons and of the architec in that country, given by the late Mr. Geor Edmund Street, R.A., in his work on "T Gothic Architecture of Spain." In Italy the was a celebrated set of builders as early as 64 as noticed in the Lombardic Code of Roth which refers to the "majestri Comacini" the builders of that period. Mr. Gould h only a few words to say of the Lombard a Byzantine workmen:—"For those in the Sou of Germany means were at hand in Northe Italy to improve their art by communicati with the artists there resident." Yes, and imbibe their peculiarities. This school builders of Como are stated to have emigrat for a period of a thousand years, which c cumstance may have been the groundwork the story (as promulgated by Sir Christoph Wren) of the "travelling bodies of maso each being led by a *maestro*, and living huts or cottages. I do not perceive th this story or class of workmen has be more than once, and then only incidenta referred to as a "theory," in the volu under our consideration. The interesti volumes of Vasari, on the "Lives of the Arti of Italy," do not appear to have been referr to, and they contain very much relating to t traditions and career of the "working me of an early period, who probably influenc England, as it is known they did Fran Germany, and Spain.

Again, no notice has been taken of t astonishing irruption of Dutch and Germ artists,—painters, architects, masons,—also Italians, from Geneva, Florence, and oth cities, not only in the time of Edward I (1327—1377), but especially from the reign Henry VI. (1422—1461), and later Henri which may have greatly influenced the worki of the British masons in practice and thec and tradition. Flemish art was grea patronised in England. It is curious that ev while discussing the Roman "Collegia," c author has not apparently referred to th ancient writer on architecture, whose wo has come down to us, and was w known to many of the Mediæval builde namely, Vitruvius, who, writing in the time Cæsar Augustus, is likely to have known t secrets, if any, of Masonry. In the preface the sixth chapter of his work, he declares th "the ancients entrusted their works to th architects only who were of good family a well brought up," and gives the reason.

Mr. Gould concludes this *first* volume by t observation, "Nothing can be more *indisputa evident* [the italics are ours] than the desce of English, and consequently of all, Freemaso from the Mediæval builders." This, I thi remains to be proved in the succeeding f volumes, which we sincerely hope Mr. Go and his friends may soon publish. Among previous extracts it is stated that Freemason was introduced from England into France 1715 or 1726. "Why, when Freemasonry w introduced from England did no recognit take place of its previous existence in Germa The reason is obvious. Stone-masonry, pur operative, *had* existed in Germany,—Fr masonry, that is *speculative* science, never Can we, on this conclusion to which Mr. Go has arrived, infer that speculative Freemason after all, is new, and was unknown to British lodges before 1717? "Speculat masonry," writes Mr. Gould, in his equa interesting and laborious "History of the Fo Lodges" (1879, p. 33, which work we here gla notice in connexion with the more importa one under review) "was, so to speak, only its trial during the generation which succeed the authors of the Revival. The institution a society of free and accepted masons, on cosmopolitan and unsectarian basis, was c thing; its consolidation, however, opposed as practical working showed it to be, to the anci customs and privileges of the operatives, w another and a very different affair." And notices (p. 32) that "The summary erasures lodges, . . . the expulsion from the Masonic Uni of original No. 4, and the high-handed sup cession of original No. 3, amply attest that, its career of innovation, the Grand Lodge w

in no degree restrained from the full exercise of its assumed powers, by any sentimental feeling of gratitude toward the lodges which had called it into being."

It is somewhat amusing to an outsider to read that, "During the pendency of the secession (for about ten years) the Lodge of Antiquity No. 1 (formerly the old Lodge of St. Paul, formerly held at the Goose and Gridiron in St. Paul's Churchyard) founded a separate Grand Lodge of its own. . . . . There being in consequence, at such time, four Grand Lodges of England in contemporaneous existence, viz.:—1. The Grand Lodge of England (Regular Grand Lodge), established 1717; 2. The Grand Lodge of All England, York Masons, 1725; 3. The Grand Lodge of England according to the Old Institutions ('Seceders'), 1753; and the Grand Lodge of England South of the Trent (Lodge of Antiquity, original No. 1), 1779" ("Four Lodges," p. 22). In addition to this novel circumstance, we are enlightened by the fact that, "The introduction into this country (partly by M. A. Ramsay in 1740) of the then newly-devised and so-styled 'High Degrees' was doubtless greatly aided by the foresight of their originators, who, whilst refraining from any direct rivalry with the Ancient Craft degree, at the same time cleverly associated their invention therewith, by limiting the privilege of membership to Freemasons. They thus instilled a belief that the alleged 'High Grades' were a recovered portion of the ancient mysteries of the fraternity. . . . . and instead of an innovation, but the raising of a more stately and perfect superstructure, on the foundations of the existing edifice of Masonry." Dr. Oliver speaks of forty degrees as then practised on the Continent, though he had a list of nearly 1,000. And, "The special object of the new ritual (Seceders) was the promotion of Royal Arch Masonry (introduced about 1736-44), and as many gentlemen preferred joining the Grand Lodge of 'Four Degrees' to associating with the society which worked but 'three,' the rival body was successful in its career of innovation. A clue being thus afforded to the reasons which prompted its formation, as well as to the causes of its extraordinary success." It appears that in 1766 the grand secretary of the Grand Lodge called the Royal Arch, "a society which we do not acknowledge, and which we regard as an invention designed for the purpose of introducing innovations amongst the brotherhood; and diverting them from the fundamental rules which our ancestors laid down for us." We must conclude these extracts by another:—"Masonry may, therefore, be termed the stock, and modern Freemasonry the scion; the pristine simplicity of our ancient English rite being now only reflected in the mirror of tradition" ("Four Lodges," p. 42).

This History thus passed under review will, no doubt, take its place as a standard book of reference and authority, superseding all others, a position which it deserves to have accorded to it, if only for the calmness with which it criticises the assertions, stated as facts, in so many of the writings of the brethren:—"It is impossible," writes Mr. Gould, "to restrain a feeling of impatience when writers whose works would be otherwise valuable destroy the confidence of a critical reader by such baseless assertions" (p. 147). Another reason for its taking a high position is the clear exposition, after long researches, into the various portions of the ancient systems or sects which it is assumed were the predecessors of Freemasonry. The last chapter, as we have already observed, is entirely new, and adds great interest to the inquiry, and to the volume, the careful perusal of which will repay all those who are interested in the subject of Freemasonry.

Wyatt Papworth.

A Popular Resort.—The shareholders of the Winter Garden Company at Weston-super-Mare are about to consider a proposal from a gentleman of experience in the far West to obtain the property and form therein a zoological collection. The gardens, at present, are in an incomplete state, as the directors do not care to expend more money than the amount subscribed in shares, but there can be little doubt that if the same was properly completed, and a large hall or pavilion erected on the site set apart for such building, the same would become a popular resort.

ANKLES AND WRISTS, FEET AND HANDS.

It may be noticed of ankles and wrists, when these are compact and well formed, that the rest of the figure is usually of good shape also. In these parts the construction of bone on which the limbs are framed comes close to the surface and evinces by their character the quality of the rest of its structure, and on this subject a few remarks are offered.

It has been affirmed of the thoroughbred horse that he can stand under an equal weight with the stoutest of the breed usually employed by brewers, the superior compactness of the bones making up for their less width. In applying this remark to the human construction some reserve may be requisite, although all may notice the great variety which is observable in the look of blood and breed between not only races of men but individuals, even of the same classes. Regard to these peculiarities and differences in the human figure is especially in the province of the sculptor, inasmuch as it is by the element of form alone that he can present and express all that is his aim in his art.

"The biggest man in the smallest compass" is an expressive athletic phrase, and is well exemplified by many of the ancient works of sculpture, especially by the principal ones remaining of those which adorned the Parthenon. The ankles and wrists in these representations of the human form are very distinct and clearly displayed, but the ankles are not large. A wide wrist in a man is essential to strength as a support for the hand, especially in the act of wrenching round, but it need not be clumsy. In a woman, who is not supposed, for beauty, to require strength in the arms, it cannot be essential that the bones of the wrist should be wide, although it is assumed that it should be sufficiently large round to allow the hand to be drawn through a bracelet that fits it, but not too tightly. This, however, presupposes, not a diminutive hand, but that it is so pliable as to close round, like the petals of a flower or the roll of a leaf, in passing through a small circumference.

In respect to ankles, however, the two sexes are more in a class, for both desire to be agile, and there can be no grace without a reserve beyond the strength exerted, and women, as dancers, exercise as great feats of activity as men. In consequence in either case there can be no satisfactory appearance of erect attitude without well-formed and compact ankles on which the whole superstructure is supported and moves with swiftness and precision. The ankle accordingly is a part which requires much attention, and there is no portion of the frame perhaps, with the exception of the head and face and hands, in which a greater diversity is to be recognised. The inner ankle, which indicates the lower termination of the *tibia*, is somewhat higher and further forward than the outer ankle, which is the lower end of the *fibula*. These two bones form the bony support of the leg, from the knee to the foot, but the variety of configuration in which their terminations just above the latter are presented in nature and translated in art is very remarkable.

The two ankle-bones, as we have said, are not exactly opposite, but the degree in which this takes place has many phases. In some cases the outer ankle bone is much lower than the inner one, in some nearly opposite. In well-selected form, however, there is rarely a great difference. Then the degree to which each ankle-bone is marked is very variable. In some cases the one, sometimes the other, is most pronounced. In some forms the inner ankle seems nearly lost, and in others to be noticed as the more strongly marked of the two, and art follows nature in these variations. In Thorwaldsen's Venus the inner ankle is but slightly pronounced, while in the Venus de Medicis it is the more emphatic of the two. Canova, as usual, follows the antique example in this respect, and also in the considerable substance and width he gives to the ankles in his statues of Venus. The question presents itself, Is so much width requisite? The weight does not rest upon the outer parts of these prominences, but upon the more central underneath parts of their surfaces, where they are articulated on the bones of the foot. Of course, it could never be acceptable that the ankles should have any appearance of weakness, but on the other hand, a superabundance of bone there which is not requisite for strength only takes away from the appearance of fleetness and agility. How small are the feet and fetlocks of a deer, and even its hocks are not wide across, and yet what wonderful speed and endurance this tribe possesses; and here we naturally recur to what has been remarked of the bones of the dray-horse and racer, namely, that compactness of bone makes up for its less width. It is, no doubt, somewhat hazardous ground to venture on to suggest that some of our acknowledged Classic types of beauty among the antique statues have ankles somewhat thicker than is requisite, especially as in this respect they have been followed by many modern sculptors, although not by all. In regard to the practice in Rome, this subject is open to the following remark,—that the Roman woman is usually of stout proportions, especially when of the peasant class, who furnish most of the models to artists in that city. It is only, however, to a slight degree that we venture to differ from so much precedent; but this moderate variation may be submitted to add much to the taper grace of a leg, without taking from its strength. To speak generally of the female limbs, both upper and lower, when they are beautiful they may be described in comprehensive terms as not very widely departing from the tapering cylindrical form, varied, however, all over with contours of great diversity, carefully to be studied from nature with discrimination of selection. Thus unnecessarily wide ankles or wrists take away from this taper form, and thereby impair its delicacy and grace without affording greater strength; for when these parts are wider than is requisite, it rather leads to the view that the bone is not of the most compact and high-bred quality.

It is evident that this mode of reasoning and treatment must not be carried too far as no result can be more unfortunate and more removed, not only from grand and noble, but even from truly graceful, form, than that the ankles and wrists should look insufficient. It should stop short at that degree of fineness that may give a look of delicacy to the wrists in female form and of activity in the ankles. In the latter it is essential also that they should be very clean cut and distinctly marked, so as to show that their actual size is not the result of fat or thickness of skin, but that of the bone itself covered but with a thin skin. With persons not in health, or inactive, or aged, it is common for these parts not only to become enlarged, but also puffed, so that the ankle-bones are scarcely seen; and the filling up of the depressions between them and the tendon of the heel, instead of giving them real strength, rather argues the same degree of integument or fatness upon the prominences also of the ankle-bones, which virtually diminishes the size of the bones themselves. Thus, if the ankles are to possess that graceful fineness which favours the taper form of the legs, these parts around have to be kept rather clear of fat, which is a characteristic of youth, in contradistinction to that of puffiness which is a quality of age or want of condition. The above treatment in these parts is quite consistent with the utmost roundness in the limbs. It must not, however, be carried to leanness, but taste and selection of form have to regulate the distinctness that should be adopted.

The heel also, especially in female form, may be kept narrow, but it should not be too short, or a want of leverage for the hind muscles of the leg to act upon is the result. The *os calcis*, or bone of the heel into which the principal muscles for extending the foot downwards are inserted, is not in itself a wide bone, and the chief width of the heel, as generally seen, consists in that of the padding beneath it on which it rests, and is raised from the ground; but the making this unduly wide adds nothing to the real strength of the foot, and only renders it heavy and clumsy. At the same time a too great length of heel is especially ugly, as not unfrequently seen in the negro race, and, moreover, by its too long leverage renders some actions of the foot slow.

Also, there is no real strength in an undue thickness of the fingers and toes, of which the bones themselves are small, and the tendons which move them do not add much to their size, the rest of their dimensions being made up with fat and integument and outside skin, which padding and protection are requisite up to a certain point, but beyond which are superfluous and conducive neither to strength nor grace.

Finger-nails also should be of sufficient length, and their sides more parallel than they are usually made, and not like little toe-nails, as they are shown in art in some well-known instances. Finger-nails and toe-nails are as distinct in their character as the hands and feet are to which they belong,—a consideration often not sufficiently regarded. In speaking of the length of the finger-nail, it is the part which is closely attached to the finger-end that is alluded to, and not to that portion which may have grown beyond its tip. In portraits by Vandyke, probably from the fashion of the time, the finger-nails often project far beyond the ends of the fingers, of which, with due deference, the real grace may be doubted. If permissible in a picture, this certainly is not in a statue. Indeed, in such case in Nature, the nail ceases to be a protection, and becomes an element of possible discomfort, as liable to fracture.

The argument has followed more closely the female form than the male, but it applies to both, with the consideration to be observed that in the male figure a still greater distinctness of the form of the ankle and wrist bones is characteristic and appropriate. With respect to the wrist also, as indicated above, width is essential to give that power of various kinds and movements which the male arm requires, and without which no size or strength of hand or fingers would avail much. Men strong in the arm are wide in the wrist, and, indeed, this peculiarity is a far surer indication of real strength than the size of the muscles of the arms, as of the *biceps* of the upper arm, on which so much stress is apt to be laid, and than which no sign is more fallacious.

Remarks such as the above can only be useful to the student when notice of them is accompanied by a careful consulting of nature and of the best examples of the antique; and there is no doubt, in preparing a model for a statue in marble to be pointed from, it is far better to keep these important bones of the ankle and wrist rather full in all respects than to reduce them to the last degree of fineness which is best done in the marble itself when the work approaches completion, as we know that in that material nothing can be added.

The palm of the hand and the instep of the foot have much in common, in its being essential that they should possess strength and freedom of action combined with compactness, and that they should grow gracefully and firmly out of the wrist and ankle. In the instep it is requisite not only for strength but beauty, and to prevent jar on setting the foot down, and to give elasticity to the carriage that it should be arched, this arch resting on the pad of the heel and of the balls of the front foot just before the toes begin, and on which arch, formed by a number of bones closely united, and yet with some play, the whole superincumbent weight of the body and limbs is taken. The palm of the hand also should be pliable, and capable of taking a rounded and closed form as well as being flat.

In respect to the fingers which, with the thumb, may be called a united family of five, there is much to interest the artist and the æsthete. Next to the features of the face the hand is the part of the human body which is capable of most expression, and is more than any the direct material agent of the mind. The tongue says most, and the hand and fingers do the most. The thumb may be characterised as the sturdy boy of the family, who, with his nearest ally, his sister, the forefinger, transact most of the business of the establishment. Next may be said to come the two younger sisters, the middle one being the tallest of the family, and the next deeply attached to her, insomuch that in all movements of the hand they have a manifest tendency to keep together. Next and last comes the smallest of the family, boy or girl, which is somewhat independent in its action, occasionally, indeed, standing quite aloof, and having, indeed, an independent *extensor* muscle all to itself. This idea, although fanciful, points to the comparative intelligence and variety of action which the wonderful human hand, with all its array of fingers, possesses. The hand of the ape is comparatively a fore-foot. The fingers have not the same individuality, and mostly act as a paw, thus grasping the branch of a tree, not by opposing the thumb to the other fingers, as with the human hand, but using all together. This varies, however, in degree in the different tribes, but the characteristic is seen strongly in the gorilla class, where the thumb is very short.

On the other side, in the human form much of the chief employment of the hand depends on the use of the thumb as antagonistic to the fingers, as in grasping a staff or a sword, or a pencil or a pen. In consequence of the thumb alone being thus opposed frequently to the whole of the rest of the fingers, it is not suitable or convenient that it should be in any degree too short or slender in a delicate hand, as that would detract much from its use. It seems, indeed, by no means, even for grace, requisite that it should be so, for beauty and utility are closely associated, and it is only desirable that it should be fine at the tip, which does not take away from its strength. The little finger, however, may be small, as it adds but little to the strength of the hand, and is chiefly useful as an accessory, as in the steadying of the hand in writing and drawing. It is, however, especially useful to the instrumental musician, so that in that case it should not be small. Indeed, it may become more developed by exercise. The middle finger, being the longest, adds much to the grace of the hand, and the fore and fourth fingers, which are on each side of it, may appropriately be made of a similar length to each other, although this varies much in nature, in which, sometimes the one, sometimes the other, is the longer of the two.

With the foot again some illustration may be gained by regarding that of the ape. This tribe have been called *quadrumani*, or four-handed, as the foot in them as well as the hand grasps, which is essential in their arboreal habits. The great variety of actions of the human hand is almost as peculiar to man as his intellect, and the foot is chiefly a support in an upright attitude, and the toes act together and do not grasp. The hind foot of the gorilla has the great toe similar to the human thumb, set on antagonistically to the other toes, and widely apart from them, and he is even said to prefer to use the hind rather than the fore foot in grasping. The mode of the ancients in seeking beauty seems to have been in some degree guided by divergence from the lower types, and yet in some of the most cherished antiques of the Greeks and Romans, we find a larger space between the great toe and the next to it than is seen in Nature now. How is this to be accounted for? We venture to suggest, as they were both sandalled nations, and as the strap or thong to keep the sole of the sandal up close to the foot passed between these toes and was fastened in a loop above, that thereby these were somewhat unduly pressed apart, which from usage, however, came to be viewed as a quality of nature. A greater division between these toes than between the others is assuredly pleasing, but if carried to an extreme this may be doubtful. It affords no additional strength, and gives an unnecessarily splay form to the foot, and the right foot especially of the Venus de Medicis may be cited as an instance of this, in which if the great toe were somewhat straighter and less separated from the next one, where the sandal strap would pass between them, it might be more graceful and compact without losing anything in strength.

In saying, however, that the foot is a support, and that the toes thus act all together in conjunction, it is not meant to convey that it is incapable of expression; indeed, it may be alleged on the other hand that this quality in the foot has been somewhat overlooked, and that in statues generally there is a sort of regulation way of disposing the toes without regard to expression, whereas we may test at once in ourselves, by baring the foot and placing it on the ground, and simulating to ourselves the effect of anxiety or hesitation, &c., that the foot is thereby contracted, and the toes pressed together into a compact form. This is not the only instance of their change of form and disposition under the emotions of the mind, but it may be sufficient to draw the attention of the student to the fact that although far inferior to the hand in that respect, the foot also may be an element of expression, which redeems it from its monotony, and may be considered especially worthy of notice by the sculptor, as the feet of statues are on their pedestals raised from the ground, and are often so much regarded. The great toe is always the stoutest and strongest, but in the best forms, in nature as well as in art, is not the longest, the end of the second toe being slightly in advance of that of the first, or great toe, thereby giving a more rounded and complete and graceful outline to the disposition of the toes, and of the front of the foot. It is also pleasing that the second toe should be markedly larger than the third, and the third, although in less degree, larger than the fourth. In respect to the little toe a comment may be made similar to that with regard to the little finger, namely, that as it is so much less practically useful than the others, it may be diminished in size without lessening the strength of the foot, but thereby much enhancing its beauty.

Hands and feet, indeed, should have respectively a consistent character, and when the little finger is small the little toe will appropriately be in harmony in regard to size. Nothing, indeed, can well be more useless as well as ugly than the little toe being large. It is ugly in itself, and even in a shoe enlarges the size of the foot without any gain in strength. A foot assuredly should be rather small than large, that is to say, it should be compact. It is quite possible for it to be too short as well as too long, for it should be in proportion with the figure. This will be given in reference to the upper members if it approach closely in length that of the lower arm from the wrist bone to the elbow, a very useful measurement in sculpture, most suitable both for beauty and for grace of movement. With the view of affording another useful measurement, namely, for keeping the hands and feet in an agreeable proportion, to each other we append one of which we have not seen previous mention, viz., that the length of the open hand from the point of the middle finger to where the palm joins the wrist, may well be made to coincide with that of the whole length of the top of the foot from the tip of the longest or second toe over the instep to where it joins the leg. The agreement of these two measurements will tend to keep the scale of the upper and lower extremities in accordance, but, of course, like other cognate proportions, is not absolute, but subject to some degree of modification in harmony with the character of the subject. In the case of a Hercules, for instance, the hand would appropriately be somewhat larger in proportion to the foot than in a delicate female figure. The expression that a man is "a man of his hands," as applied in an athletic sense, indicates not only skill in exercise or combat, but a powerful arm, wrist, and hand to back it, and in these cases, therefore, the hand and wrist are appropriately larger so as to give grasp and power. On the other side, the delicate hand of woman is even more efficient and deft at its suitable occupations when small and fine, but her foot must not be too diminutive or she will lack easy grace in those exercises which are suitably common to both sexes, such as walking and dancing.

It has been already commented on that the instep should be arched, so as not only to give beauty to its form and outline, but elasticity to the carriage. No foot is more inelegant, and at the same time more readily wearied, than a flat foot. The arch, especially of a beautiful female foot, is such that, if placed lightly on the floor, daylight is to be seen beneath its centre between the ball of the foot and the heel. A somewhat similar grace and roundness is to be remarked in a beautiful female hand and wrist. In the restored hands and wrists of the Venus de Medicis this has, perhaps, been carried to an extreme, and a degree of sweep of line adopted not borne out by Nature. The no doubt enthusiastic restorer of these, inspired by emulation of the graces of the rest of the figure, overstepped the authority of Nature in his treatment of the wrist and arm, in curving the lines too much to keep within the boundaries of truth. And if the original arms and hands could be found, they would doubtless rebuke this pardonable extravagance. As it is, however, notwithstanding those now present on the figure are known to be restorations, yet as possessing the authority of acceptance from having been so long conjoined to the original torso, head, and lower limbs in the statue as it stands in the Tribune at Florence, their influence is much seen in the works of students of the antique. Still, this delusion points to a true grace, inasmuch as the angle made by the bend of the wrist inwards, as in both the hands of the Venus de Medicis, should never be treated in such a method as to appear sharp and abrupt, but means are attainable for this without falsifying the bones. The study of grace combined with the truth of Nature is one of the most interesting fields of investigation and realisation by the artist; and in this, sculpture, although thereby its task is made more arduous,

has peculiar advantages, inasmuch as any departure from real truth which in one view may escape detection, will cause manifest deformity in another, which will rebuke the innovation and cause a rectification to be made, and the art to resume its due and proper course. It is thus that statuary has come to be especially accepted as the registry of excellent form, to a degree which painting, whatever her other advantages may be in some respects over her sister art, can never attain to. Thus it is evident that those examples of measurement to which attention has been directed above are much more readily illustrated in sculpture than in painting, although they are both in their several methods the handmaids of truth.

In ankles and feet painting has not such distinct and defined precedents to exhibit, but in respect to wrists and hands the portraiture of the Renaissance and of modern art of the last few centuries and of the present day affords many beautiful instances, and as they are second only to the expression of the features of the face they attract readily great attention. The costume of this period does not show the feet bare as the hands are, or they also would be noticed to have their expression as well as their more highly placed relatives; although, of course, not to the same degree. Where, however, they are exposed, as is usually the case in poetic sculpture, their expression as well as their form may well repay consideration. The most delicate feet of the present day are to be found, it is said, in the Zenanas of the East, where the feet of the occupants are seldom used in walking, and are never compressed by tight shoes, dainty slippers being usually their only covering. It does not, however, follow that their quality of form would be suitable to the highest class of sculpture; for without the development of exercise it is possible that they may be pretty without being beautiful.

EXHIBITION OF THE ROYAL SCOTTISH ACADEMY.

The fifty-seventh exhibition of the Scottish Academy was opened to the public on Saturday, the 17th February, when the rooms were crowded to excess, curiosity having been excited by the rumour that the works exhibited were more than usually attractive. This is, no doubt, the case, and although, as usual, some of the most remarkable works hail from the south of the Tweed, it is satisfactory to observe that the exhibition affords evidence that the distinctive characteristics of the Scottish school continue to manifest themselves, and that there is an obvious effort at the attainment of a high ideal rather than the mere realisation of the commonplace.

Conspicuous alike by its size, position, and subject is Sir Frederick Leighton's well-known "Phryne at Eleusis." Remarkably beautiful for a rich and harmonious scheme of colour is L. Alma Tadema's portrait of his daughter, and if less remarkable in this respect, not less beautiful in its simplicity is J. E. Millais's "Caller Herrin'," albeit the dainty maiden sitting beside the basket of fish has none of the characteristics of a veritable vendor of fish. Opposite this work of Millais's hangs a graphic and impressive scene from "Engene Aram," by J. Pettie, and near at hand is the "Farmer's Daughter," of W. Q. Orchardson, delightful in its freshness. T. Faed's "I cannot, Mother, I cannot," tells its own tale, but the same cannot be said of John Faed's "Poet's Dream." The poet may be Milton, or perhaps Bunyan, and the dream is but too palpable. Very charming is J. C. Hook's "Tanning Nets," and J. W. Oake's rendering of a bleak "March Morning," is admirable.

Of the resident artists the one who has come most prominently to the front is a sculptor, Mr. Clark Stanton. Mr. Stanton, besides being a sculptor, is no mean proficient with the brush, both in water and oil colour, and he is besides extensively employed in modelling works for the silversmiths. Possessed of this versatility, he has hitherto dissipated his energies, but seems at last to have determined to tackle a work of importance in his special line, and he may be congratulated as having achieved a marked success. The "Pandora" will, we think, bear favourable comparison with any work of the kind hitherto produced in Scotland. She is represented as seated on a low chair; the limbs, stretched out and crossed at the ankles, are enveloped in light drapery, the upper portion of the figure being nude. The contours are fully developed and finely modelled, but chaste and refined withal, and the position is graceful and unaffected. Upon her right thigh rests the unopened casket, the right hand lingering near it as if in hesitation; the left arm hangs listlessly over the arm of the chair, whilst the head is turned slightly to the left, the face being lighted up by a fitful smile. From whatever point of view the figure is looked at, the lines blend harmoniously. The pedestal is decorated with appropriate bas-reliefs. Mr. Clark Stanton is an Associate, and may have aimed at securing the vacant seat in the Academy, but this has been awarded to Mr. W. D. Mackay, whose charming pastorals, in which figures and landscape combine, never stale the appetite. This appointment does not appear to have met with the approbation of Mr. Rowand Anderson, architect, who, in consequence of it, has returned his diploma as an Associate to the Academy.

Mr. G. Reid represents on a large canvas the "Last Sleep of Savonarola" in an impressive manner. There can be little doubt as to the ability displayed by the artist in the treatment of the subject, but the picture seems a more fitting adjunct to the cell of an ascetic than the room or gallery of a modern lover of art, for the daily contemplation of it could hardly fail in producing a depressing effect.

Very dramatic is R. Herdman's "St. Columba Rescuing a Captive," a woman who has been bound to a rock, and apparently intended to be offered up as a sacrifice by a group of Ancient Caledonians, who are certainly depicted as savage enough. The artist has succeeded in imparting to the saint an air of fearless dignity, which impresses the savage nature with wonder and awe; the attendant monks (one bearing a high wooden crucifix) bear their respective parts in a characteristic manner.

Mr. Lockhart returns for a theme to the pages of "Gil Blas," and has never been more successful than in his rendering of the scene where the hero narrates his adventures to the Licentiate Ledello. The uncontrollable mirth of the gouty old Churchman, and the anxiety of his housekeeper as to its effect upon her master, are happily hit off. The execution is in Mr. Lockhart's usual broad and effective manner and brilliance of colour, the yellow satin in the young adventurer's costume forming the key-note. W. Mactaggart more than maintains his ground in the rendering of effect in sky and sea. There is the same uncertainty in regard to drawing as hitherto, but the canvasses have less of that rough painty look which used to be so unpleasant. His "Lobster Fishers" suggests the steady strong breeze and scudding movement of the water much more effectively than if there had been an endeavour to give more definite form to the waves, and while a boat is pitching and tossing the eye cannot take accurate account of details in the costume, &c., of the occupants.

If W. B. Hole has not achieved a great success in his rendering of the fourth scene of the second act of "Henry IV.," he has at all events steered clear from caricature, and produced a picture worthy of admiration, although it may not excite enthusiasm. *Falstaff*, *Prince Henry*, and *Poins* are each fairly represented, and their respective characters accurately discriminated. The drawing is careful, the composition excellent, and the colouring pure and effective. The influence of Orchardson may be discerned in the manner of treatment. But Mr. Hole has never been content to confine himself to one class of subjects, although these have been hitherto of an historical or narrative description. He now appears as a landscape and figure painter, and the "Night Catch," representing fishermen landing herrings caught over night, will bear favourable comparison with any work in the rooms of a similar description. It is not only remarkable for the truthfulness and accuracy of the details, but for the effective rendering of the early glimmer of the rising sun over sea and rock.

It is with delight that we hail the return of Sir Noel Paton to the realms of Fairyland. He is in a more congenial atmosphere there than when engaged in the attempt to excite the sentimental susceptibilities of pious old ladies. His Scriptural subjects are too pretty to be profound; but a fairy is nothing if not pretty, and profundity would extinguish her; and very pretty is the spirit who is challenged by the mischievous *Puck*. She is a creation as harmless and fragile as a butterfly,—a thing of beauty, which has its use to those who have clearness of vision to appreciate and understand it.

We regret to see that Mr. Robert Gibb has thought proper to put aside that with which he is familiar, what he can test by observation and experience, and to attempt to define that which he can only guess at. Sea kings were probably very grand and brave fellows, but their bravery can only now be to us of the melodramatic sort, and cannot, in the nature of things, raise the same feelings as did the real heroes who stood in a "thin red line" on the heights of Alma. This "Sea King" we have here, what is he? A fine-looking, muscular fellow enough, with a vest of chain-armour, bare shapely arms, a martial-looking face, a well-trimmed luxuriant moustache, and shaven cheeks and chin. He is not the real Norseman, but a modern dragoon got up to represent such. And so, too, with the "Last Voyage." Who feels any sympathy with the voyagers who convey the Viking to his last resting-place? Were there no burials in the trenches at Balaklava or the sands at Tel-el-Kebir? The author of the "Thin Red Line" can do better things than what we have here.

Amongst the landscapes (pure and simple) one of the most noteworthy is David Farquharson's "Links of Forth." From a height overlooking a mass of russet foliage, the eye ranges over the vale of Forth, where the river winds "in and out and round about" in so remarkable a manner,—a scene that must have struck every trrveller who has passed Stirling on his way to the North. Another impressive scene, although of quite a different sort, is R. Macgregor's "Crossing the Holy Island Sands," where a number of figures are wending their way across the level expanse, half-veiled in mist. Mr. Macgregor adopts a different *rôle* in "A Critical Moment," where a stalwart reveller stands, pistol in hand, upon the snow-besprinkled ground ready to meet the companion with whom he has quarrelled.

Gloomy and impressive is the "Lochan Dhu" of John Smart, and J. Campbell Noble shows poetical feeling in the picture named "As through the Land at Eve we went."

LEAD POISONING.

THE HUDDERSFIELD WATER CASE.

The case of Milnes *v.* The Mayor and Corporation of Huddersfield (52 *Law Journal* Reports, p. 65), which was recently decided by Mr. Justice Mathew, and is reported in this month's legal reports, has an interest for various persons. It is a case which not only affects the general public, but cannot be passed by without notice by scientific men and by lawyers. The facts out of which the action arose were most simple. The plaintiff, Mr. Mills, resided in Huddersfield, and the Corporation were the body who supplied water to the town. The water to the plaintiff's house was conducted from the mains through a lead service-pipe, which was the material invariably used at Huddersfield for this purpose.

In the middle of the year 1881 Mr. Milnes was attacked by an illness, the cause of which seems for a long time to have been undiscovered by his medical adviser. He got worse instead of better, and the symptoms at length clearly showed that he was suffering from lead-poisoning. The water in the house was forthwith analysed, and the presence of lead was discovered in it, and ultimately it was admitted on all hands, and at the subsequent trial, that Mr. Milnes's condition was due to his use of the water which had become contaminated with lead absorbed from the service pipe. There were some other facts material to the case which must yet be mentioned. By section sixty-six of their private Act the Corporation were entitled to prescribe the material to be used for service-pipes, and by their by-laws it might either be lead or cast-iron. On the other hand it appears that by section forty-eight of the Waterworks Act, 1847, the consumer has the power of compelling the Corporation to supply him with water through a service-pipe made of a material not selected or approved by the Corporation. Again, the pipes when laid belonged to the consumer, and the cost of laying them was paid by the consumer. By section thirty-five of the Act of 1847 the Corporation were bound to have in their mains pure and wholesome water, but nothing was said about the water when it reached the consumer's premises. It was under these circumstances that Mr. Milnes brought an action

for damages against the Corporation, and we may say at once that Mr. Justice Matthew decided, and, if we may say so, rightly decided, that the Corporation were not liable for the injuries which Mr. Milnes had suffered. It appears to be a correct decision, because there seems to have been no breach of any duty on the part of the Corporation. The water in the mains was undoubtedly wholesome, the material of which the service-pipes were made was generally considered a proper material for such pipes; the consumer could if he desired have had other material, and the service-pipes did not belong to the company. Thus, when they turned the water into the consumers' pipes they turned in wholesome drinking-water. It is a matter of regret when a man suffers serious injuries, but it is not less a matter of regret if other persons, even a Corporation, have to pay damages when they have not done any thing improper or illegal. Therefore, as we have already said, it appears certain that a consumer, under such circumstances as we have mentioned, cannot make the body which supplies the water liable for damages.

But, on the other hand, it is clear that this case is one of much more than mere general or legal interest. It must make every one who receives water for his house through lead service-pipes doubtful if it is safe to drink it. "No clear explanation," said Mr. Justice Mathew, in the course of his judgment, "of the cause of the contamination of the water supplied to the plaintiff was given by the scientific witnesses called on either side. It was stated that soft water like that supplied to Huddersfield usually contained ingredients which seemed to form an insoluble coating to lead service-pipes, and prevented the absorption of lead. It was not explained why this protective process had not taken place in this particular case. There was evidence to show that some persons who were peculiarly susceptible of the poisonous property of lead, and that so small a quantity as one-fortieth of a grain of lead per gallon of water might be injurious." Then the judge further points out how scientific witnesses had stated that the amount of lead absorbed in water varied according to its nature, and how they were unable to explain how the plaintiff's water had been so much contaminated, or how the plaintiff alone had been so seriously injured. But all this must make every one suspicious of lead pipes; for who can tell whether his constitution is or is not susceptible of lead poisoning until he has passed through the ordeal? Or, again, how is it possible to keep water always of a character as not to absorb lead? On the other hand, there is a danger lest too broad conclusions should be drawn from an apparently isolated case. Still, as the matter stands, it is obvious that lead service-pipes are open to much suspicion; and next, that water companies should have the question closely investigated by careful scientific observation. One thing, at any rate, is certain, after this case, that the public can have no confidence in water conveyed through lead service-pipes.

THE STORY OF THE ASHBURNHAM MSS.

THE extraordinary interest connected with the Ashburnham collection of MSS.,—which, it is to be hoped, will soon become the property of the nation,—is such as appeals not alone to the bibliophile, but to the artist. The extreme rarity of the specimens of the illuminator's art of the sixth, seventh, and eighth centuries, which render the collection so unique, has, now that the library is in the market, excited abroad a no less lively interest than has been manifested by the press at home. This interest has, however, been carried to the highest pitch in Paris by the startling disclosures concerning some (and those the rarest) of the Ashburnham MSS., made only a few days since before the French Academy of Inscriptions by the learned administrator of the Bibliothèque Nationale, M. Leopold Delisle.

On February 22nd last, M. Delisle read to his *confrères* of the Academy of Inscriptions a lengthy paper relating to the sad story of the manner in which some of the choicest treasures of the Ashburnham collection came into the possession of their present owner.* Some three years ago, it may be remembered, M. Delisle so successfully proved that the fragment of the antique MS. Pentateuch in the possession of Lord Ashburnham had been torn from the original volume in the Lyons library, that his lordship most generously restored to its old home the treasured MS. The same learned authority has now come forward with unassailable evidence to prove that many other of the choice MSS. of the library of Ashburnham Place entered that collection through the no less reputable means than the direct robberies committed by M. Libri,—whose trial for his culpability is a matter of history,—in the libraries of Lyons, Tours, Orleans, and Troyes. M. Libri, a distinguished bibliophile, Inspector-General of the Public Libraries, and a naturalised Frenchman holding (before his conviction) a position in France almost equal to our own Dibdin, sold to Lord Ashburnham's father, it may be remembered, some of the rarest of the MSS. in the collection, the purchase of which is now the object of so much discussion on the part of the Trustees of the British Museum. Of the MSS. which passed into Lord Ashburnham's library from the Libri collection, M. Delisle has now shown that no fewer than six were stolen from the Lyons library, four from that of Tours, two from Orleans, and one from Troyes. The proofs to support this startling statement cannot be set aside, for they are founded on a comparison of the types of handwriting, the nature of the vellum, the dimensions of the volumes, the ink used, the length of the lines, the character of the illustrations, and the gaps in the original volumes which the Ashburnham fragments exactly fill up, together with many other points which we are afraid only too conclusively afford evidence as to the truth of the fraudulent manner in which these rare and priceless relics of the early centuries of the Christian era, sold by an eminent but unscrupulous bibliophile to the father of Lord Ashburnham, were obtained.

We can well understand how M. Delisle, knowing the interest to the French cultivated public of the library, the destination of which is now hanging in the balance, felt little hesitation in occupying the attention of his brother Academicians by the singular disclosures his research has enabled him to make. As has been made known to the public (particularly by the brilliant article recently published in the *Times*), some of the choicest treasures of the Ashburnham Library passed into that collection from those of the French bibliophiles Libri and Barrois; while the MSS. themselves are works either executed in France, or composed, as M. Delisle remarked, of documents intimately connected with the history, literature, and art of France. M. Delisle, it would appear, has never had the good fortune to see the Ashburnham MSS.; the collection indeed, is one which, being somewhat rigorously guarded, is almost unknown except by reputation. It is chiefly by the various published catalogues and by the invaluable report on the collection made by Dr. Zangemeister to the Viennese Academy, that M. Delisle has established his means of comparison with the facts his researches have revealed. As far back as 1866, it would appear, M. Delisle satisfactorily proved that no fewer than sixty of the MSS. sold in 1849 by Barrois to Lord Ashburnham were the result of a series of robberies committed by Barrois from the Paris Bibliothèque Nationale, a fact fully acknowledged, indeed, by Lord Ashburnham himself.

As for the MSS. from the Libri collection, they, as M. Delisle shows, are of no less suspicious a source. He thereupon takes up what he calls the *pièces de résistance* of the collection, the very features which are specially mentioned as the choicest treasures, and foremost amongst which stand the seventh-century Pentateuch,—a volume of inestimable artistic value as representative of the art of this distant period. This Pentateuch M. Delisle shows, beyond the question of a doubt, to have originally belonged to the cathedral of Tours. By a quotation from a catalogue of 1706 the volume is mentioned as having been at that date in the collection. With the Revolution the precious MS. passed to the library of the town, where it was seen as late as 1840. Libri himself, indeed, notices the volume in the account of a visit made to Tours, and inserted in the *Journal des Savants*. When, however, in 1850 a detailed catalogue of the library was prepared, the MS. had disappeared. Now, in 1847 Libri sold to Lord Ashburnham a Pentateuch the excessive rarity of which the French bibliophile did not fail to expatiate upon. His statement that the paintings were executed by Romans, were far more numerous and were in a state of conservation far superior to those in the Virgil of the Vatican, is in no way exaggerated; his story of the MS. having come from the abbey of Grotta Ferrata has, however, since been shown by Dr. Zangemeister to have simply been one of the many tales vamped up by M. Libri to conceal the real source of many of his treasures. Lord Ashburnham, indeed, it would appear, loyally admitted to M. Delisle the suspicious circumstances connected with his possession of the relic. "Different manuscripts of the Libri collection" (his lordship wrote, June 16th, 1869), "contain what I have long suspected, and what you have shown to be, fraudulent attempts to hide the true origin of books which had been either lost or stolen."

The fragment of the Psalter which has been cited as one of the marvels of the Ashburnham collection is now shown to have an equally suspicious origin, and so with many others of which we have not time to speak. We can well understand the indignation with which M. Delisle comments in his paper, read before the Academy of Inscriptions, on the series of acts of Vandalism which have resulted in suppressing and disfiguring texts precious as literary and historical memorials.

* We are indebted to the report *in extenso* of M. Delisle's paper, printed in the *Times* of Sunday, February 25th.

ARCHÆOLOGY IN YUCATAN.

MR. AYMÉ, the American Consul at Merida, has transmitted to his Government a report on Yucatan, and incidentally he mentions that scattered all over the two States of Yucatan and Campeche are found the ruins of large cities. These ruins were first brought prominently to the notice of the world by Mr. J. L. Stephens forty years ago. Since that time, with one or two exceptions, these ruins have remained unvisited, though two of these cities are now pretty well known to the world, viz., Uxmal and Chichen Itza. These ruins are described by Mr. Aymé as the grandest on the American continent, and he gives the following short account of them:—They consist of large buildings very solidly built of stone, elevated on one or more huge mounds or terraces, and covered usually with sculpture of a peculiar character, all in very high relief. Hieroglyphs are few. Exquisitely-worked statues are found from time to time, as, for example, the great statue found at Chichen Itza by Dr. Le Plongeon, now in the Museo Nacional in Mexico. Discussion is rife as to the age of these structures; on the one hand, great antiquity is claimed for them, while on the other it is asserted that they are not 1,000 years old. Be their age what it may, one fact seems certain,—they are the relics of a high civilisation which existed before the white man's arrival, and they are the grandest and most satisfactory relics of that civilisation. But these noble ruins are fast perishing, carrying into oblivion the histories of the peoples who built them. Mexico has not the means to prosecute research amongst them, and, adds Mr. Aymé, the Americans "leave the treasures of American archæology at our very doors and send our money and brains to swell the mighty army of searchers of Greek and Roman antiquities."

ELECTION OF A SURVEYOR FOR THE DIOCESE OF NORWICH.

Two of the surveyors for this diocese having resigned—Mr. E. L. Blackburne, F.S.A., from ill-health, and Mr. J. H. Brown for other reasons—the Bishop, Archdeacons, and Rural Deans met at Norwich on Saturday, the 24th of February, to elect one surveyor in their place. There were thirty-three candidates. Amongst them Mr. J. P. Seddon, Mr. E. W. Tarn, Mr. E. Boardman, Mr. J. B. Pearce, Mr. W. O. Milne, and Mr. J. Arthur Reeve. After several divisions, Mr. Reeve, of Great James-street, London, was duly elected. The surveyors for the Norwich diocese are now Mr. R. M. Phipson, F.S.A., and Mr. Reeve.

The Committee of the Bewick Club, recently instituted in Newcastle-on-Tyne, have unanimously elected Mr. D. Croat Thomson an honorary member. Mr. Thomson is the author of "The Life and Works of Thomas Bewick," and is the first honorary member of the club.

LECTURES IN ARCHITECTURE AT THE ROYAL ACADEMY.

COLOUR.

Mr. George Aitchison, A.R.A., lectured on "Colour" at the Royal Academy on Wednesday evening last, Sir Frederick Leighton, P.R.A., being in the chair. The lecturer commenced by observing that as it was impossible to embrace so vast a subject as "colour" in one lecture, even when its application to architecture alone was to be considered, he should confine his remarks in the present lecture to colour applied to the outsides of buildings, hoping to be able to treat of inside colour on some future occasion. Proceeding to show that man had a passionate love for colour, whether exhibited in Nature's works or in works of art, that he had directly employed the beautiful things of Nature to adorn his temples or dwellings, and that colour had almost always been used to enhance the beauty of buildings, the lecturer remarked that colour (if we included white with its gradations to black) was the only visual means by which things could be known, and if there were persons so unfortunate as to be totally colour-blind, they saw only the shades and shadows of things. By the general consent of mankind, the arrangement of certain colours in certain proportions caused delight; in fact, for the bulk of mankind, nature had made almost every phase of earth, air, fire, and water beautiful. When people went into the country for a holiday, it was mainly to feast their eyes on the beauty of colour. Why were the painters courted and the sculptors neglected, but because the former dealt in colour, that all knew and loved, and the latter in a white abstraction from "the human form divine"? People loved landscape painting because it preserved for their admiration such evanescent phases of Natnre's colour that struck them as most lovely or most harmonious. They loved figure-painting mainly because it gave them the exquisite and subtle tones of flesh, and its harmony with the colour of hair and eyes, with lovely and gorgeous robes, with armour, with sky, water, landscape, or architecture. Landscapes were always open-air effects, and in numberless instances figure subjects were so too. Titian was particularly fond of open-air effects, and some of his most gorgeous colouring combined flesh and robes, trees and water, architecture and sky. To name no other examples as illustrative of this, we had his "Bacchus and Ariadne" in London, and his "Virgin and Child" in the Louvre. If, then, superb pieces of colour could be called from Nature and put on a canvas to enchant us, a building might be substituted for a canvas, and be made equally superb in colour. In the bas-relief of Scilius we saw the servant fixing up garlands on the house. Here, then, was a direct application of beautifully-coloured leaves, fruit, or flowers to adorn a building, and to this day wreaths and garlands were so used in Italy. Everybody had admired the labourers' white-washed cottage latticed with rose-trees, or a red-brick cottage trellised with white roses, the fire-thorn, or the purple jasmine of Japan, or with clematis, wistaria, or the passion-flower. Either cottage was beautifully ornamented when covered with the grape-vine full of bunches of green, purple, or black grapes, not to speak of those houses wholly green with ivy or glowing with the red leaves of the Virginia creeper. It was only during the last century, and at occasional epochs, that buildings had been left to the monotone of one material. The Persians, the Assyrians, the Egyptians, the Greeks, the Etrurians, the Chinese, the Japanese, the Mexicans, the Peruvians, the Arabs, Moors, and Turks, all enriched their buildings with colour, and the Gauls, the Germans, the Scandinavians, the Goths, Huns, and Vandals did the same; while all that group of nations whom we called the Mediævals made their buildings striking, at least, by the aid of colour. We naturally asked why colour had disappeared from the outside of modern buildings, for till quite lately we only allowed ourselves white-wash, green outside shutters, a red chimney-pot, and a gilded weathercock. Though in this country Puritanism might have something to answer for, in Italy Palladio had more, for he said that "white was more acceptable to the gods." Beyond these two factors, however, the lecturer believed the main reason to be that external architectural adornment was mostly of perishable materials, and in bad times was not renewed, so that many generations had grown up without ever seeing a coloured building, and any novelty shocked mankind's conservative instincts. He remembered the storm aroused by Owen Jones's colouring of the Exhibition Building of 1851. He had been to Egypt and seen colour on a grand scale there, and he had studied the colouring of the Moors. On the other hand, his critics knew no colouring but the detestable application of gold on white they had seen at Versailles, or perhaps some pale pea-green and gold in their own drawing-rooms. Viollet-le-Duc wrote:—

"The Romans under the Empire seem to have been the first people who erected monuments of white marble or stone without colour; as to their coats of stucco, these were coloured inside and out.

Decorative painting played an important part on the outside of buildings. The front of Notre Dame at Paris shows many traces of painting and gilding, not put upon the bare walls, but upon the mouldings, columns, sculptured ornament, and figures. The same observations can be made under the porch of the Cathedral of Amiens; and the ornaments placed in 1257 on the top of the transept gables of Notre Dame were gilt, with grounds of dull red and black. The colouring applied to the outside is much more vivid than that of the interior; there are bright red tones (vermilion glazed with brilliant red), crude green, orange, yellow-ochre, blacks, and pure whites,—rarely blues,—for outside, the brilliancy of direct light and shadow allowing a harshness of colour ng which would not be supportable under the sifted and diffused light of the interior."

The lecturer observed that the late Mr. Burges and himself, in their travels together, found traces of colour on the porch of a church at Villeneuve l'Archevêque. Viollet-le-Duc, after giving further details of the external decoration of Notre Dame, went on to make the following reflection:—

"Why do we deprive ourselves of all these resources of art? Why does the Classic school pretend that coldness and monotony are the inseparable accompaniments of beauty, when the Greeks, whom they present to us as artists *par excellence*, always coloured their buildings inside and out, not timidly, but by the aid of colours of extreme brilliancy?"

Having described the way in which some of the buildings of Venice and other Italian cities are coloured externally with frescoes and other decorative work, the lecturer referred to examples of external polychromy applied to buildings shown in pictures by Giotto, Benozzo Gozzoli, Luca Signorelli, Pinturicchio, and other masters, and expressed the hope that his lecture would not merely afford his hearers innocent amusement for an hour, nor simply inform them on certain historical points of art, but would bear fruit by turning their attention to the adornment of England, and even of those widely-spread colonies and dependencies to which some of them would, he hoped, go, and so be able to practise in countries where the sun was ever glorious, and not mostly hidden in clouds or mist. In Persia, a country which he had not yet seen, he believed there was to be found the most magnificent exposition of extreme colour applied externally to buildings, and executed, too, in that splendid and imperishable material, enamelled earthenware. Mr. C. Purdon Clarke, who had resided in Persia, and secured for England the Persian architects' pattern-books, described the effect of the coloured architecture of Persia as being splendid, and satisfying to such a degree that he not only did not desire to see it altered, but could not see how the colour could be improved. The lecturer exhibited examples from M. Pascal Coste's work on "The Modern Monuments of Persia," showing the upper portions of two minarets and half the upper part of the entrance to the Mosque of Mesjid-i-Chah at Ispahan, built in the sixteenth century by Shah Abbas. Through the courtesy of Sir Philip Owen and Mr. Armstrong he was able to show a piece of magnificent tile-work from Ispahan. The attention of the audience was also drawn to some drawings of splendid tile-work from India, in which unusual harmonies were obtained with a rich brown and pale fawn colour on a magnificent deep blue ground. Splendid colour was, as a rule, only to be found in the East, or had been obtained from it. The lecturer strongly suspected that all the fine colour in Europe came directly or indirectly from the East. First it filtered through to Constantinople, skilled men being sent thence to execute works in different parts of Europe. The churches, mausoleums, and mosaics of Ravenna were, he believed, executed by architects and artists from Constantinople, and probably the mosaics of the churches in Rome, Sicily, and elsewhere. It was known that St. Mark's, Venice, and the mihrab of the Mosque of Cordova, were done by them. The Crusades enabled the Westerns to see something of the glories of the East, and the plunder familiarised those at home with Eastern colour and workmanship. Afterwards this impression was kept up by the traders who visited the East and trafficked in its goods with the Pisans, the Genoese, the Venetians, the Portuguese, and the Dutch. There was very little doubt that that very effective method of outward adornment, horizontal stripes in different colours, was brought from the East. The red and black stripes in the buildings of Cairo were to be seen repeated in the Cathedral at Genoa, and in buildings at Pisa, Florence, and Siena, though in Italy the bands were mostly of dark green Serpentine alternating with white marble. Having described the leading materials used in the exterior of St. Mark's and the Doge's Palace at Venice, the lecturer observed that in many Italian buildings happy effects were obtained by filling in the ground of carved ornament with mosaic of green, gold, red, black, or other colours. Perhaps the most striking example of modern external polychromy was a palace at Berlin. Its walls were faced with black and red compressed tiles in a diaper; the window dressings were in majolica; and the frieze was in coloured glass mosaic on a gold ground. At the time the lecturer saw it, some eight or nine years ago, it was not pleasant to reflect that the tiles were probably English, the majolica Minton's, and the mosaic from the English Company at Murano, and that no such complete attempt had been made in this country. In Paris, there was the Opera House, where polychromy of a very delicate and dignified character was obtained by means of marble, bronze, and gilding, with a very slight admixture of enamelled earthenware on the flanks. The lecturer borrowed the following words of M. Charles Garnier's dream of the future of Paris from M. Paul Sedille's address on monumental pottery,—

"The grounds of the cornices will shine with eternal colours; the piers will be enriched with sparkling panels; gilded friezes will run along the buildings: the monuments will be clothed with marbles and enamels; and the mosaics will make all love movement and colour."

M. Sedille himself, one of the apostles of colour, had already enriched parts of France with buildings wholly or partially coloured, and he was now engaged in converting what the Romans called an "island" in Paris into one huge building for the sale of drapery. Two sides of the building were already built. The upper parts of each of the towers flanking the façades, built of brilliant white stone, were panelled with glass mosaic on a gold ground, the whole looking most brilliant and satisfactory in the sunshine of Paris. The front of the Turkish baths by M. Parvillée, the author of "Architecture et Decoration Turques," was faced with enamelled tiles of Turkish patterns and colours. Architects in France were not wont to lavish praises on the works of English architects; therefore the following flattering remarks by M. Sedille might be quoted with all the more pleasure:—

"Certain new constructions in London are truly grand. The friezes ornamented with terra-cotta and enamelled, mosaics on a gold, ground become the decorations of *façades*. Certain halls and public establishments are completely covered with painted earthenware, developing decorative composition with true style."

We also, then, should celebrate the pioneers of colour in London, and endeavour to cull instruction from their works; and, even if they had in some respects failed, they were to be thanked for their daring in being the first to emancipate us from drab, and to open for us that path which would eventually lead to the covering of London with beautiful and imperishable colour. M. Hector Horreau put medallions of colour on a house in the Avenue-road. Mr. S. S. Teulon designed the building covering a fountain at the corner of Great George-street, Westminster,—a structure once brilliant with colour, but now nearly black. Sir Gilbert Scott designed the Albert Memorial in Hyde Park. The front of a bookseller's shop in Piccadilly, designed by Messrs. Ernest George & Peto, is enriched with figure-subjects in opaque glass. The front of St. James's Restaurant is enriched with mosaics on a gold ground. Sir Digby Wyatt designed a shop in Gracechurch-street of iron and encaustic tiles, now pulled down. Some of Messrs. Doulton's buildings at Lambeth are ornamented with glazed stoneware and

"jewels," and their name is set out on panels of enamelled ware enriched with a pattern in colours. A shop in Bond-street has a part of its front faced with encaustic tiles. A railway station in the Finchley-road is enriched with stoneware and "jewels," and its passages and platforms are lined with white and grey bricks in bands. And, lately, two warehouses had been built in the City,—one, in Knightrider-street, wholly of glazed bricks and iron, the piers being of greenish-white glazed bricks, with grey bands, and plinths of dark brown; the walls above white, with grey bands; the architraves of the windows, string-courses, and cornice in brown enamelled bricks with impressed patterns; joining the upper and lower windows are frames of grey glazed bricks with the edges moulded, and panelled with brown glazed bricks with impressed patterns. The architect of the other warehouse, in Little Moorfields, had not so frankly accepted the glazed ware. Yellow and red terra cotta, Victoria and Portland stone, and blue Staffordshire bricks, are used in conjunction with dark red glazed bricks and tiles, with large glazed ornaments of a rich brown, and with white and grey glazed bricks. Time alone could show how these different materials worked together. Even now the yellow terra-cotta cornice of the ground-floor was getting black. Both of these warehouses were rather prepossessing examples of polychromy in broad flat tints. There is a very successful piece of partial polychromy in Lisson-grove, a warehouse built of white bricks with terra-cotta pilasters, strings, and cornices, having a wide band of enamelled tiles round two fronts on the first floor. There is some successful glazed earthenware in white and yellow outside the South Kensington Museum; and a garden wall in Springfield-road, N.W., is wholly of brown and red glazed bricks, with the capping and gate piers of glazed stoneware. This example was cited rather as illustrating the capabilities of the material than as being wholly successful in point of colour. As regarded painted work there were two very notable examples,—a shop in Berners-street and a house by North Gate, Regent's Park. The pilasters of the former are red, ornamented in gold with gilt capitals, with coloured and ornamented panels between, with the heads of musicians on a gold ground in imitation of mosaic. The lecturer believed that this example was designed by Mr. Pearson and carried out by Messrs. Clayton & Bell. The other example was the house of Mr. Tadema, and had its front treated mainly in yellow and white, with yellow columns to the porch and a light-coloured Greek ornament on the dark blue background of its frieze. At the back, two blank arched spaces had been treated by white and red lines and small coloured forms on a black ground. These blank arches had small windows at the top, whose splays and heads had been left white, with ornament in the shape of coloured lines and "jewels." It could not but be regretted that from our wretched leasehold tenure so little good work was done in London, and that when it was done it was mostly in perishable materials. Had these houses been the proprietors' freehold, the work would probably have been executed in permanent materials. It was painful to think of these works perishing, not only from the loss of the skill and labour employed on them, but from the extinction of personal memorials of artists,—artists who had been pioneers in a right way. Mention was made of the purple-red houses to be seen on every side, and which looked as if dipped in that

> "Little brook whose crimson'd wave yet lifts
> My hair with horror,"

which Dante told of,—though, perhaps, as a protest against drab they were to be welcomed. The *sgraffito* work at South Kensington and elsewhere was mentioned, as well as an office in New Bridge-street, Blackfriars, built some years ago of different-coloured granites; but all rough-surfaced materials so soon became blackened when used externally for building in London that it was almost waste of skill to use them, and waste of time to describe them. The question now is, How can we redeem our buildings from their hideous monotony, looking as they do, in misty weather or in twilight, like ghastly white or grey spectres? In England generally it was not very easy to get the permanent colour that was required, on account of the damp, for in the country all porous materials afforded foothold for moss and lichens, red roofs soon becoming green, yellow, or grey; and stone itself became draped with lichens. It was, however, in London and the large manufacturing towns that the greatest difficulty arose, as any partial colouring in glazed materials in combination with rough and porous ones soon got out of tone, the glazed work standing out from its blackened surfaces like the teeth of a grinning negro. Man's perverse ingenuity was shown in his using coal so that a large part of it was unburned. The air thus became filled with soot, which choked his lungs and skin, and covered his trees and buildings with a black pall. It was needless to speak of the damage done by the carbonic, sulphuric, and nitric acid with which the truly infernal atmosphere of London was charged. Cobbett called townsmen "wen-devils," and, therefore, they now had an atmosphere congenial to them. No marble used outside would stand this climate, as was proved by the Oriental jasper columns of the Grosvenor Gallery, or by the Breccia columns of a shop near Oxford-street, or by any marble slab let into the front of a building. Red and green porphyry and some of the granites were the only natural materials that would stand. Bronze stood pretty well, and glass-mosaic and glazed stoneware and earthenware were practically imperishable. The white tiles once so largely used outside would soon perish, the cause of this being (he was told by an expert) that they were of porcelain of fine porosity, readily taking up moisture, but not so readily parting with it as materials of coarser porosity, hence their great liability to be burst by frost. Brown, pink, and grey polished granites, even in conjunction with the porphyries and bronze, made but a sombre building, and were, too, imperial materials, that only a nation, a town, or a very wealthy man could afford to employ. Glass mosaic, too, was very costly; and in connexion with it it should be observed that a gold ground in a dark setting was too light and cold, and should be more copper-coloured. If the buildings in London and our large manufacturing towns were to be made clean, gay, and beautiful, we must, the lecturer thought, rely solely on enamelled brick. And what a field would thus be afforded for design in colour, in ornament, in landscape, and in figures! It would be a healthful material, for it would lighten our streets and keep them cleaner; and it would be cheap, for the tenants would only have to wash the fronts of their houses instead of painting them. Mr. Aitchison concluded by quoting an objection and its answer in the words of M. Sedille:—

"If an objection be raised that this ornamental glazed ware so widely spread may increase the number of bad examples, I answer that there are, too, good and bad books, yet no one is inclined to deny the utility of printing. It will belong to our brother architects to create good examples, or, at least, to choose them."

THE PANDORA THEATRE.

VISIT OF THE ARCHITECTURAL ASSOCIATION.

ON Saturday afternoon last a large number of the members of the Architectural Association visited the Pandora Theatre, Leicester-square, now in course of completion ready for opening at Easter. The visitors were received by Mr. Thos. Verity, the architect from whose plans and under whose superintendence the building erected a year or two ago on the site of Savile House for the exhibition of panorama is being converted into a theatre. The theatre will be one of the largest in London, seating about 3,000 persons in conformity with the regulations imposed by the Lord Chamberlain and the Metropolitan Board of Works. The greater portion of the oval interior used for the exhibition of panorama is utilised as the auditorium, a piece of the northern end of the oval being cut off to make way for the orchestra and stage. The oval roof of the panorama building, mainly constructed of iron, with a surmounting lantern, is retained, some of the principals at the northern end being shortened, and let into the upper part of the wall which is carried up over the proscenium opening. For the purpose of obtaining a spacious stage, some property at the back of the panorama building has been acquired. The front or southern portion of this building is retained, and from a large entrance vestibule a staircase on the left hand gives access to the arena stalls and the pit. Behind the pit and stalls, extending round the auditorium from the prompt to the o.p. side of the orchestra, is a promenade 150 ft. long by 12 ft. wide, giving access to staircases of entrance and exit. The total length of the auditorium is about 85 ft., by 87 ft. wide. The proscenium opening is 35 ft. wide between the brickwork, and 33 ft. high. The stage is about 60 ft. wide by 50 ft. in depth from back to front, and in the centre of the back of the stage is the green-room, 15 ft. by 20 ft., the area of which can be added to the stage when necessary by raising an iron shutter. On one side of the green-room is a staircase going up to the females' dressing-room block, and on the other side is a staircase leading to the men's dressing-rooms. There are in all about thirty dressing-rooms. Property-rooms and scene-docks are provided at the sides of the stage. Passing through the vestibule from the Leicester-square entrance, access is gained on the level to the first or private-box tier, in front of which will be rows of balcony stalls, projected some distance beyond the supporting columns running up through the tiers by means of concealed iron cantilever construction. At the back of the boxes on this tier is a continuous corridor, 8 ft. wide, giving access to the boxes. At the level of this corridor, and approached from it on the o.p. side, is a special exit corridor leading out to the street at the back of the theatre. This special exit corridor is also accessible by means of staircases from the pit and dress-circle tier. From the entrance vestibule rises the principal staircase, leading to the dress-circle tier and to the *foyer* above the vestibule. At the back of the dress-circle tier there is a continuous corridor, 15 ft. wide by about 150 ft. long. From this corridor access is obtained to the private boxes, and there are gangways at intervals leading into the dress-circle stalls. From the *foyer* a good view will be obtained of the stage. All the exit staircases are 5 ft. wide, with stone steps (no winders) enclosed between brick walls. The third or upper tier will form the gallery, with, possibly, a row or two of seats in front, to be styled the "amphi-theatre stalls." This tier will be reached from Lisle-street, on the prompt side, and additional means of exit will be provided by the special large exit corridor already mentioned. Above the gallery entrance are some dressing-rooms, and a large room for the ballet. The grid-floor is 44 ft. above the level of the stage, and the flies are about 20 ft. high by 13 ft. wide. Beneath the stage there is a large well, 21 ft. by 40 ft., and about 8 ft. deep below level of floor under stage. This well, which is lined with concrete, is, of course, intended for use in connexion with the mechanism of scenic effects. Beneath the iron roof, which will be, as we have said, retained, a *velarium* will be suspended, as at the Royal Albert Hall. Internally, the finishings will be in fibrous plaster, executed by Messrs. George Jackson & Son, of Rathbone-place. The whole of the constructional ironwork in the three tiers and elsewhere has been carried out by Messrs. Dennett & Ingle, who have also done all the concrete work. The scagliola enrichments of grand staircase and other parts of the building will be executed by the well-known firm of Bellman & Ivey, of Wigmore-street. The balustrade to staircase is in this material, and has red Devonshire die, Genoa green capping, and brown Belgian base and plinth; the columns and pilasters are of red Devon, with lower portions boldly moulded in red Serpentine and circular black plinths. This work is likely to be very effective when finished, owing the adoption by the architect of simple forms in design and mouldings, and it promises to be one of the best pieces of work of its kind in London. Messrs. Merritt & Ashby are the general contractors, their foreman being Mr. Walter Mitchell. The clerk of works is Mr. James Dewey.

Birmingham Architectural Association.—The sixth ordinary meeting of this association was held at Queen's College, on Tuesday evening last, the President, Mr. J. J. Bateman, occupying the chair. A discussion took place on the relative merits of the Gothic and Classic styles of architecture and their adaptability to modern requirements. The following members took part in the discussion:—Messrs. W. H. Kendrick, V. Scruton, Norman Gething, F. Simon, W. G. Mantel, and Franklin Cross (hon. secretary), a vote at the close being declared by a large majority in favour of the Gothic.

ART-REVIVAL IN RUSSIA.

The great progress achieved by the Russians in developing their home industries has been prominently illustrated by the schools of industrial art, and the exhibitors who participated in the grand national exhibition held this winter at Moscow. The Russians have not relied only on the exorbitant dues levied on foreign importation for the encouragement of home industries, but have sought, by the influence of technical education, and the revival of art teaching, to raise the general standard and value of home products. In this respect, the archæological studies to which so many Russians have devoted themselves during the last twenty years have been of considerable service. When railways and modern civilisation were first introduced into Russia, a movement naturally arose which led to a servile imitation of Western art. Indeed, even before railways, and, perhaps, since the time when Peter the Great wandered so far afield, there has been at least among the upper classes of society a tendency to adapt Western ideas and to neglect what might be qualified as national inspirations. The archæologists, however, have disinterred the ancient Russian art, which lay dormant in the heart of the people, appealed to their natural instincts, and was the expression of Russian genius. Whatever its abstract merits may be, the Russian is more apt to produce good work when working in the manner most in harmony with the native taste of his race. This fundamental principle has now been fully acknowledged, and the result is the daily production of admirable art-work of the Russian school.

In Russia art finds its most popular expression in the goldsmith's work. On all possible occasions gifts of plate, jewelry, and gold ornamentation are made, and these commemorative presentations are a great incitement to the art-workers of this craft. Their section is the most remarkable at the Moscow exhibition, and, among the exhibitors whose names are best known, we might mention Messieurs Sazikof, Chliebnikof, and Ovtchinnikof. The latter, by his inventive and adaptive genius, has strikingly demonstrated how the native style is admirably suited to work in precious metals. M. Ovtchinnikof has contrived to modify to some extent the appearance of the enamels or precious stones intermixed with gold and silver, so dear to the Russian, but somewhat gaudy in their effect upon the eye of the Western critic, by introducing colouring of a more subdued or æsthetic character. He has further succeeded in reviving the Byzantine process of enamelling mouldings. Enamel imitates the flesh, while chased gold and silver constitute the limbs and bodies of a representation of Christ and the twelve apostles to be seen at the exhibition. From the Japanese, the same manufacturer has learned how to introduce designs, leaves, &c., of silver in the paste of an enamel, baking the two together.

The revival of national taste is noticeable not merely in this kind of work, but also in furniture, in the ornamentation of tissues, and in house decoration. Museums of all descriptions have been created in various parts of Russia; and, though much still remains to be done, there can be no doubt as to the thorough character of the present movement. It is also all the more powerful as it is in a very great measure due to private initiative. At Moscow, no less than 12,000*l.* was obtained by means of public subscription to establish a Museum of Art and Industry. This work was commenced in 1863, the museum was opened in 1868 under the direction of M. de Boutovsky, and it has continued to prosper and grow in wealth ever since. By the side of this museum we have also at Moscow the Stroganoff school, which was first organised in 1860. Here there are special classes to teach design, painting on cloth, printing on tissues, goldsmiths' and jewellers' and locksmiths' work, cabinet-making, and the ceramic art. Nor is this all; arrangements have been made to enable some of the pupils to work in factories during a part of the year, so that they may complete by practical experience their theoretical training.

The methods of teaching employed in Germany, France, and at South Kensington, have been carefully studied, and many points initiated. The policy inspiring these efforts is that of enabling Russia in every respect to provide for its own wants. The large tracts of land covered by the empire of the Czar, and their abundant yield of corn, render Russia independent of foreign countries for its food supply; and now it is seeking to attain the same degree of self-reliance with respect to all manufactured articles. The prospect is not a pleasing one for those who in England and elsewhere seek to trade with Russia. Their best opening so far has been due to the superior artistic merit of articles manufactured in the West; but now it will be seen the Russians are excelling in this respect also. According to many authorities, the Russian goldwork is considered superior to that of France or England; and the prohibitive duties imposed on foreign importations will compel many Russians to content themselves, in most other respects, with whatever degree of art home manufacturers may be able to display.

A PRACTICAL CO-OPERATIVE ASSOCIATION.

There are few of our readers, we suspect, who will not agree with the statement that it would be difficult to exactly determine the advantages which accrue from a strike. For one of these unhappy disagreements which may possibly have led to a slight improvement in the relations of master and men, how many result solely in loss to each? The strike of the Parisian cabinetmakers last year will doubtless be remembered by our readers. The importance and protracted character of the movement in a city of which the manufacture of furniture is one of the staple branches of industry, led to much suffering and inconvenience; and when, at length, a peace was patched up, it was found that the position,—the difficulties of which had caused the strike,—so far from having been improved, had only grown more desperate. As we remember pointing out in these pages, the great firms of the French capital, unable to obtain their goods from their own French sources, found no want of manufacturers abroad, especially in England and Belgium, only too ready to supply the Parisian markets. When the strike at home was at length terminated, the trade too late discovered that their old clients, having continued to be satisfied with the foreign goods supplied them during the strike, were in no way anxious to patronise their own countrymen. The position was, and still remains, an alarming one for the Faubourg St. Antoine, and a great many of the smaller firms have been unable to stand the strain.

Among certain of the workmen who went out on strike, the sense of the worthlessness of their triumphs has come home with sad force, as it is found what time has been lost, what debts were contracted, and how small, in fact, have been the results obtained in proportion to the efforts made. As usual among the men, previously to and during the strike, there were not wanting the active propagators of many most specious theories respecting that much-belaboured question of the relations of capital and labour. What matter if French industry were annihilated? asked these worthy cosmopolitans; a demand for labour in some other part of the world must be the only consequence! These apparently broad-minded ideas met with positive acceptance not alone among the men, but even in the very trades-committees.

The sufferers by the strike, however, had, as may be imagined, reasons not difficult to understand for wishing to see the differences brought to a rapid conclusion; they were little concerned with the solution of the serious political questions that certain of their number seemed more interested in studying than any other point. This more peaceable section of the men out on strike, unlike some of their brethren, were far from willing to sacrifice the interests of their country for the sake of a political doctrine, and from this group was formed at the close of the strike the co-operative association, the organisation and results of which we would wish to lay before our readers. During the strike the members of this association had particularly shown their activity and vigilance respecting the men's interests, but the strike concluded, they were the first to admit how far from satisfactory had been the settlement of the antagonism between the men and the masters.

The much-mooted question of emigration, it may be stated, received in Paris among the cabinetmakers a serious blow from the results of the report made by the delegation specially sent to the Philadelphia Exhibition with a view to inquiring into the condition and prospects of the trade in "the States." Hence it was determined that the wisest course was to remain at home. A meeting was held by the more active members of the group, the rough plan of a purely co-operative association was drawn up, the necessary capital, a very small sum (70,000 francs, 2,800*l.*) was borrowed, and in the face of the unsympathetic attitude of a large number of their brethren, the association was fairly launched.

The financial results of the first year of its existence, made known a few days since to the members, serves as an interesting proof of the success of the undertaking. The co-operative workshops,—in the Rue du Chemin-Vert, No. 106,—were opened on the 15th January, 1882, so that the results of a full year's work were made known to the assembled shareholders on the reading of the first annual balance-sheet, the net profits being declared, amidst much applause, at 6,707 francs 40 centimes (about 270*l.*). The sum, it will be seen, is small, but is none the less hard on 10 per cent. profit on the original capital of 2,800*l.*, a fair return for a first year's experience.

The success of the undertaking may largely be set down to the admirable organisation of the association. Our neighbours, we have long freely admitted, are gifted with "the genius of organisation," and, indeed, it is a merit allowed them in the management of their whole governmental and financial system, even by their bitterest enemies. The organisation, however, of this special association of which we are treating, may be said to offer some peculiarities in its strict system of discipline. Entire control of the whole association was immediately lodged by the members in a committee, which in its turn appointed its director, and the foreman of the shop. The authority of these two over the men is as complete as it would be in any ordinary workshop; but, let it be observed as a characteristic detail, it is an authority which, very different from the usual, is tacitly admitted, and fully recognised by the men, not a murmur being raised against their self-elected chief. The Association has been fortunate in possessing among its members a number of first-rate workmen, many having been themselves masters, but having willingly sold their business to join the association. 140 shares, of 500 francs each (20*l.*),—5 francs on allotment, and 5 francs paid each month,—were subscribed by the members, no one being allowed by the statutes to hold more than one share.

The early months of the association were, as may be imagined, far from successful; it is the inevitable fate of most serious undertakings to meet with considerable difficulties at their outset: only ten men being employed in the shops, the other shareholders still continuing to work out of doors. At length, however, work was entrusted to the association, and when last year, as may be remembered, the French Government passed the Obligatory Education Act, and the city of Paris built a large number of temporary schools, the Association succeeded in obtaining a large contract. The workshops, from this moment, found ample occupation: forty men were actively employed, and the regulations fixing the working day at ten hours had to be changed, and the day extended to thirteen hours. With the close of last year, business to the amount of considerably over 5,000*l.* was being transacted. The Government School contract was not for a very high class of goods, it is true, but it kept the association afloat, and with the consciousness of their power to do better work, the members not only eagerly look forward to the next exhibition of decorative art to display their skill to the trade, but they already possess a show-room well supplied with creditable specimens of their work. Anxious in every way to meet with the approbation both of the trade and the manufacturers, the opinion of a committee of experts, composed of two of the members of their own shop and five outsiders, is taken whenever any doubt exists as to the value of a piece of work executed. A special committee looks into all the acts of the council of administration as also the organisation of the workshop. A curious passage of the report, read a few days back, consists of the complaint of the men of a want of severity on the part of their own foreman!

It seemed but reasonable that the secretary should congratulate the association on the results obtained. "Nine months ago we were nothing, and now we commence to have an horizon, restricted, it is true, but which will increase in extent if we only persevere in the direction which we have so far followed, the

enfranchisement of our class by labour and by the united action of our wills and our intelligence."

It has been determined to institute a retiring fund for the members, to be formed by setting aside 25 per cent. of the yearly profits, 50 per cent. being devoted to the dividends paid to the shareholders, who, however, are only credited with the sum till their share is completely paid up; the remaining 25 per cent. constitutes the reserve fund. The expenses of the first outlay for tools, &c., will be entirely paid off by retaining annually 10 per cent. of the sum expended: hence in ten years' time the whole will have been paid for and yet the shop kept well abreast of current improvements. For this fact of the use of every aid which modern science gives the workman is one of the features of the new association. Time was when the aid of machinery was looked upon by the working classes with something more than mere suspicion; the fate of the first stocking loom, the story of how the *Times* was first printed by steam, are present to every one's memory. Now, however, these sentiments, the result of the want of knowledge, have fortunately died out. "In the present day," we quote from a recent report on the furniture trade, "the working classes have recovered from the first alarm, and not only accept the aid of machinery, but recognise its immense benefits not alone in the present, but especially in the near future; and if, instead of leaving the powerful aid of machinery in the hands of the masters, we, through co-operation, become possessed of its assistance, we shall soon see the day's labour reduced to the work necessary to supply the demand, and the leisure created by the improvement of the tools used in our trade will afford that bodily repose so necessary to the workman to procure those intellectual enjoyments of which he is in such need, and which are so full of charm."

This acknowledgment of the admitted benefits of machinery is,—as remarked, not long since, in quoting the above passage, our contemporary *Le Temps*,—an important step in the intellectual evolution of the working classes, which, by this very confession, implicitly submit to the discipline created by the employment of machinery; for where machinery is largely used a unity of direction is absolutely necessary, and a rigorous application to all employed of a series of well-considered workshop rules. Conformity to these principles has been the secret of the success of the humble association the organisation of which we have considered it might not be uninteresting to many of our readers to make known on this side of the Channel, where the unsatisfactory relations of capital and labour are scarcely less productive of suicidal disagreement than among our industrious neighbours.

AN OLD FLEET STREET TAVERN.

"Foreigners remarked that the coffee-house was that which especially distinguished London from all other cities; that the coffee-house was the Londoner's home, and that those who wished to find a gentleman commonly asked, not whether he lived in Fleet-street or Chancery-lane, but whether he frequented the Grecian or the Rainbow."—Macaulay.

An ancient Fleet-street tavern, whose struggle for existence during the last two or three years would seem to have been a mockery of the past and an unavailing protest against the present, is about to share the oblivion which overtook Temple Bar,—the big yet younger brother as it were by whose side it stood so long for protection. The Bar and Child's old bank have alike disappeared. The houses between Bell-yard and Chancery-lane are pulled down; there is nothing save a much-derided statue to mark the boundary between London and Westminster; and now we learn that the City Commissioners resolve to sell the Cock Tavern by auction. Ben Jonson immortalises many of his chosen haunts; another laureate sings the praises of the Cock. But Tennyson's "Monologue" dwells not so much upon the tavern or its history, as upon the reflections it inspires in one who carries thither an uneasy yet desponding mind withal. The Cock claims to date from the days of King Charles I.; nor does its quaint old-world interior belie the tradition. The curtained boxes, the floor, the Jacobean fire-place, the clay pipes and screws of tobacco, even its pewter mugs and china trays, all tell of a bygone age, and of frequenters whose manners and mode of life were different from our own. The windows look upon a court which commemorates by name the "Apollo" at the Devil on the opposite side of the street. Over the entrance of the narrow passage which leads to the bar or "snuggery," stood the gilded effigy said to be the handiwork of Grinling Gibbons. In the bar is preserved a little box containing an old copper token, which bears the figure of a cock, and an inscription, "C. H. M. Att Temple Barr, 1655." The house itself escaped the ravages of the Great Fire, which consumed a part of the Temple, but stopped at the Temple Exchange Coffee-house, the first to be rebuilt after the conflagration. In the *Intelligencer* for 1665 (No. 51) appears an advertisement of the closing, during the Long Vacation, "of the Cock and Bottle, commonly called the Cock Alehouse at Temple Bar," with a notification that all persons having accounts with the master in farthings belonging to the house should repair thither before the 8th of July current to receive satisfaction for the same. Here, in a tavern which is mentioned in Defoe's "History of the Plague," we may picture to ourselves Pepys entertaining Mrs. Pierce and Mrs. Knipp at the lobster supper, when they drank, as he tells us, "and sang, and mightily merry." Both these ladies are frequently spoken of in the Diary: generally under circumstances of which Mrs. Pepys would probably not quite approve. The latter, indeed, was a married actress at the King's House, though very little is known of her beyond what is chronicled in Pepys's work. To the student of former times and former manners the annals of the Cock, and the many coffee taverns in its immediate neighbourhood are replete with interest. Whilst the fops and beaux thronged together at the Cocoa Tree, the Thatched House, and the St. James's, the republic of letters would assemble in the vicinity of Covent-garden and Temple Bar; the learned professions and men of rank in all of these, as well as at Cornhill and about St. Paul's. At the first named no form of tobacco other than highly-scented snuff was tolerated for a moment; in the rest, smoking was universal and perpetual. Steele, in the first article of his *Tatler*, bids his readers to look under White's Chocolate House for all accounts of gallantry; for poetry under the title of Will's Coffee-house; for learning, under that of the Grecian; whilst to the St. James's they must turn for all news, foreign and domestic.

Of the clubs which met in these resorts the earliest was perhaps that held in the Apollo-room of the St. Dunstan's, or Old Devil Tavern, kept by Simon Wadloe,—Jonson's "old Sim the king of skinkers,"—next door to Child's bank. For this, as founded by himself, Jonson, with the rules of the Roman entertainments in view, drew up his *Leges Convivales*, twenty-four in number, beginning,—

1. Nemo asymbolus nisi umbra huc venito.
2. Idiota, insulus, tristis, turpis, absito.

And from the fourth of which (Nec lectæ fœminæ repudiantor), it would appear, women of repute were admitted. Beneath his bust over the door were engraved on a black marble slab his lines,—

> "Welcome all who lead or follow,
> To the oracle of Apollo,—
> Here he speaks out of his pottle,
> Or the tripos, his tower bottle:
> All his answers are divine,
> Truth itself doth flow in wine," &c.

This tavern and the adjoining house were purchased in 1787 by Messrs. Child for 2,800*l*. They soon after pulled down the Devil, and Child's Place was erected on its site. In a print of 1774 the Apollo appears as a large and lofty room, furnished with a music-gallery. It was frequently used for balls and the like, and here Dr. Kenrick delivered his lectures upon Shakspeare. Multiplying under the Commonwealth, when at Puritan coffee-houses no oath was heard, and, in the words of Macaulay, lank-haired men discussed election and reprobation through their noses, the clubs acquired their more modern character in the days of Addison and Steele. In Dryden's time the wits gathered in the open coffee-room, but it is in the clubs of the *Tatler*, the *Lounger*, and the *Spectator* that we first meet with the closed doors, the regular membership and other features of to-day. Except wit, ladies, gallants, and good morals, there is nothing, says Leigh Hunt, that you hear more of in these writings than clubs, and he might have added the coffee-houses and taverns in which they collected. What is more exquisite, indeed, in its way than Steele's account of the *Spectator's* Club or of the Society at the Trumpet, among whom he has passed almost a sixth of his time "for these last forty years"? Of "the very insignificant fellow, but exceeding gracious," who maintains "an insolent benevolence to all whom he has to do with"? * So we have the Kit-Kat (Whig) and October (Tory country gentlemen and beer-drinkers), the Fringe Glove (a set of dandies); Estcourt's Beefsteak Club; Pope's Little or Short Club; the She-Romps, who once a month demolished a prude (which might have been due to Lady Mary Wortley Montague); Addison's Tall Club; Bishop Pearce's Silent Club; the Hebdomadal (a set of quid-nuncs); the Hum-drum and Mum Clubs, who ingeniously smoked and held their tongues; and, to descend lower in the social scale, the Choice Spirits, and the Harmonical Society, of which Goldsmith gives us so delightful a picture. Jonson's Apollo was differently constituted from that more refined concourse at the Mermaid, where he would encounter Shakspeare and Beaumont. Perhaps he there had things more to his own way, and could sit in his "throne of human felicity" more at ease with himself and with them who would flatter a vanity to which Jonson, as every one else, was no stranger. "I dined to-day," says Swift, in a letter to Stella, "with Dr. Garth and Mr. Addison at the Devil Tavern, near Temple Bar, and Garth treated." It is conceivable that Swift did not thoroughly enjoy his repast, for he was then beginning to feel awkward with his Whig friends, of whom Addison was one, whilst Garth had a few weeks before written in behalf of the fallen Godolphin a defence which their common acquaintance, Prior, himself once a Whig, had vehemently attacked in the *Examiner*. At the Devil Dr. Johnson presided over a supper party in honour of the publication of Mrs. Lennox's first book. The Rainbow, close by, is said to have been indicted in former times for the "nuisance" of selling coffee. Thus can we figure for ourselves who they were, and how they diverted one another, that frequented the famous taverns and coffee-houses beneath the shade of Temple Bar. And though the accustomed haunts gradually vanish from a scene upon which they once opened their doors so kindly, Will Honeycomb, Captain Sentry, or the Bencher who knew Jack Ogle, are to some no less real than they who crowd the street this day: still can one imagine that

> "Supper and friends expect me at the Rose."

Electrical Experiments. — A series of experiments were made with the Elphinstone and Vincent dynamo machine, on the evening of Wednesday, February 21st, at Messrs. Unwin Brothers' printing-office, The Gresham Press, Little Bridge-street, Ludgate-hill, in the presence of a large company. The guests assembled in a large warehouse on the first floor, along the ceiling of which, and grouped together, were suspended 350 Swan incandescent lamps, each of 20-candle power. These were brilliantly illuminated, and produced a most dazzling effect. Lord Elphinstone explained that the machine was capable of driving 416 Swan lamps, but owing to delay only 350 could be set up. Among other experiments shown, a length of about 40 ft. of galvanised iron wire $\frac{1}{8}$-in. thick was rendered red hot. As the heat increased the zinc burnt off in brilliant coruscations, forming an electrical firework of great beauty; the heat still increasing reached whiteness, and finally the wire fused, parts of it as it struck the floor breaking up into brilliant globules of melted wrought iron. Lengths of steel, and also copper wire, each became in turn incandescent, the steel being fused. The current was then made to run through a coil of iron wire immersed in a glass vessel holding three quarts of water; instantly there was a hiss as when a red-hot poker is plunged into water. This was followed almost immediately by steam; in half a minute the water boiled, and before a minute had elapsed half the contents of the vessel was on the floor. An ordinary steel flat file 1 in. by $\frac{1}{4}$-in. was then placed instead of one of the carbons in an arc light, and the current being passed through, the end of the file was melted and consumed like a tallow candle in a fire, throwing off a shower of sparks with a Catherine-wheel-like effect.

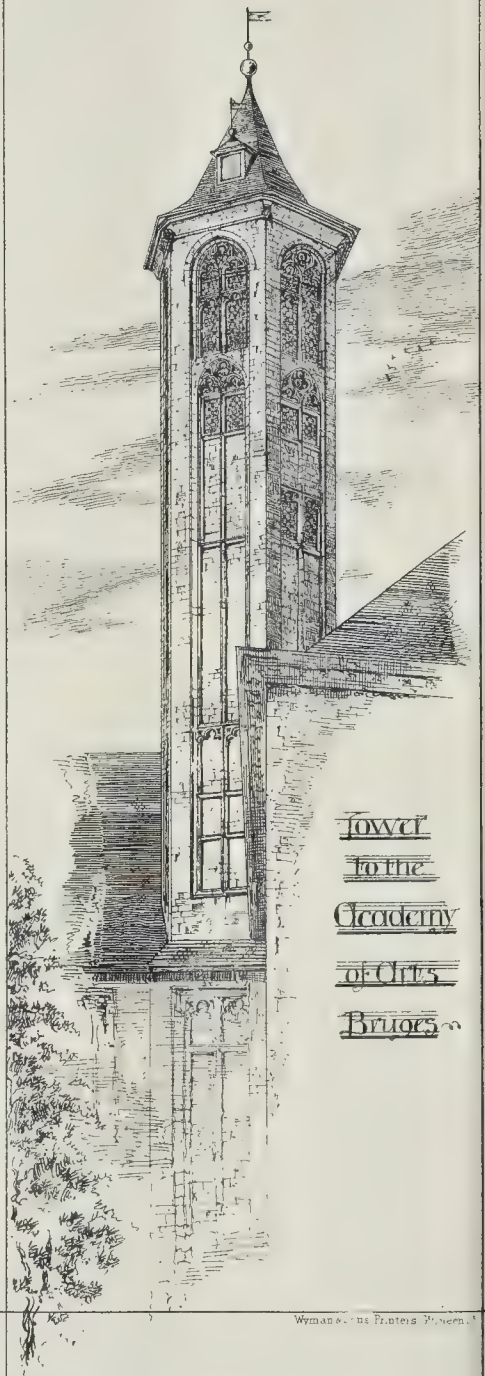
* See *Spectator*, No. 2, and the *Tatler*, Nos. 127 and 132. For an account of the Trumpet in Shire-lane see the *Builder*, vol. xliii., p. 774 (December 16th, 1882).



TOMB OUTSIDE CAIRO.



An old brick Watch Tower at Bruges



Tower to the Academy of Arts Bruges

BELGIAN TOWERS.



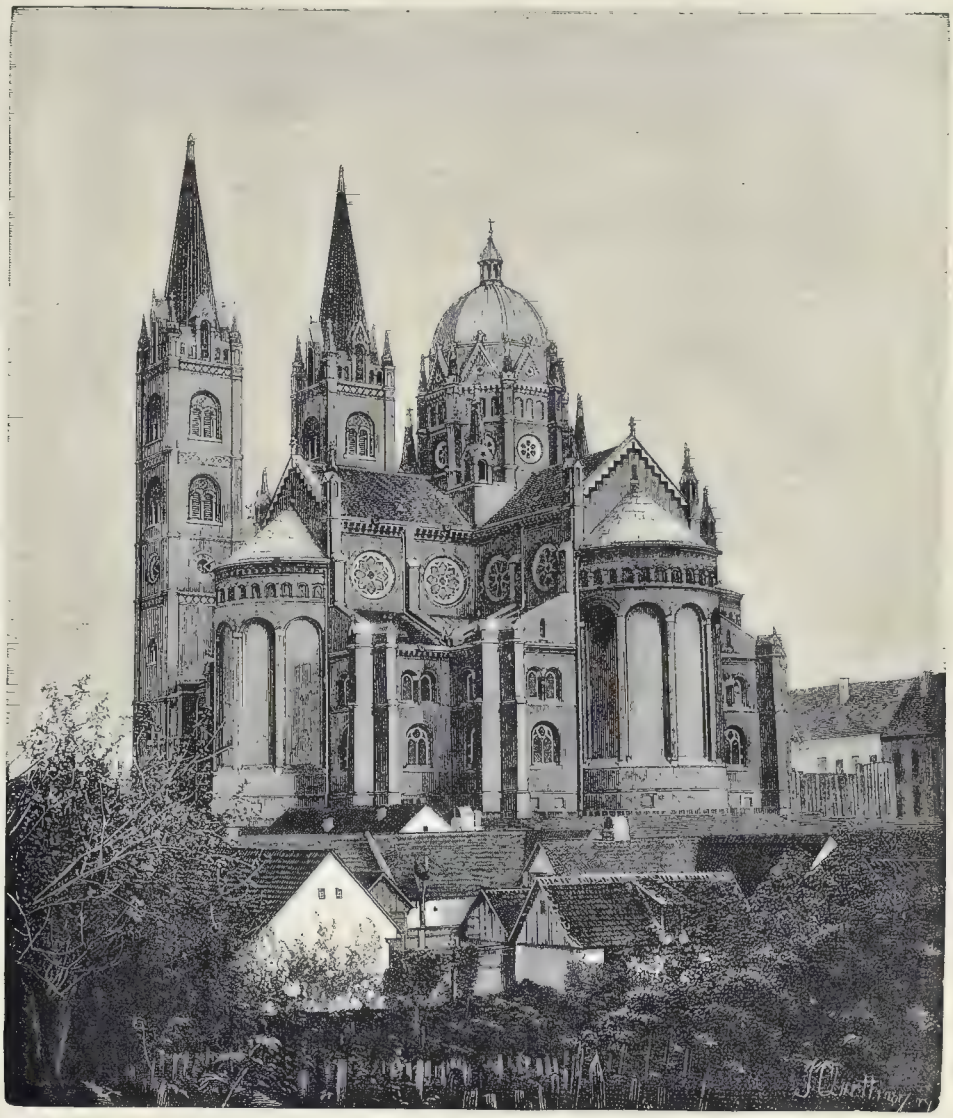


CHALET RESIDENCE. HARROW PARK FOR D. BROWN ESQ^R.

T. WALFORD ARCHITECT
27 ELM PARK GARDENS KENS. S.W.



A HOUSE IN THE STRAND.—Messrs. Archer & Green, Architects.



DJAKOVAR CATHEDRAL, CROATIA.—Carl Rosner, Vienna, Architect.

A NEW CROATIAN CATHEDRAL.

The new Cathedral of Djakovar, an otherwise unimportant town of Croatia, is, as will be seen by the view which we give of it in this week's *Builder*, a striking building, and a remarkable monument of the Croatian nation, bearing testimony to the progress of this South Slavonian race. The movement for erecting a cathedral in Djakovar was started sixteen years ago, by Bishop Strossmayer, who also consecrated the building, on October 1st of last year.

The new cathedral is in the Romanesque style, the latter regarded as a union of Byzantine and Gothic forms, being considered especially suited to illustrate the tendency according to which the Croatian nation believes itself called upon to carry Western civilisation towards the East. The church is in the form of a Latin cross, the stem of which forms the nave, the two transepts representing its arms. The choir and the transepts terminate in apses adorned by high arches. The principal façade consists of two clock-towers, also in the Romanesque style, 252 ft. high, provided with clocks and round-headed windows, the upper story being adorned by turrets at the angles, and canopied openings between. Three front portals, leading to the nave and aisles respectively, rest upon columns with cubes as capitals. In the upper panel of the principal portal is a relief of the Saviour, while St. Peter, the patron saint of the cathedral, and the Sclav apostles, Cyril and Methodius, fill the triangular panels of the side portals. Above the intersection of the nave and transepts rises a lantern terminating with a cupola,—the Kuba. The side walls of the cathedral are pierced by many large and small semicircular-headed and rose windows, while the three apses have each five arches resting upon pilasters, above which runs a blind gallery round the semicircle of the apse. Within are found Corinthian columns and demi-revetted pillars, the capitals of which are adorned by leaf ornaments. Corresponding with the building above ground, the crypt has four altars and rows of columns. The sanctuary and the transepts are four steps higher than the nave and aisles, in accordance with the traditions of the Romanesque style in Germany. The cathedral has, besides the principal altar, dedicated to St. Peter, seven smaller altars.

The plans of the cathedral were prepared by Herr Carl Rösner, Professor at the Academy of Arts of Vienna, and the builder of the Church of SS. Cyril and Methodius, Prague. Dombaumeister F. Schmid, of Vienna, and his disciple, Herr H. Bellè, of Agram, assisted in the erection of the cathedral. The cost of the building was 200,000*l*. The frescoes have been painted by the two Seitzs, father and son, of München. The pictures represent scenes from the New Testament and the lives of the saints.

TOMBS AT CAIRO.

PERHAPS the most remarkable structures at Cairo are the tombs of the Caliphs and the Memlook kings. They are for the most part situated in two large groups outside the walls of the city. There are, however, others, and those probably, the earliest in point of date within the walls of the city; one of the latter is the only existing tomb of what was formerly a large group erected to the memory of the caliphs of the Eiyoobite dynasty. The Caliph Eiyoob, whom this monument records, died in 1250. Why all the others of this group have been destroyed it is difficult to say.

The beautiful tomb which we illustrate is one situated outside the city walls, and forms one of that group called "El Kaitbay" from Kaitbay or Kâêdbai, being the most important Sultan of the dynasty which these edifices commemorate. Sir Gardner Wilkinson calls these the tombs of the Circassian Memlook kings, and informs us that the first Sultan of this dynasty was El Bêrkook, who repulsed the Tartars under Tamerlane in 1393. The largest of these tombs, that to Sultan Kaitbay, dates from the year 1496, and is a rich example of Egyptian Pointed architecture, though from having had a large mosque attached to it, it is less symmetrical than the example which we illustrate, and wanting in the simple dignity and beauty of the latter. Like all Mahomedan buildings, it is quite impossible to judge of the date from its style; it looks, at first sight, to be earlier than the Mosque of Touloon, which is more decidedly Gothic, and has the pointed arch far more strongly developed, yet if the dates ascribed to these monuments are correct, Touloon is five centuries, at least, earlier! The date given to the Mosque of Touloon, 879, seems almost incredible, even allowing for the stagnation of Mahomedan art, and we should not be in the least surprised if some one were to discover that no portion of the present building was in existence before the year 1100. It used at one time to be supposed that the Temple of Denderah was a work of the time of Rameses the Great, but now we know positively that it could not have been erected before the time of Trajan.

We do not for one moment say that this is also the case with the Mosque of Touloon, because we have no means of ascertaining the facts concerning that building; but we repeat that we should not be surprised at finding that it dates from the twelfth instead of the ninth century. Even if this were the case, it would still be doubtful whether Cairo may not claim to have been the first city in the world where a "Pointed Style" was developed. The whole question is one of considerable interest, and the examples of Mediæval architecture are so remarkable, so singularly beautiful, and offer so many hints for design, especially as regards domical construction and the use of the dome in combination with the pointed arch, that they deserve to be most carefully preserved and protected, and we venture to suggest that the English nation should not let slip the present opportunity of impressing upon the Egyptian authorities the duty of preserving these beautiful monuments. They have in past times been most shamefully neglected; in fact, the tombs outside Cairo have served as stone quarries, and nothing has been done to protect them from destruction. It seems strange that the present rulers of the country should have exhibited no respect or reverence for the tombs of their ancestors.

A NEW HOUSE IN THE STRAND.

WE this week illustrate the front elevation of the new building, 71, Strand, just completed for Mr. George Attenborough, from the designs of Messrs. Archer & Green, of Buckingham-street, Adelphi.

The new building adjoins Mr. Attenborough's old premises at the corner of Adam-street, and is faced with rubbed and gauged red brickwork, with ornamental adjuncts of red terra-cotta, modelled from the designs of the architects and executed by Messrs. Doulton & Co. The vases, &c., in the niches, have been selected from Mr. Attenborough's collection, and are good specimens of terra-cotta work.

The ground-floor of the premises is occupied by the shop, the fittings in which have been made by Messrs. Yardley & Son, of Clerkenwell. The upper portion of the premises is occupied as show-rooms for works of art, and although direct light could only be obtained from the front by the liberal use of Hyatt's lights under skylights, every part of the building appears to be adequately lighted.

The building has been executed by Messrs. Bywaters, of King-street, Regent-street.

CHÂLET RESIDENCE, HARROW-ON-THE-HILL.

WE have given a view of one of two châlet residences now building in the private park, Harrow-on-the-Hill, for Mr. David Brown. The plans of these houses are identical, and the works are being carried out by sub-contracts under the superintendence of the architect, Mr. J. T. Walford, of Buckingham Palace-road. We will give a view of the second on a future occasion.

BELGIAN TOWERS.

THE tower of the Academy of Fine Arts, Bruges, is a well-proportioned Gothic tower, built of stone, and has a slated roof. The main building occupies a fine position, with a large open space in front.

The illustration called a "Watch Tower, Bruges," is part of an extremely picturesque old building, situated near the banks of one of the canals of the town, and is built principally of red brick, with a slated roof. The lower part of it is used as an inn, and has a bowling-alley and archery-ground attached.

THE ANCIENT RESTING-PLACES OF THE DEAD.

SIR,—In an interesting article in last week's *Builder* on Croxall mound, which the writer supposes to have been created for the purposes of defence, he mentions the discovery in 1800 of human remains, but he does not seem to consider it to have been a place of interment, because, in its evident antiquity, it possessed no evidence of cremation, and contained neither urn nor cist. Now many of these mounds having the appearance of once being fortifications, are undoubtedly places of early Christian burial. They, the simple founders of our faith, committed their loved ones to the earth in the most simple manner,—scarcely 3 ft. from the surface of the ground; and up to the ninth century upon an elevation raised above the surrounding ground, embodying, it has been supposed, the Scriptural principle of a church set upon a hill. In some cases the shallow graves, where stone could be obtained, were lined with that material; in others, a simple mortuary cloth enveloped the remains. I was present in the Isle of Man at the discovery of one of these graveyards of very ancient date, — probably of the fifth century,—and a brief description of it may be interesting to your readers. It was situated at the small hamlet of Ballaqueeney, on the road to Port St. Mary, and consisted of a bed of gravel having a gradual slope, but falling with a declivity to the road on its south-western side, and where we came upon the human remains it contained, it had little to distinguish it externally from an elevated portion of the surrounding fields, but the character of the first interment uncovered stamped it at once as a most valuable discovery. About 3 ft. below the surface, and upon the removal of a few slabs of stone, there lay in a narrow stone-lined grave the perfect skeleton of what must once have been a tall and powerful man, as red as the rust of iron. One of these graves contained two skeletons, those of a man and woman. Most of the bones crumbled to dust on exposure to the air. Adhering to the stone in some cases was a fibrous substance, which might have been the remains of a textile material; but in most of them only some red dust lay scattered over the soil. The direction of all early Christian burials varies considerably, as do the chapels, usually built on the most elevated portion of the site. This was, no doubt, partly due to the position of the sun on the horizon on the morning of the saint's day to whom the chapel was dedicated.

It is only when sufficient evidence exists, such as the position or direction of the remains, the discovery of their having been subject to cremation, or the bodies having deposited with them weapons, or ornaments, or vessels either of stone, or bronze, or iron, that a satisfactory date as to their interment can be determined. The Isle of Man is full of these records of the past. The Druids, it may be, the Pagan hordes of Northern countries, the inhabitants far back in a remote period of that great storehouse of antiquity, the sister isle,—almost as mysterious in its hints of ancient learning as the tombs of Egypt,—have enriched the soil, especially of the Southern part of the Isle of Man, with the ashes of their dead. It is, therefore, extremely difficult to separate later burials, where even tradition is dumb, and in neighbourhoods where undoubted Pagan relics have been found, from those of an earlier date. The discovery, for instance, in the south, adjacent to the graveyard above described, of a Celt of early formation, a bronze hatchet-head, and innumerable Runic remains, is liable without very careful investigation, seriously to mislead. A grave is opened in some place where no traditional record can at first be gleaned, and of which the memory even of the conventional "oldest inhabitant" is a blank. The silent agency of a natural law has left behind only a few dry bones, and beyond the attitude in which the body has been placed,—not unfrequently without even this slight clue,—there may be nothing to indicate the length of its repose. The ignorance of the discoverer and the requirements of the living may carelessly or wilfully efface the witnesses which exist, and the mysterious and silent sleeper of a thousand years may vanish in an instant into dust.

The chapel of St. Luke and the ancient burial-ground ("Cronk-na-Irey-Lhaa") of the Danish kings are situated in the parish of Kirk Christ Rushen, and two miles from the village of Dalby, and are supposed to have been originally a Scandinavian settlement. This bears a strong resemblance to an ancient fortification, even to the causeways or ditches bounding the central hillock on three sides, the fourth being towards the sea. Mr. J. R. Oliver gives the following description of early Christian burials in the Isle of Man:—

"The burial of the dead in the Isle of Man was essentially a religious belief, involving a lively faith in the resurrection; consequently the selection of a burial-place,—the *ubi reaugere*,—where the dead might rest in peace to rise again in glory, was an object of the utmost importance. Hence these cemeteries usually occupy picturesque and retired localities, with little to awake the sympathy of the casual visitor except the sanctity of the place. They contain no monumental stones or other memorials of the dead to indicate who rest below, but great and small lie mingled together without distinction, in the one common hope of a joyful resurrection. The mode of inhumation practised was as follows:—A grave, 3 ft. deep and 2 ft. wide was dug east and west, and lined with flag-stones to the height of 15 in.; in it the corpse was laid wrapped in a mort-cloth; a few shovelsful of earth and a layer of sods completed the remainder. No implements or relics of any kind were entombed along with it, but the whole betokens the simple burial of the early Christian church.

It sometimes happens that two and even three bodies rest in the same grave. When this is the case, they will be found to lie on their sides, with the lower extremities semi-flexed. In consequence of this the stone coffin is much smaller in size than is usually the case, and has more the appearance of a child's than an adult's burial. Very seldom the remains in these graves will bear handling, unless the surrounding soil happens to be of a dry and sandy nature. Their colour is generally of a rusty iron or tan hue, caused by the quantity of ferruginous matter contained in the schistose formations of the island."

Gradually the mortuary chapels in the centre of these graveyards became of more importance, the walls being of irregular masonry, without mortar or cement, the interior paved with pebbles. In England and Ireland the early examples, of the fifth century, were built of wood and wattles, but in the Isle of Man they consisted, at this period, only of earth and sods, interspersed sometimes with large stones. It can be easily conceived how soon so frail a structure would, in succeeding ages, be swept away and leave only the mound and the silent witnesses below.

Standing among those children of a bygone period, who had lain in their narrow stone-built chambers undisturbed by the historical changes, it might be, of twelve hundred years, I was irresistibly reminded of the beautiful commencement of Tennyson's poem,—

> "Dust are our frames and gilded dust our pride,
> Looks only for a moment whole and sound,
> Like the long-buried body of the king,
> Found lying with its urns and ornaments
> Which, with a touch of light, a breath of air,
> Shrank into ashes, and was found no more."

In a very short time every vestige of these

remains was swept away, the bed of gravel of which the field consisted being taken for the railway then in progress, only the tradition of this discovery remained. Byng Giraud.

AN ARCHITECT ON LAWYERS.

Sir,—It is always to be regretted when members of one profession go out of their way to speak ill of those who belong to another profession. Moreover, if any person thinks it his duty to criticise any body of men harshly and adversely, it should only be done after the most careful consideration. But if such criticism is hasty and ill-founded, it can only recoil on the head of the critic, and breed ill-will where there should be complete friendship. And it is right to say that Professor Kerr's remarks at the Architectural Association on the 16th ult., as reported in your issue of February 24th, are much to be regretted. His first assertion was that as "lawyers were increasing in numbers to an alarming extent, it followed that disputes were increasing in number and in inveterate bitterness." I should like to ask Professor Kerr whether before he made this assertion he had ascertained that lawyers were increasing out of proportion to the general increase of population, or faster than architects and surveyors and builders, and whether disputes were increasing also out of proportion to the increase of population. Further than that, has he any foundation for the assertion that disputes are increasing at all? For there are many who think that litigation has, during the last few years, to judge from various data, actually been on the decrease. What, too, is his evidence that disputes are now more bitter than they used to be, and why does he ascribe this bitterness to lawyers? No respectable lawyer endeavours to foment quarrels, and though there are black sheep among lawyers as among architects, yet it is untrue to lay it down as a general rule that lawyers increase quarrels. The lawyer is generally called in when the dispute has become thoroughly embittered. The assertion of Professor Kerr is all the more remarkable because he states that "he had been concerned in a great many cases of litigation for a great many years," and therefore has clearly been an abettor of litigation, if we may use the expression. The accusation is all the more unjust as regards building disputes, and those in regard to light and air, because in every such case it is the universal experience that each side has a surveyor or architect who, from the beginning to the end of the dispute, is the most active agent in the litigation.

As to the assertion that lawyers cannot understand bricks and mortar, and that they "deal in abstractions," whatever that may mean, it is answered by the simple fact that lawyers manage to understand very intricate commercial questions, very difficult questions in regard to ships, and have constantly to get to the pith of confused questions of account. If they are competent to deal with these questions, it is difficult to see why they are incapable of managing a case which arises out of bricks and mortar. Again, Professor Kerr says that "the business of the opposing counsel was to mystify the judge." In the first place, it is constantly stated by judges that they would never get through their duties without the aid of an efficient and conscientious bar. Moreover, it must be obvious to any one who will consider the matter even for a moment that the most effective way to obtain a judgment is not to mystify a judge, but to put a point to him so clearly and so forcibly that he shall decide in favour of the advocate who does this. To mystify a judge is to leave him to take a leap in the dark. It is a well-known fact that the most successful counsel are those who can state a case most plausibly and most clearly. Professor Kerr winds up his denunciation of lawyers by insisting on the merits of lay tribunals; although in a recent letter to the Institute on the subject of the law of light, he expressly gives his opinion in favour of legal tribunals. The decisions of arbitrators, he also says, "very frequently consisted in splitting the difference and deciding the costs. That was a thing the lawyers never did. They must always have one man altogether in the right or altogether in the wrong. It should be borne in mind that the truth was to be found between extremes." Here, again, it would be desirable to have the grounds on which the Professor's views are based. He would find, if I mistake not, if he were to take at random half a dozen arbitrations before the official referees and half a dozen before Mr. Whichcord, or any other eminent architect, that in some instances one side was wholly victorious, and in some instances the truth lay between the two contentions. But to state as a general rule that lay arbitrators are best because they split the difference is, in the first place, an incorrect statement, and in the second, if it were true, is evidence of incapacity and of a desire to avoid doing a duty by always taking a middle course. As has been already said, harsh criticism can only be justified when it is based on careful investigation of facts, and an equally careful consideration of their bearings. Professor Kerr's remarks show an equal absence of investigation and of thought. To address remarks of such a character and tone to an assembly of young architects by way "of contributing what little he could to the instruction of the evening," was surely undesirable.

A Lawyer.

ARCHITECTURAL QUESTIONS IN GLASGOW.

Glasgow Institute of Architects.

The annual dinner of the members of this Institute was held in the George Hotel, George-square, Glasgow. Mr. James Thomson, Bath-street, president of the Institute, occupied the chair, and the duties of croupier were discharged by Mr. David Thomson, vice-president. Mr. William MacLean, writer, the secretary, intimated that letters of apology had been received from Professor Veitch, and from Messrs. James Salmon, George Bell, John Burnet, and Campbell Douglas, former presidents of the Institute, and other gentlemen. After the customary preliminary toasts had been given, the Chairman gave the toast of the evening, "The Glasgow Institute of Architects." He said:—A new style of architecture is said to be a want of the time,—this has, indeed, been said for many years. It has also been said that there is no more use for a new style in architecture than there is for a new language. In the meantime, I fear we must be content to remain without any very extreme novelty in architecture; for with all the modern building, Paris has not begun, nor has London led, the fashion. The architects of the present day, instead of endeavouring to follow up the outline of a new style, are too apt to fall back upon a useless phase of design about 150 years old, which was turned aside by their predecessors, and thought to be buried out of sight along with the men of the same period. No doubt, in 1850, Joseph Paxton assisted in the creation of a style of building for the Great Exhibition of 1851, which has ever since become useful and necessary for many purposes. A style very much criticised and cried down by architects and men of very fine taste, it has for all that found a place for itself; for the Crystal Palace was admirably adapted for its purpose, or for any purposes where light without impediment is required. The ancient idea of bulk and strength here gives way to strength and lightness, and I say it is far better to run the gauntlet of criticism,—that iron construction is incompatible with true architecture,—than to ignore the new demand for construction with plenty of light to suit business requirements. And I am not sure that amidst all the buildings put up for exhibitions or warehouses since 1851, that there has been anything better in that direction. As architecture is a progressive art, our members ought always to be on the alert, so as to assist in its development. While the architects of Glasgow have always endeavoured to advance in the better class of construction and embellishment of the buildings entrusted to their care, there is cause for thankfulness that the citizens have always been willing and able to give the money that was necessary. No one that has known Glasgow of the past generation has failed to see the interest that has been taken in the careful laying out and building up, not merely the new portion of the town, but also in the remodelling of old parts, now removed and replaced by modern work, and I think we need not be ashamed to say that the members of our Institute have been the means of bringing this state of things about, men who, if not originally of Glasgow, have become identified with it because of their work. The City Improvement Trust scheme has done much to develope the resources of our members, for, as the new streets and places were opened up, there were new requirements in building. The School Board, too, has developed energy in the way of planning school buildings which for comfort, suitability, and elegance, are unsurpassed. Our Institute has always considered it to be their duty to step forward and give advice in important matters relative to work in our city, and recently its Council has gone into the merits of two questions which have been very much before the Institute and the public. On these points I would say a few words. 1st. The competition for the new municipal buildings. On this head, probably, my remarks may be judged as one-sided, on account of my opposition to the principle of competition altogether. Certainly there has been nothing done in this fresh competition to alter my views; and while I do not grudge the successful man his prize, I think the public would have been as well suited and as well pleased with a professional man at home. Large public buildings such as these have been for some time very scarce, and the profession in Glasgow were naturally anxious about these new municipal buildings that they should get into proper hands. The Institute knowing the difficulties which beset competition arrangements of all kinds, placed themselves in communication with the Town Council with reference to the clauses of the competition. It is certainly very amusing to study the different apologies for the system of competition as given forth on the general question, for it requires a good deal of round-about argument to back up the necessity for the system. The assessor, Mr. Barry, of London, tells us that the principal points which struck him as demanding consideration were the insufficient and often contradictory nature of the instructions to competing architects; such instructions were more often than not drawn up by men totally unfitted for the task, and consequently they abounded in pitfalls for the professional men who competed. The architect for the proposed building has been appointed by the Town Council, but it was considered by many that the designs prepared by the unsuccessful competitors should also have been exhibited, but this was only done in respect of the exhibition of the ten designs, and the Institute had to undertake the responsibility and expense of exhibiting the rest of the designs. 2nd. When the new Police Bill was brought before the public last year our Institute considered it their duty to address themselves to the Town Council on the matter, and give their views relative to what they considered should be done as far as matters pertaining to buildings, street, drainage, &c., were concerned. Their views were explained in a very simple way,—that all necessary building regulations should be embodied in a Building Act applicable not merely to the city, but also to the suburbs, and asking for delay. No wonder, then, that our members were disappointed at the way in which they were passed over and their overtures for meeting rejected by the Town Council until the last moment, when there was no time left for discussion; and the more especially that "Lord Provost Ure has all through his career taken an intelligent and warm interest in all matters relating to sanitation." It has been said that, to have a Building Act on the model of the Metropolitan Building Act, it would be necessary to abolish the Dean of Guild Court. I do not see that at all. The fact that the Dean of Guild Court having been set up at a time when there was but little work for it to do, save a lining now and then in the burgh, does not preclude the idea of the court having grown into usefulness with the extension of the city. And with a competent man like our present Master of Works, there should be no difficulty in seeing any Act relating to the buildings, streets, &c., carried out. This matter has been considered by the Institute to be one of very great impotance to all who are interested in the welfare of Glasgow. And the members expected that they would, along with others interested, be consulted in any change of the laws, and were naturally anxious to see proper clauses introduced, under a separate Act. You are aware that after the revision of the clauses in this new Police Bill the draft of it was then placed in the hands of the Lord-Advocate, merely as a suggestion for the framing of his general Bill. Our reports and suggestions will also be forwarded to him, and I trust that all the matters referred to in connexion with the new Bill will be placed on a

proper footing. Before leaving this subject I would say that there is no doubt that house-drainage should be a separate class of work, and no longer left to the wall-building masons and their labourers. I have often thought that this matter of drainage was as important as plumber work, if not more so, although the money-value of it does not come to much. These important details relating to drainage have hitherto been left too much to the ordinary contractor, and we now know too well how they have been neglected,—drain-pipes being hurried into the trenches, and covered up as fast as possible. For a time it was supposed that the stoneware glazed pipes, with all their perfect bends and joints, would make everything safe in its supersedence of the old culvert or drain, sometimes constructed with a slab-board for a sole, a brick side, and their uneven covers; but it has been found that even these piece-glazed conductors were a greater evil, in the more swift inlet of foul air, with joints made good, but the main connexions neglected, or, as I said before, when the pipes were buried out of sight, with no jointing at all. I can scarcely speak in strong enough language condemning the builder who knowingly allows the pipe-drains to be formed with a bit of clay on half of the joints, and nothing at all on the other, and the many modes of working to get this department of the contract put out of hand as fast as possible. I would add just one word, and that is with reference to the coming "Sanitary Congress" in our city, in the hope that you will take a special interest in helping it forward. I trust that in this coming exhibition of sanitary appliances, we shall have a useful exposition of everything that bears upon the subject.

FIRE-RESISTING PLASTERING.

AN interesting trial to test the merits of Hitchins's patent fire-resisting or carbonised plastering was held on the vacant Crown land on the Victoria Embankment, at the bottom of Whitehall-place, on Tuesday last, in the presence of representatives of H.M. Office of Works, the Metropolitan Board of Works, and of a large number of architects and others interested in the subject. For the purpose of the experiment, a brick building, containing two rooms, one above the other, was erected, but without any staircase or other means of communication between the room on the ground-floor and that on the first floor. The ceilings of both rooms were constructed in the following manner:—Wood joists, 7 in. by 2½ in., were laid 1 ft. apart. To the under-sides of these joists, galvanised iron wire netting, with meshes of about 1 in. or 1½ in. in diameter, was stretched and properly secured to form a key for the fire-resting plastering, which in this case was 2 in. thick. The plastering may either be put on with the trowel, or poured through the joists from above on to a temporary platform or centering of boards fixed below the under-sides of the joists, this platform being readily removable when the plastering has set.

This plastering contains a certain proportion of pounded coke breeze. Towards the upper sides of the joists, wood fillets are fastened, and upon these fillets slabs of the patent plastering material, previously prepared, and 1 in. or more in thickness, are laid so that their upper surfaces are exactly flush with the tops of the joists, thus leaving an enclosed or confined air-space between the joists. The floor of the room above is laid with ¾-in. boards in the usual manner. It is claimed by the patentee that with this method of construction, which is obviously easily applicable to all houses, a fire which may break out in any room will be unable, at any rate for a very long time, to make its way either upward or downward through the ceiling or floor. The crucial tests which were made on Tuesday last appeared to sustain that claim. The room on the ground-floor was half filled up with a large pile of wood faggots and shavings, over which, previously to ignition, paraffin oil was copiously poured. A similar pile of combustible materials was made on the flat top of the building (representing the floor of the second story above the ground). These two fires were simultaneously kindled, and burned furiously for about half an hour, thus attacking the first-floor room from above and below, but without appreciably increasing the temperature of this intermediate apartment, and without any smoke passing into it except by the open window, which (reached by an outside ladder) was used for the entrance and exit of visitors. A fire was then kindled in the first-floor room, thus attacking both floors from above and below. At the end of a quarter of an hour or twenty minutes longer the fires were all extinguished by means of water, and when the building was sufficiently cooled down, portions of the plaster were hacked off to expose the joists, which, except on their upper edges upon which the floor-boards rested, were found to be not in the least degree charred. The patentee, while not claiming for this method of ceiling and floor construction that it is absolutely fireproof, maintain that it is, in a high degree, fire-resisting, and no one who witnessed the ordeal to which it was exposed on Tuesday last could come to any other conclusion. Of course all good plaster work is more or less fire-resisting, as the patentee admits, but he claims for his method of floor and ceiling construction (irrespective of the composition of the plaster) that it is almost impossible for the joists to take fire or burn in the confined air-space which is formed between them. One precaution that would have to be taken, however, would be to use only well-seasoned timber, in order to prevent dry rot. The patentee intends applying his material to the protection of iron columns and girders, but always with an air space between it and the iron.

THE HISTORICAL DEVELOPMENT OF ORNAMENTAL ART.

UNDER the auspices of the Painters' Company, Dr. G. G. Zerffi, one of the examiners and lecturers of her Majesty's Department of Science and Art, commenced a course of three lectures on this subject in the Hall of the Company, Little Trinity-lane, on Friday, the 23rd ult. The lectures, which are to be fully illustrated by diagrams, are especially addressed to operative painters and decorators, and a very large and attentive audience, presided over by Mr. London, the Worshipful Master of the Company, assembled to hear the first lecture.

Dr. Zerffi commenced by referring to the vastness of the subject, of which, in three lectures of an hour's duration each, he should only be able to give the broad outlines. As he proceeded he should, he hoped, make it manifest to his audience that art was one of the most interesting and cultivating studies to which they could give their attention. There were two spheres in which we always moved, namely, Science and Art. Religion connected them, but Science and Art were the primary elements on which the whole of the culture and progressive development of humanity was based. Now whatever a man did, knew, or felt, came from outward impressions. He might be impressed with the beauty of an object, although he hardly knew why. To give a definition of the beautiful would be extremely difficult, just as it would be difficult to give a definition of virtue. Beauty was, indeed, but a relative expression. The beautiful was that which produced within us feelings of sympathy, delight, and admiration. Wherever there was harmony of form and idea there would be beauty. Having described the whole circle of impressions and sensations, incidentally observing that anything which excited a sense of pain was ugly, the lecturer proceeded to speak of the racial conditions as affecting art. God created mankind in three great groups,—the black, the yellow, and the white races. The black man had never created anything in art, and never would. He had only succeeded in producing, here and there, a rough sort of geometrical ornamentation, like the work of the savages. If he attempted to make a representation of a dog, it would be like anything but what it was meant to be. The Turanian or yellow race of men, of whom the Chinese were the typical representatives, were next referred to. At times in this country we had been China-mad, but China-mania was the result of fashion, which was the greatest possible enemy to real genuine art. The Chinaman, as a workman, was industrious, and possessed a great amount of talent, and in certain technical matters he was ahead of Europeans, but he had no real art in him,—he knew nothing about the beautiful. Although clever in carving or sculpture, he could not make a Venus or a Discobolus. In pictorial art he failed utterly, because he never could see any perspective. The white man, on the contrary, was apparently unlimited in his artistic capacity, for no one could say what would be the achievements of the white man in art. Those achievements would be according to his social, religious, and political organisation, and according to his better understanding of the impressions and sensations of which he became conscious. A great many people were continually talking about Nature, and advising art-students to go to Nature. But Nature was, after all, only a sort of Johnson's Dictionary to the student of art. Just as the dictionary contained all the letters and words in the language, so Nature contained all the elements which the artist needed; but he must select from them, and adapt them, and put upon them the impress of his own mind if he wished to produce a work of art. He might copy Nature until Doomsday and yet never be an artist. Nature never produced a Parthenon, and never would. No; the power of the artist was shown in his selection and combination of the alphabet afforded him by Nature. The basis of all higher culture in art-workers was history, the study of which led to a correct understanding of beauty. It was sometimes imagined that in the pre-historic or geological period there was no art; but a petrified ivory blade found at Perigord in France disproved the correctness of such a view. The blade was scratched or engraved with a few lines, depicting with considerable power an infuriated animal. It was only, however, in the Iron Age that real art could be said to properly begin. Indian art was characterised by a fundamental error, and however much the beholder might be stupefied at the grandeur of Indian works, they were never in reality beautiful at all. The imagination was not cultivated, but allowed to run wild. The Indians built big temples, and decorated them as if they were so many carved cocoa-nuts or small boxes; the decoration, in fact, was simply a kind of panelling, which, though very nice and appropriate on an ivory box, was entirely wrong when applied to a temple 150 ft. high, as was the manner in which they dressed up their columns in a kind of lace-work. The Assyrians and Persians had proved themselves to be skilful at the representation of animals in stone, although they were but poor hands at the reproduction of the human figure. On the other hand, the Chinese, who could draw flowers admirably, failed when they attempted to depict men or animals, although they would represent the fur of a cat as minutely as if they had counted every hair. Now that was not what was wanted in art. It was the idea, the expression, that was required. Landseer's dogs were unsurpassed, because every one of them as painted had a soul in him which seemed to speak to the beholder of the picture. The Assyrians and Persians had left to us some beautifully-drawn lions and other animals, one of which, a wounded lioness, was wonderfully expressive; but their men were conventional, stiff, and expressionless, all looking alike, and all, whether slaves, courtiers, soldiers, or attendants, having the same stiff features. They made the king 2 ft. or 3 ft. higher than any of the other figures, that being the only way which they could conceive of expressing the dignity of royalty. Thus the influence of autocratic and despotic government was manifested in works of art. This was especially the case with the Egyptians, whose works as they had come down to us were monumental rather than artistic. Indeed, an Egyptian temple could not be rightly described as beautiful. It might be sublime, if not awful, with its long series of heavy columns, telling the beholder much of the hieratic and despotic form of Government under which they were produced. But Egyptian art was undoubtedly the transition link between the art of the East and that of the Greeks. Now, why was it that Greek art was so pre-eminently worthy of study, as he maintained it to be? The whole secret of the Greek development in art was that it was an ideal and humane development. The Greeks made their gods and goddesses in the form of beautiful men and women because they perceived that man was the highest of the Creator's works. Their gods were ideal impersonations of different phenomenal impressions of nature. The Greeks owed all their artistic and political pre-eminence to two mighty poems,—the Iliad and the Odyssey,—which had been read by every educated man over and over again, for they were an inexhaustible

source of delight, their charm consisting in truth to humanity. Man in the time of the Greeks knew himself. The versatility of the Greeks was nowhere better seen than in the foliage of the Corinthian capital, the acanthus-leaf of which was primarily derived from a miserable plant, but which, conventionalised by the Greeks, became a beautiful piece of ornament, because impressed with an artistic idea. Greek art, of course, did not develope itself all at once, but passed through certain stages, of which the first was the Archaic, but the climax was reached in the time of Phidias, after whose time the period of decadence set in. In the transitional period between the Archaic stage of Greek art and the time of Phidias, the sculpture of the Greeks was marked by great excellence and correctness anatomically, but the muscles, veins, and sinews were too prominently shown. In Myron's Discobolus, or disc-thrower, however, the figure, although perfectly correct anatomically, did not exhibit any prominent display of the muscles, and yet the movement of the figure seemed to thrill through it right down to the toe which was partly bent upon the ground. The Greeks would have been horrified with the wasp waists too often to be seen deforming ladies' figures in the present day, for their ideal of female loveliness was embodied in the Venus of Milo, which was unsurpassed, and any one who saw it would admit it to be a perfect idealisation of womanhood. It was, indeed, a very incarnation of moral love. There were, no doubt, little mistakes about it, but with all the defects that could be found in it by exact admeasurement where was the sculptor who could produce such a work in the present day? The Laocöon and the Farnese Bull, although fine works in execution, were sensational in idea and suggestive of pain, and, therefore, contrary to every true artistic feeling. Having spoken in some detail of Roman art, the lecturer referred to taste and its gradual evolution, and the influences which retarded or stimulated it. War, religious quarrels, plague, political animosity, vulgarity, bigotry, and ignorance were no elements of art prosperity, while, on the other hand, peace, love, poetry, philosophy, history, and a diffusion of general culture produced an appreciation of the harmonious and beautiful, and were the true elements of art and science. The aim of art was to heighten men's ideas and to purify their lives, but the modern tendency to imitate Queen Anne or other patterns would not do this. Style depended upon the artist's correct knowledge of the essence of objects, as far as he could be allowed to give them corresponding visible and tangible forms. According as matter or mind, realism or idealism, predominated, so would the styles of different artists vary. In conclusion, the lecturer referred to a minute on the books of the Painters' Company, on the 10th of March, 1673, "that the painter of Joseph and Pottifer's wife and the Four Elements be fined 3*l*. 6s. 8d. for such bad work." He did not know whether such a method of dealing with bad workmen could be revived in the present day, but he was afraid that if it were revived and enforced it would bring a considerable sum of money into the Company's cash-box.

The next lecture is to be delivered this (Friday) evening, March 2nd, at eight p.m.

LEEDS ARCHITECTURAL SOCIETY.

ON Monday evening, the 19th ult., a paper was read before this society by Mr. George Bertrand Bulmer, member (also member of the Leeds Fine Art Club), on the New Town-hall, Wakefield. After strongly appealing to assistants and pupils to help the practising members of this society in supporting and maintaining the position it had taken up, Mr. Bulmer proceeded to the subject of his paper, commencing with an account of the competition for the design of the building. The planning was fully described and the construction criticised. The appearance, externally and internally, next received attention from an artistic point of view, and the interior of the leading apartments, viz., the Council-chamber, Borough Court, and Banqueting-room. The Mayor's parlour and Committee-rooms formed subjects for a series of descriptions, which were brought to a conclusion by the lecturer pointing out that the designer of the building had availed himself of modern materials and modes of construction, besides having drawn inspiration from the knowledge of the works of those who had gone before us.

BUILDERS' CLERKS' BENEVOLENT INSTITUTION.

THE sixteenth annual meeting of this Institution was held on Tuesday evening last at the Offices, 27, Farringdon-street, Mr. Howard Colls, President-elect, in the chair, and Mr. Thomas Stirling, one of the Vice-Presidents, in the vice-chair.

The annual report, read by Mr. H. J. Wheatley, the secretary, stated that the income for the past year amounted to 267*l*. 4s. 6d. in annual subscriptions, 186*l*. 3s. 6d. in donations, and 49*l*. 0s. 11d. interest on invested funds, making up a total income for the year of 502*l*. 8s. 11d., being 34*l*. 7s. 2d. less than that for the preceding year. The total expenditure was 310*l*. 11s. 10d., of which 210*l*. 16s. 8d. was paid in pensions, the remainder being for temporary relief and working expenses. During the year two elections were held. The first took place in May, when William Harffey, for many years a clerk in the service of Mr. Loat, builder, of Balham-hill, who is quite incapacitated by great age from following any employment, was elected. The second election was held in June, when MRS. Ellen Kelly, widow of J. A. Kelly, who was employed in the office of Mr. E. Conder, of Kingsland, up to the time of his death, was elected to the widows' pension, and at the same time her daughter Ellen was elected to the Orphan Working School (per presentation of the Institution), in place of Alice Grace Spencer, whose school term expired at Midsummer last. There are now eleven pensioners on the Relief Fund, and two children are being maintained and educated in connexion with the Orphan Fund. The fourth annual dinner was held at the Guildhall Tavern on the 27th of March, Mr. Arthur C. Lucas, the President, in the chair. The total subscriptions and donations announced on the occasion amounted to 197*l*. 4s. With reference to one point connected with the Relief Fund, the Committee direct special attention to the fact that the yearly income arising from subscriptions and dividends (making together 223*l*. 4s. 7d.) is still insufficient to meet the expenditure, which last year amounted to 285*l*. 8s. 10d. This matter, the committee believe, has only to be made known to be rectified, and it is hoped that at the next annual dinner some important additions will be made to the fund. The report concluded by expressing the thanks of the committee to Mr. Arthur C. Lucas, the retiring president, for his services to the Institution during the past year.

The Chairman, in moving the adoption of the report and balance-sheet, congratulated the committee upon the economical way in which the affairs of the Institution were managed, observing that no society doing so great an amount of good could possibly do it at a less cost than was the case with this Institution, almost every penny that subscribers gave going to those whom the Institution was established to benefit. It was to be regretted that there was a slight falling off in the income for the past year; but it was to be hoped that this year there would be an improvement in that respect. As a master builder he was very glad to undertake to do what he could in making known the merits of the Builders' Clerks' Benevolent Institution. He believed that between builders and their clerks there existed the utmost good feeling and desire to be mutually helpful in this and other matters. He was glad to see that so many master builders took an interest in the welfare of that Institution, for a great deal of their success and prosperity was due to their clerks, and it was only fitting that they should seek to help an Institution carried on by the men whom it was their privilege to employ. It was gratifying that the Institution had been able to add to the amount of its funded property, but it would be additionally gratifying to see an increased number of annual subscribers.

Mr. Stirling seconded the motion, which was carried *nem. dis.*

On the motion of Mr. Stirling, seconded by Mr. W. Downs, the thanks of the Institution were accorded to Mr. A. C. Lucas for his services as president during the past year, and the following gentlemen were duly elected office-bearers during the coming year, viz.:—Mr. J. Howard Colls, president; and Messrs. Stanley G. Bird, Edward Conder, W. R. Freeman, J. M. Hart, C. T. Lucas, and H. Roberts, vice-presidents. The following members of the committee retiring by rotation were unanimously re-elected, viz.:—Messrs. F. H. Burchell, E. Graystone, H. Mason, H. Poston, J. A. Robson, H. Young, E. W. Holland, and Charles Powell. Mr. H. T. Bayes was re-elected treasurer; Messrs. S. J. Thacker, Thomas Stirling, and Thomas Bishop, auditors; and Mr. H. J. Wheatley, secretary.

Mr. E. C. Roe, in proposing a vote of thanks to the chairman, referred to the services which his father, the late Mr. Benjamin Colls, had rendered to the Institution as one of its earliest presidents.

Mr. Bayes, in seconding the motion, also referred to the indebtedness of the Institution to former presidents, making special mention of the services rendered by Mr. Benjamin Hannen.

The motion was duly carried, and acknowledged by the chairman, and it was announced that the annual dinner of the Institution would be held on Tuesday, March 13th, at the Guildhall Tavern.

THE DECORATION OF THE DOME OF ST. PAUL'S.

SIR,—Wren never had the advantage of seeing the grand mural decorations in Italy; he may, therefore, never have had any very well-defined notions touching monumental painting. We have to recollect, however, that the puritanical opposition to the introduction of pictorial embellishment into ecclesiastical edifices, which reigned in his time and down to our own day, may have hampered him, even if he had really entertained any grand project for the colour decoration of St. Paul's. But whether he had or had not any views upon this subject, there is very strong reason to believe that, practically, he had determined to imitate the panelling and the opening in the crown of the dome of the Pantheon. Moreover, we have Emmett's engraving and the iconography of Thornhill, as evidence that Wren approved of the eight dividing ribs; for though he may have permitted the first project of a panelled dome to be effaced, he sanctioned its division into eight compartments and the breaking up of its uninterrupted hemisphericity in Thornhill's pictorial project or after-thought. How, then, in the face of these facts, can painters and architects who profess to respect Wren's views, deliberately set themselves to run counter to them? We have unimpeachable evidence that Wren did not consider, great geometer that he was, that that "unbroken hemisphericity of the dome," of late so much insisted on, was worth preserving. In addition to this we have the dome of the Pantheon deeply recessed with panels, and with the opening in its crown to show that the Roman architects had no respect for that bald, unbroken hemisphericity. Besides, any one acquainted with the first principles of æsthetics should know that the sphere is not an elemental form of beauty. It was a feature neither of the pure Classic nor of the pure Gothic. Circular curves were never lines of beauty. They are essentially mechanical curves, not the lines of living movement and of growth. So that as a principle of decorative art, that "unbroken hemisphericity" is scattered to the winds. But the proposal to utilise the dome of St. Paul's for the pictorial presentment of the vault of heaven is an insult to common sense. Imagine the spectator's eyes passing from its contemplation through the crowning aperture to note mundane windows and the more material construction in the vicinity of the ball and cross! Wren, though an architect, was a scientific and a consistent man, and could never have permitted such a solecism in the language of design to be perpetrated. Wren and Thornhill were intimates and colleagues, so that we may be sure that what was done by Thornhill must have been done with the full knowledge and sanction of Sir Christopher, who, though he would never have permitted any exhibition of that Correggiosity,—which ultimately led to the "sprawling saints of Verrio and Laguerre,"—in the dome of St. Paul's, did approve of Thornhill's project of decoration designed on principles similar to the great Italian mural works. Thornhill's design is, in my opinion, the best that could possibly be devised for the decoration of the dome. But Thornhill's design, though in general conception excellent, would be improved by better art, by the introduction of colour into the figure compositions, as was originally proposed, and of gold in the background within the spandrels.

Stevens had not sufficient practical experience in mural decoration to encounter the project. His design is altogether too weak and thin for the purpose, and his circular plaques will not only be found to be too small, but out of place.

A PAINTER.

St. James's Hall Front.—The stone-work, we are told, was executed by Messrs. Moslin, of Chelsea, not by Messrs. Mowlem, of Chelsea, as stated.—The scagliola balustrade to grand staircase was executed by Messrs. Bellman & Ivey, of Wigmore-street.

EARLY RECOLLECTIONS OF WESTMINSTER HALL AND THE LAW COURTS.*

At the suggestion of a friend I have been induced to jot down roughly the following recollections of the interior of Westminster Hall as it presented itself to my eyes in the early part of the present century; also of the old Law Courts at Westminster, now so rapidly disappearing from sight, and so soon to be forgotten.

In 1818 the Courts of King's Bench and Chancery were held in a "cancellated" wooden erection at the south end of the interior of the Hall of Richard II., which occupied the whole width and about one-half the depth of the sixth bay from buttress to buttress, and then the last bay. This fact is noted because Sir Charles Barry lengthened the hall another bay southwards to make a grand entrance-hall to St. Stephen's Chapel.† These structures rose to about the springing line of the great window, and consisted of two large courts, having raised floors, with a central and wide ascent of steps to these floors right and left, and a higher ascent southward through a doorway under the great window, to connect the hall with the rooms of the Houses of Lords and Commons. For additional access to these two courts there were two passages next the walls, one of which, that on the north side, was also a way out into Old Palace Yard. The building presented a pseudo-Gothic front, answering to what is now called the "Batty Langley style," 1700, and had two semi-octagon fronts, each with three windows and two stories, and in the middle between them an arched doorway. Taken altogether, it was by no means bad of its kind. I well remember its demolition, and myself helped to remove the massive flight of steps which remained *in situ* till the preparations began for using the Hall for the banquet and ceremonies of King George IV.'s coronation.

The Lord Chancellor's Equity Court and the Courts of Exchequer and Common Pleas and Rolls were on the western side of the Hall, and were approached from the inside of the Hall by two or three ancient openings. The Hall was surrounded on three sides by buildings attached thereto.‡ Against the east wall were the Speaker's residence and a long range of rooms, —offices of the tellers and auditors of the Exchequer,—and the whole south side of New Palace Yard consisted of low Elizabethan and later buildings, which were taverns and official dwellings. At the western end of these latter remained a large room, called Queen Elizabeth's Chamber, which, if I rightly remember, had become the Exchequer Coffee-house; it was removed in about 1822 to the western end of the terrace of New Palace Yard, and there became (Mrs. Fendall's) New Exchequer Coffee-house.

Beyond Queen Elizabeth's Chamber southward, and on the east side of St. Margaret-street, there had probably been erected, about 1780,§ by Sir William Chambers, the Architect of the Board of Works, who also designed Somerset House, a handsome front of official buildings, the King's Bench Record Office, which presented a western façade of three bays of five windows each; and at the extreme southern end was a square corner tower with western and southern windows, from which there was a flank building of the same Italian architecture, having five windows, and reaching to the ancient front of the Houses of Parliament, thus forming the eastern side of Old Palace Yard.‖ The great fire of 1834 led to the immediate demolition of this square tower and the flank building. I believe that there had been a reserved intention to make a similar square tower at the northern end of this façade, with a flank building between it and the northern front of the Hall, so modernising the south side of New Palace Yard after the removal of the Elizabethan buildings.

In 1819 and 1820 the north front of Westminster Hall was cleared of some of its mean and incongruous attachments, and it underwent a good restoration by Gayfere, who was then approaching the end of his restoration of King Henry VII.'s Chapel.* Afterwards, under Sir Robert Smirke, large repairs of the roof of the Hall, the refacing of the internal walls, the formation of a new floor, the removal of the old Courts of King's Bench and Chancery, and the reparation of the then south window, together with other works, inclusive of new windows in the roof, were undertaken. For these purposes the Hall was closed during the suspense of the coronation of George IV.† At the same time the old buildings about Queen Elizabeth's Chamber were removed, and the stone building at the south-west corner of New Palace-yard was erected under the influence, it is thought, of Mr. Hanbury Tracy (Lord Sudeley), M.P., which ignored the first intention of imitating the Italian style southward, and made it to agree pretty nearly with the Gothic style of the Hall front.

There now appeared on the scene Mr. (afterwards Sir John) Soane.‡ He was required to design new law courts, the area assigned for the purpose being from the back of the Italian buildings of the King's Bench Record Office, on the east side of St. Margaret's-street, to the west wall of the hall, and the whole length of that wall, comprising a space wholly internal, about 240 ft. long, and 60 ft. wide. Mr. Soane commenced operations by making a corridor about 9 ft. wide next the wall of the hall, with seven doorways in that wall. To this corridor he attached, most ingeniously, eight courts on the ground-floor, and over them others, with various rooms. The large buttresses on that side of the hall, of which there were six, perhaps seven, sadly obstructed the architect. Some of them he seems to have retained in bulk, and to have built in as walls, and others to have greatly reduced; but it is hoped that the foundations of all are *in situ*, and that some of the lower parts of them are still capable of being developed,—that, in fact, there may be sufficient of them left and on record to warrant an entire restoration. The buttresses on the east side of the hall were more irregularly placed, but there were yet remains of three, one in the Speaker's Court, and two in the Cloister, all which have since disappeared.§ The destruction of others was occasioned by the palatial and ecclesiastical buildings which followed William Rufus's building; for Sir Robert and Sir Sydney Smirke have most convincingly proved that the walls belong to that king, having traced the positions of all his great windows and of several small intermediate ones besides. The remains of these windows have been left undisturbed, though necessarily covered with modern casing.‖ These works occupied from 1822 to 1825.

The difficulty which Sir John Soane had to overcome ¶ in respect of light, ventilation, and access to the courts and their belongings, was a theme of remark and of admiration at the conclusion of the works. Comparing the small area at his disposal, and the great amount of legal business carried on there, with the immense area and bulk of the Royal Courts of Justice just completed, every one will accord to the architect of the Law Courts of George IV.'s reign the meed of praise so justly deserved.

As already stated, Sir Robert and Sir Sydney Smirke have clearly proved that the walls of William Rufus's Hall still remain in bulk on each side. Like a corresponding building of the same date, erected at Rouen by his elder brother, Robert, Duke of Normandy, it had pillars to uphold the roof; therefore, massive buttresses with arched flyers were not necessary in either. This Palace Hall of Duke Robert was in the next century replaced by the covered market "Halles" which yet remain there, in almost the original state, with a double row of pillars supporting a floor, and therefrom rise pillars of timber to carry the roof; flying buttresses are therefore absent.

When Richard II. became possessor of the Hall of Rufus, he desired to secure amplitude as well as freedom from pillars, and therefore he got rid of the ancient pillars and roof of William Rufus and whatever else the pillars may have supported. He then spanned the hall with the beautiful hammer-beam truss principals which yet remain; and, foreseeing the thrust that would be made on the walls, he devised, in order to resist that thrust, ten massive flying buttresses, seven of which still exist, to a great extent, on the southern side of the Hall.

If we refer to the beautiful engraving in Brayley & Britton's work, plate viii., No. 41, the existence of both designs becomes manifest. The plain and flat Norman buttress, or, rather, pilaster, is shown in elevation on the wall of the Hall in the Speaker's Court; and in the plan of the west wall, in plate ii., No. 1, there are ten such flat buttresses. The grand detached buttress, with its flyer, which existed before the fire of 1834, is evidently of the style of Richard II.'s period, and will be followed, it is to be hoped, in the restoration on the west side.

In connexion with the view of King Richard II.'s buttress, in Brayley & Britton's "Ancient Palace of Westminster," plate ix., we may observe the unaltered back of the two houses, which, about 1745, were occupied by "the Receipt of Exchequer," and in 1835 by Mr. Rickman and Mr. Godwin, Clerks of the Parliament.

These houses were probably connected with the Star Chamber, the exact position of which can now be conjectured only. The various views, of different dates, show how their north front had been gradually modernised, but that the back, on the south, had up to a late date retained, not only the iron grilles to the seven windows (rendered necessary for State purposes when the Star Chamber was in full force), but also traces of small openings, arches, a buttress, and a fine arched gateway. Of all these interesting features the history is probably lost beyond recovery.

In one of the last volumes of "Archæologia," Mr. G. R. Corner has contributed four beautiful illuminated pictures, attributable, he thinks, to the period of King Henry VI. They represent, quaintly and vividly, the assemblies in the four courts of law,—Chancery, King's Bench, Common Pleas, and Exchequer. Every one interested in English judicial history should see these interesting pictures, and read Mr. Corner's descriptions.

HENRY POOLE.

Westminster.

* From *Notes and Queries*.

† I picked up some years ago an excellent early aquatinta engraving of the interior of Westminster Hall, and have inserted it next the view of the south side of New Palace-yard in my copy of Smith's "Westminster," p. 30.

‡ See plans of the Palace in Smith's "Westminster," pp. 38 and 125, and in Brayley & Britton, p. 464.

§ Brayley & Britton's "Westminster Palace," p. 401; Smith's foundation plan, 1807, p. 125.

‖ The upper room of the square tower was the kitchen of Bellamy, the housekeeper and provisor; committee-rooms and passages occupied the other parts of this flank building.

* Brayley & Britton's "Ancient Palace of Westminster," p. 440.

† Smith's "Westminster," p. 30, plate of south side of New Palace-yard, 1805.

‡ Brayley & Britton, p. 406.

§ *Ibid.*, plates ii., xvii., and ix.

‖ Brayley & Britton, pl. viii.

¶ *Ib.*, p. 442.

THE SANITARY ASSURANCE ASSOCIATION.

The second annual meeting of the Sanitary Assurance Association was held at the Office, 5, Argyll-place, Regent-street, on February 22. Professor T. Hayter Lewis, F.R.I.B.A., was elected to preside. The secretary read the report of the Council for the year 1882, from which it appeared that the inspection of houses, supervision of work, and issue of certificates, had been continued on the plan initiated by the Association in 1881. The property placed on the assurance register and inspected during the year had varied in annual rateable value from 10*l.* to 1,000*l.*, and in every case the sanitary arrangements had been found to be defective. The Chairman, in moving the adoption of the report, referred to the work done by the Association during the past year, and pointed out that the officers of the Association had inspected a much greater number of houses than in the preceding year, still he was of opinion that when the benefits to be derived from such operations were considered the progress ought for the future to be still more rapid. Great good had, however, been done, and he believed that there was ample promise of further good in the same direction.

The Construction of Window Frames. The Rev. D. Quayle, of Castletown, Isle of Man, has just obtained a provisional protection order for an improvement in the manufacture of window-frames. It consists of light steel tubes being attached to the bottom part of the frames, and thence passing through the sill of the window for a short distance, so that when the window is opened, the tubes or rods being raised with it, a protection at once exists against children or servants falling out of the window, or against burglars being able to enter. All unsightly fixed bars are obviated, and the window can be raised any height for ventilation with security.

THE BUILDING OF FACTORY CHIMNEYS.

IN the course of a lecture on factory-building recently given by Professor Koch before the Austrian Architects' and Engineers' Association, the above subject was treated at some length. From both æsthetic and technical grounds the most suitable shape is considered by him to be a round conical form. This mode of construction reduces to a minimum the surface which is affected by the wind, and can usually be executed so as to present a more pleasing effect than that of a quadrangular or polygonal construction. As to the ornamental features of chimneys, it is remarked that the cannons of the last century form, in a certain degree, suitable models for the upper portions of chimneys, which can be easily and effectively reproduced in brickwork. Reference is also made to the deceptive effect of chimneys in plans, which, when executed, usually appear larger in proportion to the surrounding objects than they do on paper. This fact is attributed by Professor Koch to the absence of any shadow until the eye of a person standing at the foot reaches the summit, the effect of the upper projections being intensified by the absence of any other shadow in the work.

Several comparative dimensions are quoted in the accounts published of the lecture in question, which, however, are qualified with reservations as to their application.

The height of the pedestal may, it is remarked, be fixed at from one-fifth to one-quarter of the entire height of the chimney. The diminution of size of the chimneys should be for average diameters about 2 in. per running mètre (39⅜ in.).

With regard to stability, it is stated that the excellent quality of the bricks made in Vienna would enable builders to be a little more venturesome in this respect, were it not that the violence of the storms in that part of Austria necessitated special precautions. According to official regulations, a pressure of wind equal to about 30§ lb. per square foot is laid down as a basis. Stress is laid upon the necessity of the foundations being executed in a substantial and exact manner, as a slight unevenness in the foundations would cause the chimney to be out of level. It is also recommended for the smoke-channel to be conducted into the chimney at as high a point as is conveniently practicable, and well above the foundation. The reason for this precaution is said to be that the smoke exercises in many instances a desiccating influence upon the brickwork on the side where it is conveyed into the chimney. This circumstance, it is asserted, is capable of producing a sinking of the brickwork after a certain lapse of time.

In addition to suggestions as to lightning-conductors, &c., the remark is made that the cost of chimney-building in Vienna, with an internal open diameter of about 39 in., is about 5*l.* per running yard. The work at the summit of the chimney would be a subject of separate calculation, and the brickwork of the pedestal, &c., would be reckoned according to its cubic measurement.

MORTAR FOR FIRE-PROOF WALLS.

IN a recent number of *Stahl und Eisen* Herr Lürmann called attention to the unsuitable character of the mortar commonly used in the construction of walls built of fire-bricks. He remarks that such walls are often subjected to pressure from above, and are likewise constantly undergoing physical and chemical changes from the action of the heat to which they are exposed, and from the effects of the substances which are being burnt. He refers to the fact that the masonry is sometimes more or less disconnected, even before the construction which it forms is really in active use.

In order that fireproof walls may acquire the needful firmness to resist the effects of furnaces, &c., being heated and put into operation, the use of so-called fire-proof mortar is disapproved by Herr Lürmann, who suggests the employment of a mortar composed of lime, dolomite, cement, blast-furnace slag, glass, &c., with the addition of sand, clay, fire-brick dust, &c. This mortar in a finely-grained condition is mixed with water in such a way that the spaces between the bricks can be very small. It is asserted that this mortar ensures uniformity of extension during the action of heat, the masonry forming a solid mass and the loosening of bricks being entirely obviated, as well as the falling of mortar from the spaces between the bricks.

The result of a high temperature is to render the union more binding between the mortar and the fire-bricks. Herr Lürmann remarks, however, that the fire-bricks must not in such cases exceed the normal dimensions, as bricks of too large a size are not well burned through, and by their want of uniformity allow of displacements in the interior of the masonry. The evenness in surface of fire-bricks of good quality makes the quantity of mortar but small in proportion to the entire mass of brickwork, the fire-resisting properties of which are not deteriorated, Herr Lürmann asserts, by the substitution of the mortar proposed by him for that commonly in use.

SALE OF PROPERTY AT THE AUCTION MART.

VALUE OF CITY FREEHOLDS.

ON Thursday and Friday in last week Messrs. Farebrother, Ellis, Clark, & Co., held a large and important sale of city and other property, at the Auction Mart. The property consisted of a portion of the London estate of the late Mr. Joseph Arden, and was sold under an order of the Court of Chancery in the case of Arden *v.* Arden. The sale, which was divided into twenty-six lots, comprised freehold and copyhold properties in Warwick-court, Holborn; Red Lion-square, Hatton-garden and Hatton-wall, Gloucester-street, Bloomsbury; Stanhope-street, Clare Market; St. John-street, West Smithfield; Wood-street and Gresham-street in the City; Goswell-road; Curtain-road, Shoreditch; High-street, Homerton; Upper-street, Islington; Holloway-road and Essex-road, and Wapping and Bethnal Green. The aggregate rental of the property was stated to be 2,259*l.* per annum.

Sir John Whittaker Ellis, who conducted the sale, observed, in submitting the property, that it was left to the late Mr. Arden by his father, who had enjoyed it for about sixty years. The property was let at very inadequate rentals, and he drew attention to the fact that the rents had never been raised during the last forty years, although it was well known that almost every kind of property in the metropolis had more than doubled and trebled in value during that period. It would now pass into other hands, and would be sold, subject to a reasonable valuation which had been made by direction of the trustees under the will. The first portion of the property offered (in three lots) consisted of an undivided moiety of three freehold houses in Warwick-court, Holborn, the rental of which was stated at 310*l.* per annum. In submitting this property the auctioneer said it was worth more than double the present rental. It was sold for 3,200*l.* An undivided moiety of the freehold premises in Warwick-court, known as the Gray's Inn Larder, and let on lease expiring in 1866, at 157*l.* 16s. per annum, was sold for 2,270*l.* Two freehold houses in Red Lion-square, Holborn, altogether, with land adjoining, containing an area of 4,420 ft., and let on a yearly tenancy at 210*l.* per annum, were sold for 4,160*l.* Two freehold houses in Hatton-wall and Hatton-garden, let to yearly tenants at 85*l.* per annum, realised 2,110*l.* Four freehold houses in Gloucester-street, Bloomsbury, let to yearly tenants at a rental of 156*l.* per annum, were sold for 3,340*l.* Freehold business premises, in Stanhope-street, Clare Market, let to Mr. Spiller, builder, who, it was stated, was holding over under the terms of an agreement for a lease which expired at Michaelmas, 1880, at a rental of 38*l.* per annum, were sold for 1,050*l.* Three freehold shops and dwelling-houses, in St. John-street, West Smithfield, concluded the day's sale. Two of these shops and dwelling-houses are held on leases which expired in 1880, and on similar conditions as to a new lease as the before-named premises in Clare Market, at 80*l.* per annum. The other premises are held on a lease expiring in 1885, at 50*l.* per annum. The three properties realised 3,285*l.* The total proceeds of the day's sale amounted to 19,415*l.*

The second day's proceedings commenced with the sale of the City property, the auctioneer observing that it consisted of some of the best property in the City, which, from his own knowledge, was let at very inadequate rents. The first lot offered during the day comprised the freehold property in Wood-street, a short distance from Gresham-street, substantially built, having a frontage of 15 ft., and containing a total area of 550 superficial feet, let on a lease expiring in 1890, at a rent of 210*l.* per annum. After a spirited competition the property was sold for 6,110*l.* The freehold premises in Gresham-street, at the corner of Aldermanbury, were next submitted. They were described as having a frontage to Gresham-street of 23 ft., with a return frontage to Aldermanbury of 40 ft., and containing an area of 879 ft. They are let on lease expiring in 1888, at a rental of 420*l.* per annum. The first offer was 8,000*l.*, upon which an advance of 1,000*l.* was immediately made, and ultimately the hammer fell at 11,200*l.*, at which sum the property was sold. A freehold property in Goswell-road, containing an area of 2,330 ft., and occupied as a wall-paper manufactory, was next offered. It is let on a lease expiring in 1884, at 157*l.* per annum. For this lot there was a close and severe competition, and it was sold for 7,300*l.* Freehold premises in Curtain-road, Shoreditch, containing 2,220 ft., and let on a lease expiring in 1890, at 80*l.* per annum, were sold for 2,610*l.* A freehold estate in High-street and Plough-lane, Homerton, containing an area of 9,380 ft., containing three shops, houses, and warehouses, and let on lease expiring in 1888, at 86*l.* per annum, was sold for 2,170*l.* Two freehold houses and shops in Holloway-road, let on a long lease at a rent of 100*l.* per annum, realised 2,140*l.* A freehold house and shop in Bethnal-green, let on lease at a rent of 27*l.* per annum, was sold for 600*l.*; and similar premises in Wapping, rented at 23*l.* per annum, realised 410*l.* The sale was brought to a close with the disposal of two lots of copyhold property in Upper-street, Islington, comprising four houses and an aggregate area of 7,500 ft. The first lot is let on leases just expiring, at a rental of 220*l.* per annum. The second lot is in hand. They were sold for 6,240*l.*

THE NEW BUILDINGS ON THE WHITEFRIARS PRIORY SITE.

WITHIN the last few days the demolition has been completed of the several old buildings which have had to be removed in order to clear the site for the extensive new block of mercantile structures which are about to be erected between Bouverie-street and Whitefriars-street, on the ground where, until within the last few weeks, stood the old coaching house, the Bolt-in-Tun Inn, and the Sussex Hotel, and previously, in the early and middle ages, the historical Priory of Whitefriars, a descriptive notice of which appeared in the *Builder* a few weeks since. The buildings forming the Sussex Hotel and Bolt-in-Tun were cleared away some weeks since, and the foundations of the intended new structure have already been for some time in progress. The premises in Bouverie-street to the north of the Sussex Hotel, in the direction of Fleet-street, which were also required for the new buildings, were finally cleared away last week, and the entire site is ready for the prosecution of the works, which are now actively in progress. The removal of the Bouverie-street buildings displaces many old and well-known City firms connected with the publishing and printing trades, amongst others Messrs. Murby, publishers; and Messrs. Deane & Co. and Messrs. Dunn & Co., both firms being printing-ink manufacturers. All these several firms have had for the present to migrate to other localities, but it is understood that they will return on the completion of the new buildings. The principal elevation of the new structure will be in Bouverie-street, to which it will have a frontage of 136 ft. in length. In depth it will be carried eastwards to Whitefriars-street, with an entrance from that thoroughfare of about 30 ft. in width, connecting the two streets by a roadway or avenue. The building will cover a ground area of about 14,000 superficial feet, and will be carried to a height of upwards of 60 ft., comprising several lofty floors, besides a deep basement. The new buildings are to be erected as printing-offices and warehouses.

Messrs. Arding, Bond, & Buzzard, of Surrey-street, Strand, are the architects; and Messrs. Perry & Co., of the Tredegar Works, Bow, the contractors.

New Workhouse for Wandsworth and Clapham.—The guardians of the Wandsworth and Clapham Union have decided upon the erection of a new workhouse, the estimated cost of which is between 50,000*l.* and 60,000*l.*

THE INNER CIRCLE COMPLETION RAILWAY AND THE DEMOLITION OF CITY PROPERTY.

Along the line of route of the Inner Circle Completion Railway, between the Mansion House Station of the Metropolitan District line and the Cannon-street Station of the South Eastern Company, and again between Little and Great Tower streets, the demolition of much valuable property for the construction of the underground completion line is just now going forward at an exceedingly rapid rate, and Messrs. Horne, Eversfield, & Co. are now, in quick succession, selling the materials of the several buildings required to be taken down. Last week they disposed of the materials of a number of buildings on the north side of Great Tower-street, extending from the Old Ship Inn, at the east end of Little Tower-street, to Mark-lane, and large numbers of workmen are now engaged in the work of dismantling these several structures, many of which are modern and well-built mercantile premises. On Monday last the same auctioneers effected another sale of the materials of the buildings in Mark-lane-square, including the extensive premises of Messrs. Barrett & Co., steam printers, which have only just been erected. The materials at these several sales commanded more than average prices, owing to the buildings being in such a substantial condition.

The portions of the line now being actively prosecuted are between the Mansion House Station and Cannon-street at the west end, and between the Tower Hill Station and Great Tower-street on the east, and it is stated that at these points about 1,000 workmen are at present employed, working by gas-light. From Thomas Apostle-lane, in the direction of College-hill, the tunnel arches are already turned, and the connexion of the line with the Mansion House Station platforms is in progress, whilst eastward the line is being constructed under Cloak-lane, in the direction of Dowgate-hill and Cannon-street. Amongst the buildings in course of demolition for the purposes of the railway are several ancient and historical structures, one of these being the Cutlers' Hall, in Cloak-lane, extending southwards along College-lane to the ancient house in which Whittington is said to have resided for a great number of years. In a few days Cutlers' Hall will have entirely disappeared, as also the north side of Whittington's house, which is likewise being swept away. From Dowgate-hill, at its junction with Cannon-street, immediately opposite the station, to the junction of Cannon-street and King William-street, the works are being vigorously carried forward. There are three shafts in Cannon-street, one opposite the station, another a short distance eastward of St. Stephen's Church, London-stone, in front of which there is a hoarding, whilst the foundations of the church are being underpinned. The third shaft is at the east end of Cannon-street, at its junction with King William-street. Preparations have just been made for carrying the line across King William-street, and under King William's statue, in the direction of Fish-street-hill and Eastcheap, and within the last few days the statue and pedestal have been enclosed by a hoarding for the purpose of sinking a shaft and commencing operations. The Weigh-house Chapel and some property immediately around will shortly be taken possession of, the companies having given notice that they shall require it at the end of March. That portion of the line running eastward along Eastcheap to Great Tower-street is the only section on which the works have not yet been commenced, but these will shortly be entered upon, and included amongst the property to be taken down is the Butchers' Hall, on the south-west side of Eastcheap. In anticipation of the speedy demolition of their hall, the Butchers' Company are said to have held their last dinner there during the present week. The removal of this building will not be regretted, as it is a plain and unattractive structure. Incidentally it may here be observed that the original hall was destroyed during the Great Fire in 1666. In 1668 it was re-erected, and in the year 1829 this second hall was also destroyed by fire. In the same year the erection of the present hall was commenced and completed in 1831. It is thus a little more than half a century old. The works at the east end of the line, between the Tower-hill Station and Great Tower-street, are being carried forward with the same activity as those at the west end. The line from the Tower-hill Station to a point near Great Tower-street is already completed, and that part which passes under the north side of the Church of All Hallows, Barking, is in a forward state.

THE VICTORIA BUILDINGS, MANCHESTER.

Messrs. Robert Neill & Sons' tender for the completion of the buildings on the Victoria site has been accepted by the Manchester Corporation, and the works in connexion with the superstructure are now being proceeded with. The designs have been prepared by Mr. William Dawes, architect, Manchester; and are being carried out under his superintendence. Externally the new portions will harmonise with the existing buildings, which were commenced in 1875, and will complete this important block in accordance,—broadly,—with Mr. Dawes's original intention, although not quite so rich in ornamental detail as at first proposed. The foundations of the new building are very extensive.

BUILDING PATENT RECORD.*

APPLICATIONS FOR LETTERS PATENT.

889. T. Fletcher, Warrington. Cooking-stoves. Feb. 17, 1883.

893. J. C. Mewburn, London. Stoves for burning bituminous fuels. (Com. by L. C. Voorhees, New York, U.S.A.) Feb. 17, 1883.

900. W. Carrington, Openshaw, and W. H. Bowers, Gorton. Water-heater for pipes for warming greenhouses, &c. Feb. 19, 1883.

904. B. C. Cross, Leeds. Waste-preventing cisterns. Feb. 19, 1883.

905. T. Dunbar, Coalbrookdale. Fire-grates. Feb. 19, 1883.

909. J. C. Bloomfield, Blen-y-lung, and J. McGwm, Bally-Magharan. Manufacture of bricks, tiles, &c. Feb. 19, 1883.

919. F. G. Fleury. Water-waste preventers. Feb. 20, 1883.

920. H. W. Davidson and J. Spiers, London. Assisting the combustion of fuel in grates, &c. Feb. 20, 1883.

923. T. J. Mullings, London. Sash-fasteners. Feb. 20, 1883.

933. W. Lee and D. F. Beale, Maidstone. Construction of blocks, &c., for walls and building structures. Feb. 20, 1883.

939. E. Edwards, London. Manufacturing bricks, tiles, &c. (Com. by P. A. Lazarae, Peruget, France.) Feb. 20, 1883.

971. T. H. Collins, Winchester. Window-fasteners. Feb. 22, 1883.

NOTICES TO PROCEED

have been given by the following applicants on the dates named:—

Feb. 20, 1883.

4,894. J. Wadsworth, Manchester. Apparatus for heating, cooking, and ventilating, &c. Oct. 14, 1882.

5,106. W. H. Lindsaw, London. Window-sashes. Oct. 26, 1882.

5,115. T. H. Collins, Winchester. Manhole doors for passages leading down to sewers, &c. Oct. 27, 1882.

516. W. R. Lake, London. Building arches and domes. (Com. by T. J. Lovegrove, Philadelphia, U.S.A.) Jan. 30, 1882.

ABRIDGMENTS OF SPECIFICATIONS.

Published during the Week ending February 24, 1883.

2,961. J. Harsant, London. Apparatus for flushing water-closet traps and urinals. June 22, 1882. Price 6d.

A displacer is pivoted above the tank, which, when pulled down into the water, starts the syphonic action which empties the tank. The syphon consists of a pipe rising up above the level of the water, which is covered by a cap which forms the short leg. This cap may be attached to a lever of the displacer and be lifted by the same. An air-pipe is attached to the cap to admit air thereto when the flush is nearly finished, and gradually diminishes the rush of water. The water passes into a chamber below the tank, from which it passes to the closet by a pipe of a smaller diameter, with a trumpet-shaped mouth, so that when the flush is finished some water is left in the chamber, which passes down the pipe through holes in the sides of the mouth, and forms an after-flush.

3,049. R. Searle, London. Manufacture o artificial stone. June 28, 1882. Price 4d.

The stone is formed by Portland cement mixed with heated water without lime.

3,095. H. Conolly and A. E. Hubert, London. Overflow of valve-closets. June 30, 1882. Price 6d.

The overflow-pipe opens into the basin at the bottom thereof, and rises outside the basin to the height at which the water is to stand in the same. It is then bent over and carried down to the discharge pipe of the closet. The overflow is thus always sealed.

3,103. W. A. M. Valon, Ramsgate. Bricks and tiles. July 1, 1882. Price 4d.

These are rabbeted on all their faces, so that when placed together they are gas and air tight.

* Compiled by Hart & Co., Patent Agents, 186, Fleet-street.

COMPENSATION CASE.

INNER CIRCLE COMPLETION RAILWAY.

The compensation case of Gooch *v.* The Metropolitan and Metropolitan District Companies, was tried before Sir Thomas Chambers and a special jury at the Guildhall on Saturday, the 17th ult.

The claimant had carried on the business of a stationer in the premises now required, being No. 55, King William-street, London Bridge, for nearly half a century, and at the present time had thirteen years' unexpired term to run of a recently-granted lease of the whole house at 300*l.* per annum, the upper portion of which he let off at 250*l.* a year for the full period, retaining in his own occupation the ground-floor, shop, and basement.

Mr. Edward F. B. Fuller (Fuller & Fuller, of Queen-street), in giving evidence as to the value of the premises, stated that he had been acquainted with the property all his life, having been born at No. 53, King William-street, and that he had many dealings with houses in the various streets adjoining thereto. The premises in question the witness estimated to be worth 700*l.* per annum, or an improved rental of 400*l.* a year, which he valued at 3,500*l.*, beyond which the claimant ought to be paid 196*l.* for fixtures, 99*l.* for fixed plant, and 57*l.* for erecting and fixing movable plant, and though he was entitled to be paid a further sum for loss on forced sale of stock, the witness was bound to admit that the claimant could not seek compensation for loss of business, as the improved rental swallowed up all the remaining net trade profits.

Mr. Chatfeild Clarke, the surveyor to the Fishmongers' Company, agreed with Mr. Fuller's value of the premises, as he estimated the ground-floor and basement at 500*l.* per annum, less 50*l.* for taxes.

Mr. Edmund Farmer (Debenham, Tewson, & Co.), on behalf of the Railway company, valued the whole premises at an improved rental of 100*l.* per annum only, giving 973*l.* as the outside value of the lease, including compulsory sale.

Mr. R. C. Driver said he had advised the owner of the property, as recently as 1879, to grant a new lease of the whole premises at 300*l.* per annum. Mr. Gooch, as an old tenant, did perhaps get the house at a somewhat moderate rental, though the full value now was 400*l.* a year, not 700*l.*, and that he agreed with Mr. Farmer's value of the unexpired term.

Mr. Robert Ritchie, the company's surveyor, said he had purchased the premises in question as well as four other houses in the same street, on the basis of 400*l.* per annum rental value, and that he considered them worth no more.

In addressing the jury, Mr. Bidder, Q.C., contended on the part of the companies, that between 1,200*l.* and 1,300*l.* was the full compensation the claimant should receive, as he could easily remove the stock and sell it elsewhere; whereas Mr. Edward Clarke, Q.C., M.P., suggested that the claimant ought to be paid the value of his lease as estimated by Mr. Fuller and the other witnesses, together with the items agreed for fixtures, besides a substantial sum for forced sale of stock, &c., and though he could not support any claim for loss of business without reducing the value of the leasehold interest; he thought Mr. Gooch should receive in all about 4,700*l.*; and the jury without leaving the box returned a verdict for 3,600*l.*

Prizes offered by the Society of Arts.—Among the prizes offered by the Council for the year 1883 are:—

John Stock Prize.—A Society's Gold Medal, or 20*l.*, for the best design from a poem, or from history, or from the Scriptures, prepared with a view to mural decoration.

Fothergill Prize.—A Society's Gold Medal, or 20*l.*, is offered for the best invention having for its object the Prevention or Extinction of Fires in Theatres, or other places of public amusement.

Mulready Prize.—A Society's Gold Medal "To that student in a School of Art in the United Kingdom who exhibits the best drawing from the nude figure, executed in black and red chalk, in the manner so successfully practised by Mulready."

BRITISH ARCHÆOLOGICAL ASSOCIATION.

ON Wednesday, the 21st ult., the sixth meeting of the present session was held, the Rev. S. M. Mayhew in the chair. Mr. G. R. Wright, F.S.A., announced the invitation from the Mayor of Dover to hold the annual congress in that town. The invitation had been accepted. Visits will be paid to Hythe, Folkestone, Lympne, and other places of interest in the locality; and two days will be spent at Canterbury in celebration of the fortieth anniversary of the Association, the first congress having been held there in 1844. Mr. Loftus Brock, F.S.A., in illustration of one of the papers, exhibited a contemporary drawing of Winchester Palace, Southwark, showing its ruins after the fire; also a Roman cinerary urn found in King-street by the late Mr. George Gwilt in 1819. Mr. Cecil Brent, F.S.A., described an Indian stiletto-scissors of very peculiar form. The Chairman exhibited a fine collection of antiquities, principally from excavations in London, the most important being a Roman jet ring, with a cross and palm-leaves, of Christian origin, found in the Minories; also a Roman axe-head, similar to those carried by lictors, from Leadenhall; and a fire-arrow, with arms below the dart for holding in the combustibles. Mr. Martin exhibited some Roman pottery found in Holborn, one being similar to the olive or honey pots used in Spain to the present day. A paper was then read on "Roman Southwark," written by Dr. Rendle. The author described the district, now so densely populated, as having been originally a huge marsh, on the borders of which "lake dwellings" may have existed, their pile foundations being not unfrequently met with. The embankments which have reclaimed so large a tract of country were undoubtedly Roman in their origin; and, judging by the number of early coins found, this work must have been done soon after the arrival of that people. Roman remains, traces of handsome villas, mosaic pavements, and burial-places, have been found throughout Southwark, particularly along the probable lines of the roads. The paper was illustrated by Mr. Gwilt's map of Southwark, on which that distinguished antiquary had marked the position of all the finds noted by him. The proceedings were brought to a close by a discussion on the interesting paper on "Sign-boards in St. Paul's Churchyard," by Mr. Syer Cuming, F.S.A. (Scot.), read at the previous meeting.

WHAT IS A NEW STREET?

At the Hammersmith Police Court, the Fulham Board of Works summoned the London and North-Western Railway Company, to recover the sum of 840*l.* 1s., which had been apportioned upon them for making up a portion of Scrubb-lane, which was declared to be a new street. Mr. Page represented the Company, and said it was not a new street. Mr. T. E. Jones, Clerk of the Board, was called to prove the formal proceedings. He said that he was acquainted with Scrubb-lane before the year 1856, at which time there was only one building in that portion of it. There were now forty-two houses on the west side, and twelve on the east. He also stated that building was still going on in that portion of the lane. The length of that part for which proceedings were taken was 1,635 yards. It did not extend so far as Wormholt Scrubbs. Mr. Besley, in explaining the plan, said if there ever was a case in which the public advantage would be subservient to that of the owners of the land, it was this one. In the event of the road being made up, it would lead to the letting of the land and covering it with houses. Mr. Sheil looked at the plan, and thought, from the way in which the houses were dotted about without any regularity, it was not a new street at present. He dismissed the summons, and ordered the Board to pay 6*l.* 6s. costs.

LIGHT AND AIR CASE.

STRICKLAND *v.* KINGWELL.

This case, which come before Vice-Chancellor Bacon, occupied the Court five days.

Mr. Marten, Q.C., appeared for the plaintiff, with him Mr. Nalder; and Mr. Hemming, Q.C., for the defendant, with him Mr. A. Dawney.

The action was brought for an injunction to compel the removal of new buildings said to obstruct the light of the "Grapes" public-house, Red Lion-street, Holborn.

Mr. Kettle, the co-plaintiff, gave evidence as to the difference in the light.

Mr. Fleuret, public-house broker, gave evidence of the value of the premises at the transfer in 1877.

The following surveyors—Messrs. E. L. Blackburne, C. K. Bedells (Lander & Bedells), T. Chatfeild Clarke, and Banister Fletcher—gave evidence on behalf of the plaintiff, explaining the models and plans which had been prepared.

For the defence, the defendant, Mr. F. Kingwell, was examined, and the following surveyors—Messrs. Roger Smith, Henry Lovegrove, Geo. Edwards, F. Lee, and W. G. Coldwell.

The result was, his Lordship issued a mandatory injunction to pull down such portions of the buildings as obstructed the lights of the plaintiff.

WORKHOUSES.

THE Lambeth Workhouse, erected in 1871-2 having become insufficient for the growing requirements of the parish, has been enlarged by the addition of 580 beds, making a total number of 1,350 inmates.

The building was originally designed with a view to its extension, and the system of classification has, therefore, not been interfered with; and, for the same reason, it was not found necessary to extend the administrative department, but only the wards, day-rooms, and dining-halls. The cost has been £28,000. Mr. T. W. Aldwinckle, of 2, East India-avenue, is the architect. It may be mentioned that this was the first workhouse built strictly upon the Pavilion principle, with rigid classification, the able-bodied being divided into three classes for each sex, each class having its own wards, day-rooms, staircases, yards, offices, and workshops; and we understand that, since its erection, this workhouse has been visited by a large number of other Boards of Guardians sent there by the Local Government Board.

The Guardians of the Wandsworth and Clapham Union, at their last meeting, instructed Mr. T. W. Aldwinckle to prepare plans for their new workhouse. The ultimate accommodation is to be for 1,200 inmates, provision for 600 to be erected at the present time.

SMOKE ABATEMENT TESTS.

AN ASSERTED OVERSIGHT.

SIR,—I beg to call attention to a most extraordinary blunder that has taken place in connexion with the testing of grates and stoves at South Kensington. A volume of reports has just been issued, an account of which appears in the *Sanitary Record* of the 15th ult. Mr. Kinnear Clark, the examiner, states, in his report, that each test-house had a circular chimney, 8½ in. in diameter, which was prolonged by 6 in. zinc piping to a total height of 25 ft. Now, every practical man knows that such a flue is utterly unfit for open fires and bituminous fuel, and fit only for close stoves, to burn gas or anthracite coal.

Hence it is that those modest contrivances for burning coal which could be most safely used for a few hours with a 6 in. pipe, stand highest in the reports and in the awards, and the most successful contrivances, when used with proper chimneys, are simply nowhere.

Hence, also, is the explanation of the remarkable inconsistency which I explained in your number of January 6th.

The exhibitors were no parties to the blunder, as the flues were embedded in brick-work and could not be seen.

It is fair to state that the Smoke Abatement Committee are not entirely responsible. They adopted the test-houses and chimneys used by the Society of Arts in 1873. On that occasion the results were so unsatisfactory that no reports were published and no awards made. The cause of the failure can at last be accounted for. I have not the least idea who was personally responsible for the mistake, but will only say that such a flue embedded in brick is admirably suitable for gas.

In consequence of the unfortunate oversight, an enormous amount of trouble and expense has been incurred uselessly, and, so far as open fires are concerned, the reports and awards possess no value whatever.

As some of your readers may not be as familiar as myself with the subject, I beg to explain that a flue prolonged by a 6 in. pipe is about the same thing as a flue of 6 in. in diameter throughout, and that its effect on all full-sized grates must be to make them act badly in every respect, to be most imperfect in combustion and in heating power, to occasion a concentration in the chimney of noxious products, and to emit some of these into the testing room. The smaller the contrivance the better it would answer.

It appears to me that all the Smoke Abatement Committee can now do is to test the really important grates with proper chimneys.

Captain Douglas Galton and Dr. Siemens have both disclaimed any responsibility for the testing.

FREDERICK EDWARDS.

CONDITION OF HOUSES IN THE COUNTRY.

SIR,—I can quite endorse the remarks in your article last week on the Sanitary Condition of Houses in the country, more especially in remote parts. I knew only some months since of a water-closet immediately over a cesspool, and the covering over it was left quite unsound from the time of one emptying to another, as the local men told me, to avoid the trouble of cutting up the covering every time. In the same house another cesspool was at the back door within a yard; another at one time was outside, but subsequently to its formation a conservatory had been built over it. Another was in the stable yard, and close alongside of it a rain-water tank, the water being often used in the kitchen owing to its being so close to it; otherwise the water in general came from a reservoir sufficiently high to supply the upper stories of the house.

Another case, a most curious one, was a small grocer's and general stores in Kent. From time to time the family had been ill and nothing was suspected, although the water-closet was within the thickness of the wall of the well,—not a spring well, either, but one of the many thought so, but merely land surface-water, otherwise rain-water, filtered through the land. However, alongside this water-closet and further from the well was a store for paraffin oil, and one day some got spilt and found its way in a short time into the well. Luckily for the inmates of the house, the well was at once, I was glad to hear, filled up and the pump taken away, and the drain re-laid. This is only one of the many instances, some fatal, showing that no one scarcely thinks where the wastes go to so long as the refuse goes somewhere.

F. BOTTING.

LIGHT OUT OF DIRT.

SIR,—I am much interested in your article "Light out of Dirt." I made some experiments in 1879 for the treatment of solid garbage and sewage, and I found large volumes of gas given off, which in burning gave out a powerful heat but not much light, though after its purification a brilliant light was obtained equal or superior to gaslight from coal. The process would be quite remunerative, and I am about to carry out some works for a small Local Board district with the object of solving that hitherto unsolved problem, the profitable utilisation of the sewage,—and when in operation shall be glad to give you the particulars.

E. CLEMENT TRAPP.

THE SUPERINTENDENCE OF BUILDINGS.

SIR,—Being a constant reader of your valuable and interesting journal, I shall be obliged if you will allow me to insert the following comments, referring to some portions of the paper read by Mr. Arthur J. Gale at the meeting of the Architectural Association on the 16th ult., and published in your issue of the 24th ult., and headed "Notes on Professional Practice."

On perusing the paper, I find portions of it refer to clerks of works. On these points (being a practical clerk of works) I am personally interested, and would venture, with your permission, to make a few comments, not in a hostile, but in a friendly, spirit. Mr. Gale says the selection of a clerk of works was a difficult point; for he might prove to be unreliable in many ways: he might drink, or connive at builders' dishonesty; or, if honest and sober, he might be incompetent to perform his duties. I fear this gentleman has been most unfortunate as regards his experience with clerks of works, otherwise the trio of possibilities might be more favourable and complimentary to clerks of works as a body. Mr. Gale goes on to say (continuing the possibilities), an energetic architect's assistant (junior pupil or otherwise) might make a very good clerk of works, especially if gifted with tact and business capacity. I quite agree with

Mr. Gale that the selection of a (practical, qualified, experienced) clerk of works is a difficult point (or has been), but I cannot endorse his view that an architect's assistant (especially a junior pupil) is likely to make a good clerk of works, unless he has had some practical experience in one or another of the mechanical trades in connexion with the building trade. I certainly should not like to be the client whose interest was left in charge of a non-practical and inexperienced junior pupil from an architect's office.

The several branches of the building trade are intricate, and require a lengthened practical experience to gain an insight sufficient to qualify one to discharge the duties of a clerk of works efficiently o the satisfaction of the architect and the client. Perhaps I may here add (without being considered nvidious) that the difficulty of selecting a clerk of works, with the necessary qualifications, is now reduced to a minimum, by the action taken by qualified clerks of works in forming an association, the objects of which are to enable architects requiring the services of a clerk of works to obtain qualified and experienced men who can be relied upon, as having been engaged in that capacity for years, and also to protect their own interests being assailed and brought into disrepute by inexperienced and unqualified persons who endeavour, and sometimes obtain, appointments which they are no more fit to fill than a junior pupil from an architect's office.

Information with reference to the Clerks of Works' Association can be obtained by applying to the secretary, Mr. G. R. Webster, 31, Spring-gardens, Charing-cross, London, S.W.

A MEMBER OF THE CLERKS OF WORKS' ASSOCIATION.

"A DOCTOR'S HOUSE, BEDFORD PARK."

SIR,—Under the above heading, in the *Builder* of 3rd February (p. 139), you notice a visit of the Architectural Association,—"the first visit of the session. Mr. E. J. May, the architect, conducted the visitors over the house, which had been designed upon the principles laid down by Drs. Drysdale and Hayward, at the special wish of Dr. Hogg, as a residence for himself. The principal thing aimed at is to produce a constant flow of fresh air through every room in the house, the air being admitted to the basement, and from thence to every room in the house. From each room one or more separate extracting flues go to a foul-air chamber in the roof, extracted by a flue, which passes up behind the kitchen fire, which provides the suction power for drawing air through the whole house," &c. I beg to inform Mr. May, also the three Doctors, that it is not their design. This principle, and the whole arrangement, were carried out by Messrs. Price, Lee, & Co., 9, Adam-street, Adelphi, upwards of thirty-two years since, with success. I hoped these four gentlemen had honour enough in them not to call it their design, and I shall be glad to hear they informed the members of the society that the design belongs to Messrs. Price, Lee, & Co.

It is better adapted for large public buildings than private houses. We Englishmen do not care to give up our "social hearths." ARCHITECTUS.

CHELTENHAM GAS OFFICES.

SIR,—It is to be hoped that the directors of this Gas Company have at last made a selection of a builder to do the above work. They have not deigned to give the general competitors any information on the subject, and although some of us have by invitation practically sent no less than five tenders for the works, the directors do not appear to have possessed gentlemanly feeling enough to tender their thanks for the trouble taken in the matter.

Our tenders were simply returned to us with the curt remark that they were not accepted. In all my experience this is the most shabby treatment I have ever received, and I find that I am only expressing the feelings of others who have sent tenders. WILLIAM JONES.

SANCTION FOR PUBLIC WORKS.

SIR,—Referring to the paper read at a meeting of the Civil and Mechanical Engineers' Society, and quoted in the *Builder*, "The Process of obtaining Sanction for Public Works in Great Britain," may I draw attention to the description given by me in chap. i., vol. i. of my "Aid Book to Engineering Enterprise," a book which you were good enough to notice? EWING MATHESON.

CHURCH-BUILDING NEWS.

Forest Hill.—The new Church of St. Paul, Forest Hill, has just been opened for worship. It has been built from the designs of Messrs. Herbert D. Appleton and Edward W. Mountford, who were appointed joint architects after a limited competition. The church stands upon a very sloping site, advantage of which was taken to form a Sunday-school under the east end of the church, to hold 300 children. The committee stipulated that every sitting should have an uninterrupted view of the pulpit, reading-desk, and communion table. The length of the church is 120 ft. from the pulpit to the wall at the west end. The chancel is 17 ft. deep. The plan of the church consists of a nave, a north and south aisle, with apsidal chancel. There are four porches entering the church at the west end, all of which are screened by inner lobbies. The general treatment of the church is in the thirteenth century Gothic style, carried out with moulded bricks. The original design contemplated a tower at the west end of the church, but this has not been built, nor is provision made for it. The stained-glass windows in the chancel are by Messrs. Heaton, Butler, & Bayne, and were presented to the church by Mr. James Bissick and Mr. Fielding. The window in the north aisle, by Mr. Steel, is the gift of the architects. The works have been carried out by Mr. W. Smith, of Harleyford-road, Vauxhall.

Milford, near Lymington.—A reredos has recently been erected and other works have been carried out in the chancel of this church from the designs of Messrs. John Colson & Son, architects, of Winchester. The reredos, which is composed of various coloured marbles, alabaster, and stone, consists of five deeply-recessed panels with moulded and crocketed gablets, the centre considerably elevated, supported by clustered marble columns of various colours, the centre column of the cluster supporting central gablet being of a spiral form executed in Rosso Antico marble. The bulk of the work is executed in veined alabaster; the foliage to the capitals, spandrels in gablets, bosses, and the figures of angels at the intersections of the gablets, being delicately carved in white alabaster. The central panel contains a vesica of inlaid Devonshire marbles, with a gold ground and across of Penzance red serpentine decorated with Florentine alabaster, Chilian lapis, agate and Derbyshire spar. The remaining panels are filled with the figures of the four evangelists executed in glass mosaics by Mr. Powell, of London. The retable is in Devonshire marble moulded, and supported by Purbeck marble moulded brackets. The lower part of the reredos is in Caen stone, with Purbeck marble columns at angles. The remaining works consist of new oak choir desks and stalls, oak ceiling, encaustic tile paving to the sacrarium by Mr. Godwin, of Lugwardine and Poole; paving to the remainder executed by Mr. Pilley, a local builder. The sacrarium steps are executed in red Mansfield stone, and the step to the altar platform in polished Irish red marble by Mr. W. Earp, of London, who also executed the reredos. The reredos and work in the sacrarium has been presented by a parishioner, the cost of the remainder being defrayed by subscription through the vicar, the Right Rev. Bishop McDougall.

Duloe.—A new reredos has just been dedicated in Duloe Church, near Liskeard, Cornwall. In 1862 the church at Duloe was carefully restored, under the direction of Mr. J. P. St. Aubyn, architect, and at the expense mainly of the rector and of the Rev. Thomas Bewes, the principal landowner in the neighbourhood. The remains of the rood, and the fine parclose screen on the north side of St. Cuby's are good specimens of carved oak of fifteenth-century work; and in the sculptured and masonry work of the Bewes' Chapel a striking similarity exists to work in the choir of Exeter Cathedral. The reredos just erected extends the full width of the east end, from the north wall to the south. The main portion, immediately behind the altar, is made altogether of polished alabaster and Cornish serpentine. It rises to the height of the east window, only cutting slightly into the painted decorations of the latter with the central gable. The re-table is of moulded and polished Cornish serpentine, beautifully veined. The central compartment contains a representation in sculpture of the Crucifixion. The figures are in high relief. In striking contrast to this central group are the two side panels, which are quietly diapered. The cornice is boldly moulded and carved, and the whole work is surmounted by a cresting of pierced work. The wings at the north and south of the reredos proper are, in the main, of Beer stone; their columns, however, like those of the central part, are of polished serpentine. This reredos has been carried out by Mr. Harry Hems, of Exeter.

Shirley.—The Bishop of Worcester has re-opened St. James's Church, Shirley, Birmingham, after its enlargement and renovation. The original building consisted of a nave, with small side porches, tower (in which was the vestry) at one end, and a shallow recess or chancel at the other end. The funds at disposal being limited, and the chief object being to provide more sittings to satisfy the requirements of an increasing local population, the whole body of the church or nave has had little exterior attention, but internally the side galleries have been removed, the end gallery altered and adapted for children, a bold arch turned to open up the lower part of the tower to the nave, and convert what was formerly the vestry into a baptistery. The additions consist of the erection at the old chancel end (which has been altogether removed) of large transepts and a well-proportioned new chancel, with organ-chamber and vestry on one side. Under the vestry has been fixed a new warming apparatus by Messrs. Haden, of Trowbridge. The organ has been removed from the end gallery, and reset up in the new organ-chamber, after having been repaired and set in order by Mr. Hewins, of Stratford-on-Avon. The church, with the new additions, is now of a cruciform shape, the transept being connected with the old nave by a bold new moulded brick arch, of a span nearly equal to the width of the old nave. The transepts are opened to the body of the church by arcades of two arches, each springing from carved wall corbels, and centrally supported on a moulded brick pier. A bold moulded brick arch also opens up the chancel, wherein double rows of seats on either slide have been provided for the choir, ended on one side by the pulpit, and on the other by the prayer-desk. The additions have been built almost entirely of local red bricks, neatly pointed; Greensill stone having been used for copings, tracery, and exposed weatherings, and Codsall stone for the window-sills. The internal stone-work, corbels, springers, &c., are done in Corsham Down Bath stone. The new roof, which is open-timbered in the interior and plastered and coloured between the rafters, is covered with purple plain tiles, and is of a steeper and better pitch than the flat slate roof over the old nave. The windows are filled with cathedral tinted glass in lead lights (squares and diamonds), floriated pattern work being inserted in the tracery heads, and hopper casements being employed where necessary for air and ventilation. One of the transept-lights has been filled with stained glass by Messrs. Camm Brothers, to the memory of certain deceased members of the Terry family. The whole of the additions have been designed in the Early English or First Pointed style of Mediæval architecture. The corbels and label terminations, &c., have been carved by Mr. Roddis, of Birmingham. The cost of the additions and improvements has been about 1,500*l*. Mr. John Cotton, of Birmingham, was the architect; and Messrs. Bragg Brothers, of Solihull, were the builders.

DISSENTING CHURCH-BUILDING NEWS

Sunderland.—The Grange Congregational Church, the memorial-stone of which was recently laid, is really the second half of a building designed by Mr. Pritchett, of Darlington, the first half of which was erected in 1881, and which we described at the time. We may, however, briefly note that the portion already built comprises schools on a novel plan, forming half of a decagon externally, and internally having class-rooms ranged round a central room, from which they are separated during teaching hours by revolving shutters, but forming with the central part one room when the shutters are up. The church, now in course of erection, joins on in front of the above-named schools, making one building about 135 ft. long externally. The front faces Stockton-road, and has on the ground-story three doorways, having polished red granite shafts, moulded bases and arches, and carved capitals. The tower is at the corner of Stockton-road and Candlish-terrace, and the tower is 65 ft. high, designed in five stages, and surmounted by a spire rising to a height of 135 ft. from the causeway to the top of the vane. The side elevation to Candlish-terrace is relieved by being broken into parts, the corner having an apsidal staircase against the tower, the end portion next the schools being arranged as a transept with double gables, and the portion between, forming the aisles, being considerably recessed. The ridge of the roof is continuous in the church and school, 65 ft. high from the ground. About the middle of its length is an ornamental "Flèche," or turret, of oak, lead, and slate, rising to a height of 90 ft. from the ground. This turret is to contain an apparatus for extracting the foul air from the building. The church will consist of a nave, 32 ft. wide, separated from the aisles, each 10 ft. wide, by iron pillars, in two tiers, supporting the side galleries and main arcades. The pillars will

have moulded bases and foliated caps, and the arches will be of moulded woodwork. From the arcades rises a moulded wagon-headed roof, groined in the lower portion between the arcades and the hammer-beams. This roof, and, in fact, all the woodwork, is to be of best pitch pine varnished. On the top of the first tier of pillars runs, all round, the gallery front, which is of handsomely-moulded tracery-work, deeply recessed. The seats are all 2 ft. 10 in. from front to back, and, allowing 20 in. full for each person, will accommodate 925 adults; but by an arrangement of seats to slide out into the gangways from the ends of the fixed seats, 1,053 adults (or about 1,200 persons, reckoning the usual proportion of children and young persons) can be seated on special occasions. The glazing is to be by Mr. Atkinson, of Newcastle-upon-Tyne, in his *specialité* of "Muffled" glass, with coloured "roundels" and "borders" in the body of the windows, and foliated designs in the tracery. The warming is to be by Weeks & Co., of Chelsea, with the introduction of their "Hydro-Caloric Coils." The building is designed by Mr. J. P. Pritchett, architect, Darlington, and is being carried out under his supervision, assisted by Mr. Bryan as resident clerk of works. The contractors for the whole of the works, except the heating and the glazing before named, are Messrs. Hirst & Sons, of Darcy-street, Sunderland. The contracts, together amounting to about 6,500*l.*, which, added to the cost of schools, —about 2,500*l.*,—will, with professional and furnishing charges, make the total cost of the whole scheme not far short of 10,000*l.*, exclusive of site.

STAINED GLASS.

Tickhill Church (*Yorkshire*).—The large five-light east window of this fifteenth-century church has, by the liberality of the Misses Alderson, of Tickhill, been filled with painted glass in the style of that period. The lights are divided so as to allow of an increased number of illustrations. In the upper and larger range the central subject, on a cerulean blue ground, is the Ascension. No canopy surmounts this light, but instead, there are indications of the glory into which the Lord is ascending; whereas all the other subjects are surmounted by rich and elaborate fifteenth-century canopies. The other illustrations on this range are the Marriage Feast at Cana, Christ teaching in the Synagogue, Christ sending forth his disciples to preach the Gospel, and Christ blessing little children. Of the five smaller compartments in the lower range the central three are devoted to the Last Supper, flanked by illustrations of the Parables of the Good Samaritan and of the Wise and Foolish Virgins. The tracery lights above are richly foliated in grisaille, upon green and ruby grounds. Beneath each subject is an appropriate legend text; and at foot of the whole an ornamented base and an inscription of the donors' names. The work is rather special in some of its characteristics, more notably of colour. In the upper range the ground colours are alternately blue and ruby, whilst a silvery white or grisaille predominates in the treatment of the figures and their accessories. In the lower range, ruby on each side flanks the central blue. Of the canopies, the grounds are alternately ruby and green, the latter surmounting ruby beneath, and ruby surmounting blue. The colours are thus so opposed as to complement each other at once richly and harmoniously, yielding, nevertheless, to the subject compositions, their due and distinct prominence. The window is by Messrs. Powell Bros., of Leeds.

Lymington. — A stained-glass window has recently been placed in Milford Church, Lymington, in memory of the late Lord Justice Thesiger. It is a two-light window, and contains figures of Moses and St. John the Evangelist. The artists are Messrs. Warrington & Co.

Discovery of Red Ruabon Terra-cotta Marl.—An immense bed of superior red marl, sixty-four yards deep, has been recently discovered at Ruabon, and, we believe, secured by the well-known firm of Messrs. Monk & Newell, Liverpool, who will commence the manufacture of terra cotta, &c., upon a large scale forthwith. We learn, too, that the firm has taken into partnership the well-known manager of the Penybont Works,—"the originator of Ruabon (deep red) terra cotta,"—who undertakes the practical management of the business.

VARIORUM.

"THE Booke of Entries of the Pontefract Corporation, 1653-1726" (Pontefract, Richard Holmes), appears to be the oldest record of the Pontefract Corporation known. It has been edited with care and intelligence by Mr. Holmes, and includes much interesting matter. ——The lecture on the Future of Electric Lighting, delivered by Mr. St. George Lane-Fox at the Royal United Service Institution, has been printed in a separate form. Mr. Lane-Fox maintains the certainty that the uses of electricity will spread, and we agree with him in this; but holders of gas shares need not be in any hurry to sell them, for all that.——Mr. Batsford announces the early publication of "A Complete Account, illustrated by measured Drawings, of the Buildings erected in Northamptonshire by Sir Thomas Tresham between the years 1575 and 1605, together with many Particulars concerning the Tresham Family and their Home at Rushton," by Mr. J. Alfred Gotch, architect. ——An article appears in the March number of the *Bibliographer* on the "Book Prohibitions of the Church of Rome," which have continued for 300 years,—from the destruction of Luther's writings to the present time.——The *Leisure Hour* thus instructs its readers what to do in case of fire:—"In case of either a chimney or a room catching fire, the first thing to be thought of is to exclude all draughts; for it is certain that the slightest current of air will increase the force of the fire. All the doors and windows should be shut at once, and if the chimney be on fire, a wet blanket should be immediately fastened to the top of the mantelpiece, so as to exclude all draughts from the opening of the chimney, and entirely cover the grate; shutting the trap first if possible. This will in most cases make the fire go out by itself. You may throw into the grate a few handfuls of salt. Water should never be thrown down from above, as it spoils the carpet and furniture unnecessarily. A very common cause of fires will be found in the careless sweeping of the chimneys, the sweep's neglect of putting the brush up out of the top of the chimney, thus leaving a cake or ceiling of soot, which either catches fire or comes down some night with disastrous consequences. If the window or bed curtains catch fire, beat them with the thickest woollen garment you can lay your hands upon. Window-curtains can in most cases be torn down with a violent jerk, and this will prevent the flames from extending to the woodwork of the windows. In escaping from a burning house or room, remember that the air nearest the floor is clearer than any, and go on your hands and knees at once. A wet cloth tied over the mouth and nose keeps out the smoke, will help the breathing, and prevent suffocation if too much oppressed. A wet blanket, or even a dry one speedily used, will extinguish many a small conflagration, such, for instance, as of an upset lamp, by excluding the air; and will be far more efficacious than water thrown on for that purpose; its use also prevents damage to furniture. When an alarm of fire is given, if in bed, wrap yourself in a blanket, which will form the best protection for you from the chance of ignition, and endeavour to remember the different exits from the house, where they are, and how to reach them; if you cannot attain to any of them, try to get to a front room as near the ground as possible."

Miscellanea.

The Churchyard of the old parish church of St. John, Bermondsey, has been opened as a recreation-ground, and dedicated to the public in the presence of the parish officials and a large number of the inhabitants. The churchyard, which is a very large one, has been laid out into walks and flower-beds, and the tombstones removed to a place of safety, and a reference plan prepared showing the exact spot from which each stone was taken. An old watchhouse, situated at the entrance, has been transformed into a lodge for the caretaker.

The School Board of Tottington Higher End have decided to build a new school for 160 children, upon a site at Townsend-fold, Rawtenstall. In a limited competition, the plans of Messrs. Maxwell & Tuke, of 29, Princess-street, Manchester, have been selected, and the work is to be carried out as soon as possible.

Halifax School of Art.—The prizes and certificates gained by the students of the Halifax School of Art during the past year were distributed in the school at the Mechanics' Hall. Mr. Fox, the secretary, read a letter from Mr. G. Marchetti, the president, who had promised to distribute the prizes, stating his inability to be present on account of indisposition. Mr. Cochrane, a member of the committee, was then voted to the chair. Mr. Stopford, the head master of the school, gave a few particulars of the examinations during the past year. In the second grade, forty-nine papers had been successful, and five prizes had been obtained for papers marked excellent. There were also four certificates granted to students who had passed in all subjects in that grade. In the national competition two Queen's prizes had been obtained, and ten third-grade prizes, nine being for subjects in design. Mr. Stopford said that in a school of that character design was a very important element, and he scarcely thought that the system adopted by the Science and Art Department was one calculated to develop design. In connexion with their schools works of a promiscuous and incongruous kind were sent up, on which the students had to be examined at Kensington. The student was anxious to send a design to Kensington, but they were placed at a disadvantage in not having any knowledge of the principles and elements of ornamentation. He had suggested to the Department that they should institute elementary examinations in the schools in the elements and principles of ornamentation, and also in the historic periods. It was his intention during the winter to take advantage of the liberal prize money which the president had given them to have examinations in those subjects. He purposed giving a series of lectures during the next term on the elements and principles of ornamentation, and also upon the historic period of ornamentation. Mr. Stopford then alluded to the increase in the number of students, which had made it impossible for the students to work well in a room of that size. Mr. Cochrane briefly addressed the students before distributing the prizes. He agreed with the remarks made by Mr. Stopford with regard to the existing system at South Kensington, but stated that within the past few years improvements had been made, but he believed there was room for still further improvement. One matter to which he would like to refer was the amount of time which he believed was wasted in sketching from the round. He had himself derived more technical instruction from nature than from sketching from the round. Mr. Cochrane then distributed the certificates and prizes to the successful students.

Arbitrators and Property Assessments. A deputation has had an interview with the President of the Board of Trade on the appointment of arbitrators to assess the value of property to be taken for public works. The deputation, which was introduced by Mr. Jacob Bright, M.P., consisted of Mr. Arnold Morley, M.P., Mr. Whitley, M.P.; Messrs. Grundy, Pattison and Talbot, of Manchester; and Mr. Pritchard (Sharp, Parkers, & Co., solicitors to the Association of Municipal Corporations). It was represented that considerable abuse had grown up around the present methods of arbitration, which were said to be both dilatory and expensive, and it was suggested that a similar system in the case of railways acquiring land should be adopted, namely, the appointment of an umpire by the Board of Trade. This the deputation believed would be more satisfactory to all parties. Mr. Chamberlain, in reply, said that he was perfectly familiar with the abuses that had grown up under the present system; but, although he doubted the ability, or even the propriety, of the Government introducing a measure upon the subject, he gave them his most cordial support, and would speak in the House in favour of such a change, if such a Bill should be introduced at the instigation of the Municipal Corporations Association. The deputation then withdrew.

Peterborough Cathedral.—The first of a series of public meetings in aid of the Peterborough Cathedral Restoration Fund was held on Wednesday, under the presidency of the Mayor of Peterborough. It was announced that Earl Fitzwilliam, who was present, had contributed 1,000*l.* A detailed statement was made by Dr. Perowne, the dean, and resolutions were carried approving the action of the Dean and Chapter. The total subscriptions amount to 11,000*l.*, towards 55,000*l.* required.

Arsenical Pigments.—The Foreign Office has, at the request of the National Health Society, addressed a communication to its representatives abroad desiring them to report on the existing legislation in Continental countries with reference to the precautions and restrictions imposed on the manufacture and sale of articles in which arsenical pigments are employed. A committee, including Dr. Lauder Brunton, F.R.S., Professor Heisch, F.R.S., Dr. Farquharson, M.P., Dr. Cameron, M.P., Lieut.-General Cotton, C.S.I., Mr. J. Hogg, Mr. Carr, Mr. J. C. Whittle, and Mr. Ernest Hart (chairman), has been formed in connexion with the Society for investigating the subject of arsenical poisoning in respect to the use of arsenical pigments, paperhangings, dress fabrics, and other materials in daily use, and their deleterious effects on health. Reports have been prepared by Dr. Lauder Brunton, F.R.S., and Professor Heisch, F.R.S., on the medical, chemical, and sanitary aspects of the question, and a Bill has been drafted with the object of requiring that in the case of articles manufactured with arsenical pigments, due notice should be given to the purchaser. A considerable body of information was laid before the committee, showing that the use of arsenical pigments was not confined, as was popularly supposed, to the preparation of green colours, but that numerous cases of arsenical poisoning had occurred in families living in rooms hung with mauve, red, fawn, and other coloured paperhangings, in which arsenic was freely used, and from which arsenical powders floated into the air.

Gas and the Electric Light.—The annual dinner of the members of the Gas Institute was held at the Crystal Palace on Tuesday evening, Mr. Paterson, the president, in the chair. After the disposal of the usual loyal toasts, the chairman proposed the health and prosperity of the directors of the Crystal Palace Company. Mr. M'George, in responding, alluded to the sectional exhibitions which had been established at the Palace, and stated that from the 1st of January up to the present time the number of visitors to the palace had considerably exceeded the number in the corresponding period, when the electrical exhibition was going on. Sir J. Douglass, in reply to the toast of the assisting exhibitors, referred to the rivals which gas had in mineral oil and the electric light, and observed that, great as had been the progress of gas, it had been still more decided since the introduction of the electric light. Mr. Denny Lane proposed the health of the executive committee, and observed, after referring to the progress of gas and electricity, that there were certain laws of nature which could not be overcome. Thus, out of a certain amount of motive force more than a given amount of electricity could not be produced. If electricity could give better service than gas, let them welcome it. It had certainly been one of the greatest stimulants to the gas industry.

Proposed Exhibition at Boston, U.S.—The prospectus and rules which are to govern the forthcoming exhibition of foreign arts, products, and manufactures, to be held at Boston, Massachusetts, in September next, have been issued. The exhibition is to take place under the auspices of the Massachusetts Charitable Mechanic Association, and is to consist exclusively of foreign exhibits. It will remain open for three months. The building in which the exhibition will be held is centrally located, and of easy access from all parts of the city. It has been erected at an expense of over half a million dollars, and is constructed solely for exhibition purposes. There will be no charge for space. Medals and diplomas will be awarded to exhibitors.

District Surveyors' Fees.—A return has been issued by the Superintending Architect of the Metropolitan Board of Works, Mr. George Vulliamy. Compared with the results of former years, the present abstract shows an increase in the number of works. In 1856 there were 14,654 separate building operations, the fees in respect of which amounted to 19,904*l.*; in 1881 the buildings numbered 29,275, and the fees were 51,383*l.*

More Cards.—S. Hildesheimer & Co., not content with their successful issue of Christmas cards, have sent us a box containing a large collection of Easter cards, wedding-cards, and birthday-cards, not to speak of valentines, the time for which has just now passed. We can say a good word for these, as we did for their other cards.

The Lytham Commissioners and the Ribble Scheme.—A deputation from the Lytham Commissioners has had an interview with the Ribble committee of the Preston Corporation, with the object of obtaining some further information with respect to the effects of the development of the river, as proposed, upon the foreshore of Lytham, and the flow of the tide thereto. The deputation produced a plan of the river, which turned out to be at least twenty years old, and in no way representing the present channel of the river, and it appeared that their study of this old plan had quite misled them. Of the north training wall proposed to be erected by the corporation, they had an impression that it would be visible from 6 ft. to 8 ft. above low water, whereas it will, in fact, be 2 ft. below the present sand bed, and therefore not visible at any time. With respect to the sewage of Lytham, the commissioners suggested that the Corporation of Preston should carry it away for them, as it would not be allowed to enter the Ribble after its development, and as the cost of doing so would only be from 4,000*l.* to 5,000*l.* To this proposition the committee replied that Lytham must dispose of its own sewage, and on no account would it be allowed to be turned into the river. Preston would also have to find some other way of disposing of its sewage. It is understood that the Lytham Commissioners have now given up all notion of opposing the Ribble scheme.

St. Chad's Schools, Birmingham.—On the 5th ult. Councillor Hardman laid the foundation-stone of St. Chad's new schools, in Shadwell-street, Birmingham. Hitherto the accommodation for the children attending the Roman Catholic schools at St. Chad's Hall, in Bath-street, has been very deficient, and as the building was also in a dilapidated condition, it was deemed advisable to erect new schools sufficiently commodious for the requirements of the district. A piece of land in Shadwell-street, adjoining the cathedral, was acquired, and here it is proposed to build schools to accommodate 700 children. The building, which is to be in the Gothic style, will be 95 ft. long and 25 ft. wide, and will have a frontage to Shadwell-street of 66 ft. On the ground-floor is to be a large infants' schoolroom, and two class-rooms; while on the next floor a large schoolroom and two class-rooms will be provided for the girls. The boys, it may be stated, are provided for in a school further along the street. In addition to the new schools, two sacristies, one for the choir and the other for the clergy, adjoining the cathedral, will now be built. The plans have been prepared by Mr. G. H. Cox, architect, Temple-street, Birmingham; and the contract has been taken by Mr. Thomas Robotham, builder, Great Francis-street, Birmingham. The total cost of the building will be about 4,500*l.*

Manchester Ship Canal.—The Standing Orders Committee of the House of Commons will this Friday consider the Examiner's report on this Bill. Over 300 petitions from public bodies, chiefly in Lancashire, Yorkshire, and Cheshire, but many of them from other parts of the country, have been presented to Parliament in favour of the suspension of the Standing Orders, so that the merits of the Bill may be considered by a Select Committee of the House of Commons. The petitioners comprise municipal corporations, local boards, chambers of commerce, bankers, merchants, manufacturers, and ratepayers in the counties mentioned. About 200,000 signatures have been appended to the petitions presented to both Houses, all of which were obtained in less than ten days. It will be remembered that the Examiner decided that the Standing Orders had not been complied with, on the ground that plans and estimates of the proposed works for the upper estuary of the Mersey had not been deposited, the argument of the promoters being that they had not taken this course because they were not desirous of over-riding the powers of the River Mersey Conservancy. The Promoters sought powers by their Bill to enter into arrangements with the Conservancy to enable that part of the works to be carried out under their authority and control.

A Contract.—We understand that Messrs. Durnford & Son, contractors, of Bristol, have been successful in securing the contract for lowering the bed of the river at the new Clyse, Highbridge. About 1,400*l.* is the amount of the contract.

Safety in Theatres.—It is proposed by Mr. Dixon Hartland, M.P., to abolish the jurisdiction of the Lord Chamberlain and magistrates as to granting licences to theatres, music-halls, &c., and to place all places of amusement "under the department" of the Home Secretary. The Bill for this purpose directs the Home Secretary to frame regulations for the establishment of decency and order in these places, and for insuring the safety and accommodation of the public. Further, he is empowered to appoint inspectors, whose duty would be to survey and continuously inspect all places of amusement, and report as to the observation of the regulations, and as to the stability of structure, due security against fire, and facilities of ingress and egress.

Proposed New Railway to the Crystal Palace.—At a meeting of residents in the neighbourhood of Forest-hill, it was resolved,—"That, considering the large number of inhabitants, and the continued growth of the population in this district, whose business required them to have daily intercourse with London, it is desirable that increased facilities should be given by railway accommodation to all parts of the metropolis, and that the proposed railway from the Crystal Palace by way of Ladywell, East London, Cannon-street, and Charing-cross, which would open up a new route, would be of great advantage in this district, and confer an immense boon upon many thousands in London, who could then more easily and cheaply visit the Crystal Palace."

TENDERS.

For goods warehouse at Strangeways, near Hindley, for the Wigan Junction Railways. Mr. Charles H. Beloe, M.Inst.C.E., engineer. Quantities supplied:—

T. & R. Stone, Newton-le-Willows	£1,053 0 0
J. Preston, Wigan	1,000 0 0
J. Wilson, Wigan	998 7 6
A. Haughton, Godley	980 0 0
W. Winnard, Wigan	976 13 0
C. B. Holmes, Wigan (accepted)	970 0 0

For the erection of new stables and coach-house, Essex-road, for Mr. Wilkinson. Mr. Walter J. N. Tomlinson architect, 35 Great James-street, Bedford-row:—

Crowne Bros.	£675 10 0
W. T. Niblett	520 0 0
J. P. Groome	500 0 0
D. D. & A. Brown	490 0 0
R. Henderson	478 0 0
Dayman & Co.	473 11 6
W. F. Quirk	469 0 0
J. Bartram	460 0 0
W. Perkins	459 0 0
Langler & Pinkham	437 0 0
G. Howard	426 0 0
W. T. Parsons	421 0 0
W. R. Cubitt (accepted)	420 0 0

For hall and reading-room, Bermondsey New-road. Mr. J. Cubitt, architect. Quantities by Messrs. J. E. Goodchild & Son:—

Dove Bros.	£5,285 0 0
Burman & Son	5,197 0 0
Woodward	4,989 0 0
J. & J. Greenwood	4,820 0 0
Shepherd	4,793 0 0
Higgs & Hill	4,664 0 0
Holliday & Greenwood	4,655 0 0
Tarrant & Son	4,630 0 0
W. Johnson, Wandsworth Common*	4,603 0 0

* Accepted.

For the erection of dwelling-houses and business premises in Lower Kennington-lane, for Mr. W. C. Wayre. Mr. Banister Fletcher, architect:—

Newstead	£5,520 0 0
Cannon & Mullins	5,484 0 0
Burman & Sons	5,442 0 0
Julian & Co.	5,323 0 0
Starling	5,224 13 10
Rice (accepted)	4,989 0 0
Priestly (too late)	4,811 0 0

For the erection of new warehouses, Dunning's-alley, for Messrs. Reynolds & Eason. Mr. Banister Fletcher, architect:—

Bennett	£4,415 16 5
Boyce	3,880 0 0
Castle Bros.	3,875 0 0
Garrud	3,731 0 0
Merritt & Ashby	3,533 0 0
Steel Bros.	3,414 0 0

For alterations at The Old Red Lion, Kennington Park-road. Mr. Banister Fletcher, architect:—

Burman & Sons (accepted)	£110 0 0

For iron doors, for Messrs. Maple & Co., Tottenham court-road. Mr. H. Woodzell, architect:—

G. Baker & Son	£622 0 0
Cottam & Co.	555 0 0
Lindsay & Co.	537 0 0
Waygood & Co.	506 0 0

For hydraulic lift and cranes, for Messrs. Maple & Co., Tottenham-court-road. Mr. H. Woodzell, architect:—

Smith & Stevens	£575 0 0
Turner & Co.	519 15 0
Waygood & Co.	512 10 0

For the erection of offices in Eastcheap. Mr. Brown architect:—

Foster	£2,375 0 0
Ellis	2,334 0 0
G. Crabb	2,238 0 0
G. Watson (accepted)	2,149 0 0

For road and sewer works on the United Company's Kilburn House Estate, Edgware-road, Kilburn:—

Wilkes & Co.	£7,959	0	0
P. E. G. Pound	7,824	0	0
J. Sheppard	7,350	0	0
W. Harris	7,140	0	0
W. J. Botterill	6,862	0	0
J. G. B. Marshall	6,594	10	0
Beadle Bros.	6,572	0	0
E. & W. Iles	6,495	0	0
Nowell & Robson	6,415	0	0
J. Jackson	6,222	0	0
J. Pizzey	6,221	0	0
Rowland Bros.	6,160	0	0
C. Taylor	6,100	0	0
R. Finnegan	5,973	0	0
F. Colepeper	5,737	8	0
C. Killingback	5,587	0	0
W. Nicholls	5,555	0	0
Neave & Son	5,345	0	0
G. Felton (accepted)	5,176	0	0
J. Cardus	4,982	0	0

For road and sewer works on the United Company's Hurlingham Estate, King's-road, Fulham:—

J. Sheppard	£1,609	0	0!
J. Pizzey	1,589	0	0
J. G. B. Marshall	1,462	0	0
C. Taylor	1,425	0	0
W. Harris	1,397	0	0
J. Jackson	1,369	0	0
Nowell & Robson	1,355	17	0
Wilkes & Co.	1,307	0	0
W. Williams	1,247	13	0
J. Cardus	1,145	0	0
J. Bell	1,115	0	0
W. Nicholls	1,111	0	0
No name	1,092	18	0
Saunders & Co. (accepted)	611	17	0!

For making and sewering certain roads on the Cann Hall Estate, Stratford, for the Imperial Property Investment Company (Limited), 57, Moorgate-street:—

Dunmore	£1,379	0	0
Nicholls	1,371	0	0
Bloomfield	1,277	0	0
Bell	1,239	0	0
Jackson, Stratford	1,234	0	0
Jackson, Leyton	1,175	0	0
Pizzey	1,125	0	0
Wilson, Walthamstow (accepted)	1,086	0	0

For the erection of a detached villa, Trinity-road, Herne-hill. Mr. W. H. Milnes, architect, 5, Westminster-chambers, Victoria-street:—

Holliday & Greenwood (accepted)	£1,200	0	0

For alterations and additions to warehouse, Little Orford-street, Norwich. Mr. Edward Boardman, architect:—

Wegg	£1,200	0	0
North	1,086	0	0
Wilkin	1,076	0	0
Hall	1,068	0	0
Hawes	1,000	0	0
Downing & Son	975	0	0
Youngs (accepted)	935	0	0

For a block of private wards, at the London Fever Hospital. Mr. Keith D. Young, architect. Quantities by Mr. Morgan H. Young:—

Holland & Hannen	£2,300	0	0
Colls & Sons	2,295	0	0
G. S. Williams & Son	2,125	0	0
Dove Bros.	2,087	0	0
Adamson & Sons	2,025	0	0
Hall, Beddall, & Co. (accepted)	1,773	0	0

For residence, Crescent-road, Tunbridge Wells. Messrs. H. H. & E. Cronk, architects. Quantities supplied:—

Barnett, Shortlands	£3,495	0	0
Kemp, Aldershott	3,240	0	0
Judd & Young, Tunbridge Wells	3,235	10	0
Elwig, Tunbridge Wells	3,188	10	0
Grover, Tunbridge Wells	3,180	0	0
Strange & Sons, Tunbridge Wells	3,087	0	0
Foster & Dickson, Rugby	2,995	0	0
Bingham, Headcorn	2,987	0	0
Penn, Banbury	2,978	19	0
Swain, London	2,955	0	0
Hann & Co., Windsor	2,942	0	0
J. O. Richardson, Peckham	2,882	0	0
Longley, Crawley	2,880	0	0
Wallis & Clements, Maidstone	2,790	0	0
Kingerlee, Banbury	2,720	0	0
Paramor & Son, Margate	2,680	0	0
Morris, East Grinstead	2,660	0	0

For the erection of barrack buildings and quarters, comprising twenty-two residences, for the directors of the Hertford Militia Barracks Company (Limited). Messrs. Smith & Austin, civil engineers, Hertford. Quantities supplied:—

	No. 1.	No. 2.
J. Garlick, Birmingham	£4,850	£5,620
Gibbons & Co., Buntingford	4,430	4,970
Willmott & Sons, Bassingbourne	4,043	4,375
Vernon, Evens & Co., Cheltenham	3,700	4,350
Wade & Edey, St. Neot's	3,750	4,035
Messrs. Hampton, Hoddesdon	3,372	4,298
Whitehead & Jacklin, Royston	3,400	4,110
C. Miskin, St. Alban's	3,320	4,000
W. Gray, Hertford Heath (withdrawn)	3,030	3,250
Spencer, Atherstone	3,120	4,000
Ekins & Son, Hertford	3,200	3,900
Rayment & Sons, Hertford	3,104	3,835
O. E. Gibbons, Ipswich	3,150	3,850
H. Norris, Hertford (accepted)	2,900	3,680

Accepted for water-works for the Rural Sanitary Authority of Towcester, Northamptonshire. Mr. John Ennson, engineer:—

Reservoir and Valve-House.
T. Heath, London and Towcester.
Pipes and Bends.
Firmstone, Stourbridge.
Laying Pipes.
Evans, Wolverhampton.
Valves and Hydrants.
The Glenfield Company, Kilmarnock.

For the erection of a detached villa, Knollys-road, Streatham, for Mr. S. Alderton. Mr. W. H. Milnes, architect, No. 5, Westminster-chambers, Victoria-street. Quantities by Mr. Walter A. Williams:—

Holliday & Greenwood	£995	0	0
Hoskins	899	0	0
Williams	891	0	0
Gillett (accepted)	850	0	0

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A. P.—T. D.—E. F.—T. G.—W. H. S.—W. M.—T. P.—P. & B.—M. & Son.—H. F.—R. M. P.—S. & A.—B. Bros.—E. F.—J. G. S. & Co.—D. J. M.—J. B.—J. M.—J. S.—W. & Co.—An Old Surveyor.—Old Clerk of Works.—M. & T.—B. & I.—D. J.—S. P. M.—G. H. S.—M. Y.—Practical Surveyor.—C. S. & C.—T. W. A.—H. W.—F. E.—A. T. S.—J. O. R.—H. L.—Mr. R.—W. G.—J. F.—B. R.—J. E. & Sons.—G. B. (should send list and amounts).—W. C. (we have already given Mr. C.'s statement).—E. R. (declined).—V. D. (we cannot comply).—W. C. (Messrs. Knight & Co.).—B. B. (contrary to custom).—A. B. (very good).

Correspondents should address the Editor, and *not* the Publisher, except in cases of business.

All statements of facts, lists of tenders, &c. must be accompanied by the name and address of the sender, not necessarily for publication.

We are compelled to decline pointing out books and giving addresses.

NOTE.—The responsibility of signed articles, and papers read at public meetings, rests, of course, with the authors

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VOL. XLIV. No. 2092. SATURDAY, MARCH 10, 1883.

ILLUSTRATIONS.

St. Peter's Church, Leipzig (Double-page Engraving).—Herran Aug. Hartel and C. Lipsius, Architects 314
Naworth Castle: the Stanley Tower. Recent Additions (Double-page Engraving).—Mr. C. J. Ferguson, Architect 316
American Planning and Construction: Mills Buildings, New York; Iron Staircase, New Post-office, Philadelphia 318, 319

CONTENTS.

The Outlook in one Direction for 1883 301
"Les Eglises Circulaires d'Angleterre" 302
Dudley Gallery Art Society 303
Fate of Flaxman's Drawings 303
Mediæval Cyprus 304
French Furniture 304
An Agency and its Bearings upon Irish affairs 305
The Architectural Drawings Royal Scottish Academy 306
The Increase Lighthouse Keepers 307
Tool for the Million 307
Sir Christopher Wren and Westminster 307
The Design of the Hospital and the Spread of Disease. Society of Medical Officers of Health 308
The Graduation of Travel 309
The Students' Drawings at the Institute of Architects 310
Competitions 310
Obituary 310
The Restoration of St. Giles's Cathedral, Edinburgh 311
Ancient Greek Painting 311
"An Architect on Lawyers" 311
The London and North-Western Company's New Buildings at Euston 312
New Protestant Church, Leipzig 312
Naworth Castle: Recent Additions 312
American Planning and Construction 312
The National Gallery 312
About Modern Design: Architectural Association 325
Hindrances: Leeds Architectural Society 328
The Works of the late Hablot K. Browne 329
The Teaching at Art Schools 330
Hygiene in Dublin: Heating and Lighting 330
A New System of Dealing with Sewage Manure 330
District Surveyors and Dangerous Structures 331
Central Association of Master Builders of London 331
The Ventilators for the District Railway 331
The Foundations of Waterloo Bridge 332
Proposed Street Improvements in Edinburgh: The old Infirmary Grounds 332
Exhibitions 332
The Peabody Trustees and their Buildings 332
Medals for Building Successes 332
Sale of the Horse Armoury Buildings at the Tower 332
An Italo-Sicilian Channel Tunnel 332
Prize Essay on the Improvement of the System of Unrestricted Tenders in the Building Trade 333
London School Board: Architect's Department 333
The Wellington Statue 333
Superintendence of Buildings 333
Case under the Metropolitan Building Act: Line of Frontage 333
Books: The History of the Year (Cassell, Patter, & Galpin) 333
Miscellanea 333

The Outlook in One Direction for 1883.



THE various reports which, during the first fortnight of 1883, were published as to the outcome of different great branches of agriculture, manufacture, and commerce, are generally taken to be, on the whole, of a promising character. If there is no record, and as little promise, of any advance by leaps and bounds, on the other hand various prophecies of ill-omen have been, as yet, unfulfilled. In one special particular, indeed, the financial improvement of the country appears, for the nonce, to suffer from its moral improvement. There appears to be the distinct proof, in the comparative diminution of revenue from taxes on drink, of a great increase in sobriety. This increase appears to pervade all classes, to the disgust of the wine-merchant, who supplies luxurious tables, no less than to that of the man who earns an unenviable income from the gin-palace. With some ignorance, some fanaticism, and even, in some cases, some inconvenience, has been blended no small degree of earnest self-denial; and even if it has to be made up by other impositions, no good citizen can fail to rejoice at loss of revenue caused by diminution in the consumption of alcoholic liquors.

Perhaps the most distinct lesson that can be drawn from the critical state of our national business, at this time of annual stock-taking, is to the effect that while, on the one hand, we have plain warning to make the best of the natural resources and forces of the country, on the other hand we have little reason given us to fear the result of competition with other, and, in many respects, cheaper countries, if this be done. But there is this difference, if we compare the actual state of things with that at the close of 1872. We no longer have any odds to give. We may hold our own, or even increase our prosperity, but we shall only be able to do so by a combination of intelligence and of resolution. While we have good reason to believe that the English workman, when he steadily does his best, can bear to be heavily handicapped in his rivalry with any other workmen, he is not likely to be able to do so unless he knows what is the actual amount of the handicap. That, no doubt, varies. In many,—or, at all events, in some,—cases it is so considerable as to drive English labour at once and for ever from the field. We may cite as an instance and proof of this the case of the Indian railways; because it is one into which none of the complications that come under the use of the word "capital" occur. When the Indian railways were first completed, it was necessary to have English engine-drivers, stokers, machinists, and workmen in different departments. But the presence of these skilled workmen was, in fact, the installation of a technical school, and of one by which the native workman was not slow to profit. Year by year more and more of the natives fitted themselves to replace any gaps left in the roll of the Englishmen. And they did this, let it be borne in mind, at the rate of at the most an anna to the English shilling (1½d. to 12d.), if not that of an anna to the rupee. There has thus been a steady decrease in the working cost of the Indian railways, due to the continually increasing proportion of low-priced but efficient labour, while during the same time the working cost of the English lines of railway has been, on the whole, increasing. This is a weight of handicap against which no resolution and sturdy energy on the part of the Englishman can contend. Except in rare cases, the Indian railways must be regarded as a market once open for skilled English labour, but now almost entirely closed against it. We might carry this comparison much further; but prefer to rely on the past, rather than to anticipate the future.

Indeed, the above was only just written when we observed a notice carrying this competition a step higher. Young Indians, we are told, are sent to this country for technical education at Cooper's Hill College, and such is their proficiency that in a few years we may expect that the engineers, as well as the workmen, of the Indian railways will be natives of the Peninsula.

The manufacturers of England are awaking to the fact that it is in the cost of transport, whether of raw material or of finished goods, that they are now being distanced by the foreigner, and that it is in this item that the greatest reduction is to be made in the expenses of production. And it is to be remembered that it is in the physical conditions to which England owes so much of her power and wealth, —the great extent of her coast-line as compared with that of most Continental countries, that her reserve of power now lies,—so only that she will make use of it. In the proportion of our coast-line to the area of our country we have an element of wealth of which none but ourselves can deprive us. Taking the area of England and Wales at 58,351 square miles, we find that the coast-line which bounds that area is 2,400 miles in length, or above 4 per cent. on the area. We have not an exact account of the length of the shore line of France at hand, but cannot make it come to more than 1,560 miles by measurement on the map. The area of France is 204,000 square miles, which would give 0·7 per cent., instead of 4 per cent., or only about one-sixth of the accessibility to foreign traffic. In order to be safe, let us call it one-sixth. Then, if we take the cost of inland water transport at three times that of sea transport, and that of railway transport at three times that of canal transport, we can see what a pull the English has over the French manufacturer, if the former makes the best of his position. On the coast, it may be said, all countries are equal. But while (due regard being paid to the nature of the coast, and the existence of harbours) this is true as to seaborne traffic, it is not true as to manufactures. On many parts of the coast-line of England and Wales, the coal beds dip actually into the sea. But Mons and Valenciennes, on the west of the great coal basin of the North of France, are 50 miles from the sea; and over the greater part of the area of France the coal necessary for manufacture has to be carried long distances by canal. Thus, if our insular position gives us an advantage of five to one, our method of competing with water transport by railway, and making up the loss thus incurred by charging heavy railway rates inland, where no competition exists, now more than neutralises that great advantage. If we make the best of our inland waterways, the result will be an advantage, as compared to France, of fifteen to three,—or a gain as five to one, in the cost of inland transport.

The builder, the navigator, the excavator, the bricklayer, and the whole host of trades that directly or indirectly contribute to the construction of railways, are not to be starved in 1883 at all events for want of projects. Application is made to Parliament to authorise the construction of 1,770 miles of railway, at a cost of upwards of 76,500,000*l.* This is at the costly rate of 43,220*l.* per mile, or from 7 to 8 per cent. above the average cost of existing railways in the United Kingdom. Nearly one-third of this length, or some 530 miles, however, are to be constructed by existing companies, at a cost of over 53,000*l.* per mile, and the thirteen miles which the London and North-Western Railway seek to add to its system are to cost 2,133,000*l.*, or the large price of 164,000*l.* per mile. It may very much be questioned how far the true interests of either the shareholders or customers are to be secured by works carried out at such disproportionate cost. The railway companies plead, in order to justify raising their rates, that they have laid out such enormous sums on their stations that no traffic will repay them unless a special charge is made for "terminals." The London and North-Western Railway Company must either have very firm faith in the complaisance of Parliament or some as yet undiscovered justification, if the account be true which speaks of the construction of thirteen miles, and the increase of capital by 2,133,000*l.* But we apprehend that in this sum must be included the cost of those enlargements of roadway stations which we have recently seen going

on over the whole distance from London to Manchester.

Looking at the matter, then, in block, as far as accessible information will enable us, our railway system stands thus:—

	Miles.	Capital.
At the end of 1881	18,180	.....£745,519,000
Proposed last Session..	1,376	 81,500,000
Now proposed.....	1,770	 76,500,000
	21,326	£903,519,000

The figures of the "Railway Returns" show a steady increase in the cost of construction per mile, from 40,613*l.* at the close of 1880 to 42,367*l.* for the present date, supposing the new lines to be completed for the estimates. This constant increase in cost per mile is the scourge of the English shareholder. From 1867 to 1883 the increase has been no less than 7,113*l.* per mile, or more than 20 per cent., amounting to 140 millions of money. The French railways, on the other hand, which pay 5·56 per cent. against 4·28 per cent. on the English lines, attained their maximum cost more than fifteen years ago, and actually cost 2,800*l.* per mile less in 1877 than they did in 1867. We fear that the outlay proposed for 1883-84 will be more to the advantage of the contractors than to that of the shareholders.

London is to have its share,—if Bills become Acts,—of the railway expenditure for the next few years, 3,000,000*l.* being asked for in order to construct a new Mid-Metropolitan railway, of 4½ miles in length, from Lancaster Gate, Uxbridge-road, to the Minories, as well as a further sum of 366,000*l.* as addition to the authorised capital of the Charing Cross and Waterloo Electric Railway. There is a matter for very grave consideration as to these urban schemes as far as relates to the value of house property in the metropolis. That the construction of a railway under a road causes a serious deterioration in the value of the houses fronting that road it is unnecessary to argue. Let those who have any doubt make a little tour of inspection, and they will return with their doubts removed. The public welfare may demand such a sacrifice. But then the public, it seems to us, have small claim to enjoy the advantage they may acquire at the cost of the householder. And when it is not the case of the State coming in to make a great military or commercial route, but that of a private association seeking Parliamentary powers to make a line in order to invest money at a profit, it does seem that the claim of the householder to equitable compensation is nothing but simple honesty. Now, take as little ground as possible for the construction of a tunnel, or, rather, of a subsurface gallery, and it will amount to from 5 to 6 acres per mile. For 4½ miles this comes to 25 acres. But the Mid-Metropolitan only propose to purchase 3½ acres of land, and the quantity points to the conclusion that this must be for stations and approaches alone. On what ground of justice or honesty can this Company ask Parliament for power tantamount to making them a present of 25 acres of land, taken, at their own choice, as the crow flies, through the very heart of the metropolis? If a mere way-leave were required, as for a gas-main, a water-main, or a subway for the communication of the telegraph and telephone companies, there might be an argument in favour of a moderate charge. In point of fact, such way-leaves are paid for very handsomely. But such companies might urge that the inconvenience that they would cause would be temporary,—that the public advantage would be enough to sanction a claim, though made directly in private interest,—and that, these lines once laid down, no neighbour would be the wiser for this circumstance, unless he were told of it.

When, on the other hand, a ponderous locomotive, weighing 42 tons and upwards, propelling 100 or 120 tons of train, whirls along at the rate of forty-five miles an hour, and the use of powerful breaks brings this vast momentum to a stop in a few yards and a few seconds, the case is very different. It would be quite unnecessary to explain to the most stupid person how near the subterranean railway came to his cellar, or to indicate to him the hours,—or rather the minutes,—at which the trains went by. Compensation for such disturbance it might be hard duly to assess. But that is surely no reason for inflicting on the unfortunate owner or occupier disturbance of a very grave kind, without any compensation at all.

We do trust, in the interest first of common honesty, and next of urban architecture, that there may be a resolute and organised accord amongst those persons whose property is thus unscrupulously invaded. We are not, at the present moment, prepared to offer any opinion as to the desirability, on public grounds, of the construction of a fourth east and west railway through London. Many elements have to be taken into consideration before that decision can be properly made. And until the Metropolitan District Railway carries a traffic equal to that of the parallel (or opposite side of the circle) metropolitan line, we think such an intermediate route may probably be, at all events, premature. But if and when a new line is demanded by the public convenience, let it be made at the cost of the promoters, or if needful, at that of the public; not, in great part, at that of the innocent individuals who happen to have their dwellings on the line of route.

It is a remarkable and, we may add, an unexpectedly hopeful feature of the *menu* for the present session, that ten Bills, authorising the expenditure of nearly a million sterling on forty-nine miles of railway, are Irish, only about a quarter of the capital being required for extensions of existing lines.

Tramways, again, in spite of the failure of the existing lines to exceed (as an average) a five per cent. dividend, are not overlooked. In Birmingham, Halifax, Macclesfield, Portsmouth, and Wakefield, new tramways are projected, while numerous extensions are also proposed. Let all whom it concerns give heed to the proposal to lay tramways over Blackfriars and Westminster bridges. We may not think that the plan is more questionable than elsewhere, but at all events it should not be carried out by surprise. In July last there were 444 miles of tramway open to public use in England, and 564 in the United Kingdom. The average cost we make to be 14,640*l.* per mile, which, considering the capacity for traffic, is proportionately as high as that of the railways in the United Kingdom.

Together with new railways and new tramways comes the scheme of what is called the Lancashire "plateway," the estimated cost of which has grown in about two months from 36,000*l.* to 56,000*l.* per mile. This increase of estimate is probably due to the fact that the original propositions, when brought under the light of hostile criticism, have been looked somewhat more closely into, and that the great cost in working which would attend on the use of gradients like those of the ordinary highways has been so far brought home to the projectors as to lead them to reconsider their first idea of dispensing with costly earthworks. As it is, in what respect a "plateway" costing 56,000*l.* per mile can prove a cheaper means of communication than a railway costing 40,000*l.* a mile has got to be shown. One thing is sure, that it will require a traffic considerably larger than that of the most frequented goods line in England, the Lancashire and Yorkshire, to allow of a charge for conveying a ton for a mile lower than ¾d. for interest of money alone. When working costs are added to this, matters must be conducted far more economically than is the case on our railways in general, for a ton of goods to be moved for less per mile per ton than 1½d., paying only four per cent. on capital. In fact, under another name, the scheme resolves itself into one for making a costly line to compete with the five railways that now share the traffic of the district. This view of the case seems to have been so far brought home to the people of Lancashire that when the time came for the examination of the fulfilment of Standing Orders the necessary deposit of money had not been made for the "plateway" scheme.

The Late Edward Duncan, Water-colour Painter.—The remaining works of this eminent artist are to be sold at Christie's, on this Friday, the 9th, the sale being continued on the 10th and the 12th. They consist principally of sketches in water-colours, taken on the spot; some sepia drawings, and pencil sketches; a few finished drawings; and several finished drawings, presents from friends. Duncan, though in the early part of his life he had a hard struggle, never had recourse to pot-boilers. His sketches are as true as nature, carefully and patiently executed, — scenery, ships, marine subjects, river, sea, and figures,—all equally good; and we have no doubt will one day be as anxiously sought after as Cox's are now.

"LES ÉGLISES CIRCULAIRES D'ANGLETERRE."

UNDER this title we have a book by a French architect,* which aims at giving a succinct account of the four circular churches existing in England, accompanied by a brief summary of the other churches of this type still existing beyond the limits of France. The main part of the matter of the book was originally contributed to the annals of the "Société Centrale des Architectes" of France.

We are glad to find a member of the profession across the Channel giving attention to the four especially English monuments of this class, and placing before French readers a good though brief account of them; more especially as we doubt whether Continental architects generally appreciate the peculiar interest of these English examples.

M. Chas. Lucas gives plans of the four churches with which his pages are principally occupied, but no sections or views, except one small interior perspective of the Northampton church, which had perhaps been better omitted, as, unless our memory of the interior deceives us very much, this conveys an incorrect and very inadequate idea of its effect. The plan is, however, the main point in comparing buildings in reference to general type of form and arrangement, and the plans of the four churches specially referred to are given on a large scale and very completely.

It is a strange bit of architectural history of which these four churches form a portion. The circular form of building is so seldom convenient for practical purposes that it stands out as a form specially chosen for symbolical or architectural effect, and traceable by its marked peculiarity through every phase of architectural history in which it has appeared. And very strange it is to contemplate the manner in which this circular form of temple has changed its meaning and significance, while retaining through so many architectural stages the same main characteristics of form and plan. The association of the form with the idea of a monument or tomb seems to go back nearly as far as architectural history will take us, chiefly, however, on the Roman line of descent. M. Lucas cites certain instances of Greek circular temples, including in the list the monument of Lysicrates, which, of course, is not a temple, though it has the same architectural treatment on a small scale which would have been given to a circular temple: its form is probably due more to artistic than to any other considerations; it was a good and elegant shape for a little structure put up solely as a monument and not for any practical use. This, however, is probably outside the pedigree of the Templars' churches, for which we must go to Italy rather than to Greece. From the Etruscan circular tombs to those of Pagan Rome, then to the tombs built by the Christian Constantine on a nearly similar model, including the one round the supposed site of the Holy Sepulchre, and which gave the new or Christian sanctity to the circular form; then the Romanesque baptistery churches carry out the model further in the architectural sense. And whilst there is this architectural descent from far-off Pagan types in the shape of the building, the name of the most prominent example in this country is derived from the principal sacred building of the old religion which stands out conspicuously as anti-Pagan, and which alone of all ancient religions is regarded by many as having a definite historical connexion with Christianity. The knights quartered at Jerusalem in the Crusade period had their quarters in the Temple buildings or on the site of them, and they take the name of their order thence, and give the name in turn to a church on the banks of the Thames, and to a railway station in an adjoining tunnel; and "the Temple" has now become the name of a locality around a church which derives its architectural form originally from that of a Pagan tomb, its hereditary sanctity from the supposed burial-place of the Founder of Christianity, and its name from the temple of Solomon. Names in their relation to history are often curious, but none, perhaps, more so than this. And still more curious is it to reflect that the peculiar sanctity which, since the time of Constantine, has attached to this form of church, is derived

* "Les Églises circulaires d'Angleterre, précédé de Notes sur les Temples Ronds de la Grèce et de l'Italie, et sur l'Église de St. Sépulcre de Jérusalem, et suivi des Églises circulaires encore existantes." Par Charles Lucas, Architecte. Paris: Ducher et Cie., 1882.

from traditions about localities connected with the crucifixion and its sequel which were probably pure assumptions at the outset, either totally legendary, or unsupported by a single shred of historical evidence. On such strange and inadequate foundations was this piece of architectural sentiment reared.

The four churches which arose out of this sentiment in England, or the only four which are preserved at least, present somewhat interesting varieties of detail, though on the same general model. The Cambridge example shows the circular plan in its simplicity, both in the outer wall and in the interior arcade. The vaulting of the interior space, within the arcade, is a curious instance of the *naïveté* of the early Gothic builders. It is a quadripartite vaulting compartment; but as the intercolumniations face the cardinal points of the building, and the vaulting-ribs spring from the piers, it is central with nothing else in the design, but stands askew and quite independently. In the Northampton church we have the circular external wall, while the arcade forms an octagon, with a symmetrical vault, of which a rib springs from each pier. The domical treatment of the aisle is, as M. Lucas observes, a most remarkable feature, quite un-Gothic in its appearance, according to the usual practice of Gothic architecture, and looking like a direct reminiscence of the original Etruscan interior; though, of course, the construction is different, being a real arch instead of the Etruscan sham arch, with its horizontal courses; and, so far, a decided advance upon the ancient type, as scientific and logical building. In the Temple Church we have got very nearly towards pure Gothic construction, with an arcade of six- (not eight) shafted piers, and a symmetrical system of vaulting. Our French author regards this building, not incorrectly, as peculiarly adapted for the display of the progress from Romanesque to Gothic principles. Some persons in England will hardly join in his enthusiasm in regard to "les réparations qui ont donné à l'église du Temple la splendeur qu'elle offre aujourd'hui," which, according to the French text, are due to the celebrated architects, "Sidney Smirke, Decimus Burton, et *Nath*,"—a curious instance of the difficulty which French writers, even one so well grounded in English as M. Lucas, seem to find in dealing with English names. Mr. Smirke had a good deal to do with the building at one time; we were not aware that Burton or Nash had worked on it. The name of Mr. St. Aubyn, as the last restoring architect, should hardly have been omitted. The church of Little Maplestead (not "Maplested," M. Lucas) shows in its circular portion the same general scheme as the Temple,—the octagon, with a six-sided arcade in the interior, but with the addition of a choir with an apsidal termination. Mr. Fergusson calls this "a little St. Géréon," referring to the celebrated Cologne church, though the resemblance, which is considerable, can hardly be regarded as more than accidental.

Added to the remarks upon the four English churches is a useful list, with brief comments, of the other known circular churches of Europe. We have to thank M. Lucas for a little book which may be acceptable to English as well as to French readers, as furnishing a succinct parallel of the main features of our four Templar churches.*

DUDLEY GALLERY ART SOCIETY.

The Dudley Gallery appears to have resolved itself into a Society and taken a new departure, which is signalised by a rather interesting exhibition, including the work of one or two artists of ability with whom we have not previously been familiar there. Among these Mr. Henshall takes a good place with works showing a rather varied range and a distinct and individual style of execution. "Our Village" (96) is an evening scene in twilight, giving a group of cottages and a church, with a meadow foreground, pervaded by a soft uncertain twilight, the effect of which is very well given in the artist's peculiar manner. The same manner of manipulation, in which details of colour and texture are subordinated to a broad and slightly monotonous effect, is exhibited in a perfectly different stamp of work, "Behind the Bar" of a public-house (112), a work painfully tragic in its realisation of various types of bar-haunting drinkers. We have seen this design in some shape before; possibly in one of the "black and white" exhibitions; it is well worked out, and might be said to be painfully true to nature. Among other contributors whose works are not too familiar is Mr. J. Smart, R.S.A., whose two landscapes, "Loch Lubnaig" and "The Lachan Dhu" (158, 172: both in Perthshire), are remarkable for truth of tone and a broad, powerful, and truly artistic style. Mr. Arthur Severn has one large work, "St. Paul's from Westminster, Sunrise" (230), which is a triumph of effect in light and colour and atmosphere, and one of the most powerful and successful of watercolours on a large scale that we have seen for some time. Mr. Walter Severn's "Close of a Summer's Day, Loch Lomond" (365), is also a fine work, but not quite free from "make-up"; the water is somewhat hard and mannered too. His "Inchlonaig, Loch Lomond" (90), exhibits masterly treatment of foreground in the shape of the beach and rocks and shallow water, but here again the main expanse of water strikes us as artificial in treatment and effect. Mr. J. W. B. Knight's two views in "Otterton, Devon" (9, 127), are excellent bits of the picturesque of a village street. Of Miss Edith Martineau's very highly-finished figure studies, the best perhaps is "Barberry" (46), though not the most taking in sentiment; but the face and neck are beautifully painted, with a conscientious care that courts the minutest examination. "Girl Feeding a Puppy," by Miss Virginia Adey (63), is another piece of very conscientious study, in this case entirely prosaic, which Miss Martineau's figures certainly are not. Mr. H. M. Paget's "Painting Sketch for Mural Decoration" (79) is a well-composed and effective group, in which Painting is symbolised by a female figure seated in the centre, flanked by other figures on opposite sides, which seem to represent sacred and profane art, or the art of the Church and the studio respectively. Mr. Melville's "Waiting an Audience with the Pacha" (252) is a clever, though rather too sketchy, drawing, bearing the impress of truthfulness of character in the groups of figures in various degrees of grotesque patience or impatience. Mr. Hemy's bright and broadly-treated sketches, of which "Bowling along" is the best, may be contrasted with Mr. Brett's remarkable little miniature, in which body colour is freely used, with great certainty of handling, called, "East Coast of Sicily, looking towards Catania." Among various other works are some good examples of the treatment of buildings, especially Mr. H. Goodwin's "Interior of the Church of St. Francis at Assisi" (74), and Mr. Melville's "The Call to Prayer,—Modern Mosque, Bagdad" (265), where the painting of the architecture is the chief interest of the work. The same kind of interest, in a simpler manner, belongs to Mr. Bailey's "A Potter's Shop, Cairo" (37), Miss Forster's "St. George's Tombland, Norwich" (53), where the old church, with its contrast of grey stone and patchings of red brick, is beautifully painted, Mr. Varley's "The Centre Gate, Tetuan," (88), Mr. Bell's "Old House at Rye" (323), Mr. McDougall's "Old Cottage, Newton-le-Willows" (352), Mr. Franz's "The Villa d'Este" (371), Mr. Spiers's "A London Suburb" (492), and Mr. Bell's "The Parade, Morecambe" (524). The last-named will bear very close examination. We have seldom seen a better-wrought piece of topographical landscape. There are a good many other good drawings, and the gallery will probably be all the better for having got out of a groove, in which its former exhibitions ran a little too decidedly. We do not see the sense or advantage of the new form of catalogue, with narrow longitudinal pages, instead of upright ones; it necessitates more turning over than a square form, and seems in no respect more convenient.

Assistant Harbour Engineer, Dundee.—At a meeting of the Works Committee of the Dundee Harbour Trustees, held last week, it was resolved that the list of candidates for the situation of assistant harbour engineer be reduced to three, when the following gentlemen were duly nominated and seconded, viz., Mr. M'Culloch, Dundee; Mr. Kyle, Glasgow; and Mr. Aytoun, Fraserburgh; and it was agreed to submit these three names to the meeting of the Board, held on Monday last, when Mr. Kyle was elected.

SALE OF FLAXMAN'S DRAWINGS.

Considering that works of the same class by Flaxman have been twice before sold in large numbers at Christie's, it is satisfactory that in the sale which took place there last week, the large collection of the remaining sketches and models belonging to the Denman family realised fair prices, the total amounting to 2,292*l.* 16*s.* 6*d.* It is gratifying also to see that there is still appreciation for high sculptural qualities in England, although it is a subject for great regret that this is not also evinced by encouragement to the native sculptors of to-day. Sculpture has been alleged to be dead in England; but this is far from being the case. There is plenty of talent in this art in this country, and it is only the due encouragement of it that is dead. There is abundance of seed in the ground to produce vigorous plants, of which the nation would be proud, but there are no genial showers or fostering sunshine to give it life. We are speaking, of course, of the higher branches of this art, and not of busts and portrait sculpture, for which individual self-appreciation and private affection will always afford some employment. There is no Earl of Egremont now to go round to the studios of the chief sculptors to give them simultaneous commissions for poetic works in a liberal spirit, accompanied with ample remuneration. The grand group of Michael and Satan by Flaxman was one of those thus ordered. Suppose it had to be commissioned now, what chance would there be of its being realised in marble as it stands now at Petworth? Since the early part of this century the prospects of sculpture in this country have been sadly impaired. At that period the emoluments of the sculptor exceeded those of the painter. How is it now? Assuredly more sculptors have to become bankrupt than those who make even a competent income. The late Sir Gilbert Scott, who, by his profession, was much brought into communication with sculptors, has left it on record that it was so only a very few years ago, and there are no signs of improvement as yet. Isolated cases may be brought forward in which fair remuneration has been given for sculpture of the epic and poetic class, of which the "Athlete and Python" of Sir Frederick Leighton, and the "Moment of Danger" by Mr. Brock, which were purchased with the funds of the Chantrey Bequest, are examples, but these only by their prominence exhibit the dearth of encouragement around. Moreover, these works were purchased from the legacy to art left by a sculptor who had made his fortune by his own, now many years ago, and were neither national nor private commissions.

Fortune has been peculiarly severe upon sculptors of late years. The High Church movement has caused nearly all the memorials of respect and affection in churches, which formerly were executed in marble, to take the form of painted windows, and thus the most lucrative branch of sculpture has withered away, and the ambitious sculptor has no funds derived from this source to apply to realising in marble any of his own poetic and cherished imaginings. Every step in sculpture is attended with expense, and how can the poor and perhaps embarrassed student be expected to get up costly models, and execute them in marble and bronze, to show what he can do? If Flaxman could look down on the present state of sculpture here, he would recognise no lack of ability in its followers, but a grievous want of encouragement from those quarters whence it might be expected, and especially from the public funds of England herself. There is no European country in which the due encouragement of the higher branches of sculpture are neglected as they are here, and even from our younger cousins across the Atlantic, we believe we are safe in saying, come more countenance to and payment for poetic works of sculpture than from the mighty and rich in our own land. We have many and large schools of art in this country substantially supported by extensive grants from our national resources. In these the study of sculpture is fostered, but when fostered up to the power of production, where is the remuneration to the artist to come from? The grub is cherished, but the butterfly is starved. Far different is this in France, where the annual national grant for education in art is much exceeded by that for its production when the student is educated.

The country which produced Flaxman, who has now a world-wide reputation as one of the highest spirits in art that ever existed, should

* It is right to note that the book is avowedly founded on the materials afforded by John Britton, and is dedicated as a memorial of him to his two intimate surviving friends, Professor Donaldson and the conductor of this journal.

not forget that there may be "mute inglorious" Flaxmans among us now, whose poems in marble may never see the light unless fostered by due encouragement and support, and truly it appears to us a grave national shortcoming that the higher departments of that most noble and lasting art,—sculpture,—should have fallen into so neglected a condition in a country which is supposed to have a peculiar regard for what is enduring and permanent.

In view of the lofty qualities of the art of Flaxman, these are some of the thoughts which naturally arise in regarding the exquisite designs in the collections of his works which have lately been exhibited at the Royal Academy and elsewhere, and those which were sold last week at Christie's, various of which we are glad to see have fallen into good hands, and that some have been purchased for the Museum of the University of Cambridge. Flaxman was a most kind Mentor and friend to the young student, and he would grieve to see how little prospect there is for the follower of the branch of art he loved, at present in England. By the example of his own works, and by the admirable lectures he composed and delivered, he did his utmost to benefit the rising generation of sculptors in a future which he hoped might offer them a fair and full field for their energies. What would he think of it now?

MEDIÆVAL CYPRUS.

The island of Cyprus has had a marvellous history, both ancient and modern. Assyria, Egypt, Phœnicia, the Ptolemies, the Roman Empire, Mediæval England, the Knights Templars, the House of Lusignan, the Venetian Republic, the Turk, and now England again, have each in turn exercised lordship over this beautiful island,—an island with so many luxurious associations as well as practical interest. In the lovely mythology of Greece, Cyprus was the favourite home of the foam-born daughter of the sea, Aphrodite, whom only Roman coarseness and crassness identified with the goddess of venal love and of prostitution, the Latin Venus Vulgivaga. The Cyprian temples and worship of Aphrodite were famous in the old Greek world, and the half-slang and now almost obsolete adjective, "Cyprienne" was a vestige of the carnal associations of the name. "Copper," again, is derived from *Kupros*, which, of course, is the Greek form of Cyprus, and which is perpetuated in the name of a compound substance well known to chemists, cupric acid. The actual or exact connexion of the words cypress, the tree, and of the island, is, perhaps, questionable. But crape is certainly a corruption of cypress, as we learn from Shakspeare; while Cyprus wine was a choice liquid, much appreciated by our ancestors. Nor should we forget that Cyprus has an august association with early Christian history, since St. Barnabas the Apostle was a Cypriote. Another ancient name for Cyprus was Ceraste, from its horn-shaped promontories, those of Paphos, Salamis, Amathus, and Cytherea. The same adjective reappears in the name of those horned and venomous serpents, known as *cerastæ*, which are mentioned by Lucian, the Greek satirist, by Lucan, the Roman poet, and also by Dante in the "Divine Comedy." Another name, again, for Cyprus was Macaria, or the Blest Island. This island is sixty miles distant from Syria, thirty from Cilicia in Asia Minor, and 300 from Alexandria. Cyprus fell to the arms of Selim II., a Turkish sultan who was believed, contrary to his religion, to covet the luscious blood of the Cyprus grapes. On July 25th, 1570, the Turkish army invested Nicosia. After no less than fifteen fruitless assaults, the enemy took Nicosia by storm on the fatal September 9th, of the same year. No less than 15,000 Cypriotes were put to the sword; the rest were made slaves. The appearance of a comet was accounted a celestial presage of the impending doom of this bright island of the Mediterranean. "One ship of the Turkish fleet," says Sagredo in his "Monarchi Ottomani," "which was destined to give joy to the Sultan's heart, contained a precious freight, for on board it were the flower of feminine beauty from the captured island in the form of marriageable damsels. Arnalda di Roca, a woman more worthy of a crown of glory than of a victim's chains, and free in soul, although a prisoner in the body," set fire to the vessel which contained her, and perished in the flames that also devoured her would-be ravishers.

Nicosia, which is among the chief cities of Cyprus, rises "from the centre of the vast plain of Mezzarea, being distant twenty-four miles from the sea on the side of Salines, fifteen on that of Cerines. It is divided by the river Pedeo, which is fed by many neighbouring streams and crossed by various bridges. It is surrounded by a chain of mountains which bear on their crest the mountain of Santa Croce, the highest of all, and one of the four [rival] Olympi, each of which claims to be the dwelling of the ancient gods. It is fortified by a wall of circuit with *terrapieni* or gabions, fosses, and gates for sortie, and is fortified by eleven *baluardi reali*, one of which is called *Costanzo*. The city is made beautiful by its palaces in the Italian manner, its piazzas, its monuments, and its churches. Among these churches are the greater Saint Sophia." ["Saint Sophia," of course, being Christ Himself, the Power and Wisdom of God, and not any canonised woman, or any mere *personification* of the attribute of wisdom, as has been erroneously supposed], "a Gothic-Byzantine building, the work of Justinian, and now used as a mosque; and St. Dominic, which contains the tombs of many princes and magnates of the house of Lusignan, a race of no common blood, who numbered among their scions the Counts of Roca and of Carpasso, and the Lords of Said and of Suro."

Helena Palæologa, a daughter of the tyrant of the Morea, a kind of Greek equivalent of the Italian *podestà*, was the wife of John II., the fourteenth king of Cyprus, 1432. This fierce-hearted lady became jealous of Mary of Patras, the most beautiful woman in the whole archipelago, and with whom the king had fallen in love, and caused her nose and ears to be cut off, and sent James, a son of the king by poor Mary, to the gallows. She then married her own daughter, Carlotta, to John, second son of the king of Portugal, and as her son-in-law failed to carry out her wishes, she contrived in 1456 to poison him.

Another notable incident in the region of Cyprus was "the famous battle of Lepanto," fought by Don John of Austria, of whose victory several commemorative pictures exist, "and which was begun near the rocks formerly called *Echinadi*," *i.e.*, the Hedgehogs, "but now named *Curzolari*. This battle, after prodigies of valour, ended in the total discomfiture of the Turks on the 6th October, 1571," a battle considered of sufficient importance to the Christian cause to be to this day commemorated in the Roman Breviary, "just a year after the sack of Nicosia and the capture of Cyprus. The news of this defeat of the enemy, which was a true and solemn feast of rejoicing throughout Europe, was sent with marvellous rapidity by Vaniero, and reached Venice hard by the midnight of the same day. . . . . The name of *Propetides* was given in classical antiquity to certain women of the city of Amathos, who, for having despised Aphrodite and denied her divinity, were punished by the goddess by being rendered insensible to honour or shame. . . . A Cypriote legend tells us how the mother of Constantine,—St. Helena,—when returning from Jerusalem by sea, after her discovery of the True Cross, was tossed about in a terrific hurricane in the Gulf of Settaglia, which had then an evil repute among sailors. Seeing the danger, St. Helena flung one of the sacred fragments into the stormy waters, and from that time henceforth the troubled sea became calm and navigable."

Another story, this time a tragic one, is the tale of the heroic and martyred Bragadino, to whom the Venetians subsequently erected a monument. This gallant defender of Famagosta met with his death in a manner which an historian thus details:—"By order of Mustapha, Marcantonio Bragadino was conducted to the front of the Piazza perfectly naked, with his hands and feet tied with cords, and his face turned to the column at which they used to chastise malefactors. There, while Mustapha himself stood gazing at this act of barbarity, he was flayed alive. In the midst of this hideous torment the man's constancy and fortitude shone forth. He never sighed or wept. Comforting himself by faith in God, and love towards Christ his Saviour, whose Holy name he continually invoked, he lived until his tormentors reached his middle, and then breaking forth into Divine prayers and praises, he surrendered his unconquered spirit to Eternal God, and exchanged mortal pain for an immortal and blessed life. On this, the barbarous conqueror, not content with having beheld the hero with his own eyes lacerated and mangled under the executioner's knife, was fain even to insult his corpse. He fastened it to the ropes of the flagstaff on the piazza, and turned in wild beasts to mangle it," and then, with revolting details, "he had the remains carried in contempt through the city. Finally, he attached the remains to the yard-arm of a ship, and after exhibiting the hideous spectacle all along the coasts of Cilicia and Syria, he brought it to Constantinople, that no place might be left which had not witnessed the evidence of his perfidy and cruelty."

For most of the above particulars I am indebted to the Italian notes at the end of the beautiful poem called "Arnalda di Roca," which was one of the earlier literary efforts of that accomplished poet and patriot, Signor Aleardo Aleardi, whose death was one of the greatest losses to contemporary Italian literature. Aleardi was, perhaps, the greatest poet and man of letters which Italy has produced since the death of Pindemonte and Cesare Cantù, and of the crowning genius of modern Italian poetry, the illustrious Alfieri.

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FRENCH FURNITURE.

The extraordinary prosperity of the building trade in Paris during the last few years, and the consequent activity that has been given to its many kindred industries, has had undoubtedly very much to do with the increase of the ill-made furniture that too frequently shocks us in the shop-windows and in the houses of the Parisians. It is not merely the cabinet-makers of the Faubourg St. Antoine, whose hasty and showy work is ever trying to attract the world of purchasers, who are to blame for so much veneer and surface work on unsound foundations, but the producers of the more expensive furniture, which makes so feeble an effort to compare with the more honestly-constructed objects of the past. With much of the furniture that is made in London at present, there is far less to complain of than is the case with that produced in Paris and Vienna. It is, indeed, but very lately that Parisian workmen were complaining that England and other countries were interfering seriously with their trade by their successful competition, and by the superior beauty of the work; and we do not wonder at this, for as long as Paris with characteristic complacency adheres to a style of furniture that is calculated to please alone those whose taste is blinded by a savage love of shoddy splendour, they cannot expect to retain their old celebrity for the sole possession of that kind of knowledge which is called "taste," and which, indeed, is nothing more than, or rather which is, in fact, only the result of, a knowledge of the well-studied efforts of past thinkers and workers in the direction of the beautiful.

Not a day passes in Paris that the *commissaires-priseurs*, the auctioneers, do not dispose of hundreds of lots of modern furniture such as would find, if any purchaser at all in London, those only who were about to furnish a tenth-rate hotel or boarding-house, calculated in the mind of the speculator to attract the colonial, the Continental, or the uncultivated American stranger, and although it is not uncommon for the critic in London,—and who nowadays is not a critic?—to quiz, or at least to cavil at the want of taste in the furniture of our friends' houses, it is safe to say it would be impossible to find, either in Belgravia, Tyburnia, South Kensington, or Villadom, any single instance of exaggerated vulgarity in furniture such as is commonly to be met with in self-applauding Paris. When, as is now and then the case, we see at an exhibition in the Palais de l'Industrie, or in some expensive shop in the neighbourhood of the Rue de la Paix, some lovely piece of artistic furniture, in taste sufficiently sound to please our modern English sense of right, it will be found that the object is a *tour de force*, the design or the combination of some ambitious furniture-maker, and, as is not uncommonly the case, the object may in reality be nothing more than a very thorough restoration of some fine old specimen of a better day, the cost of which to reproduce would seriously frighten the ordinary purchaser.

We hear a great deal, we have for some time heard a great deal, about how furniture and the whole of our surroundings need not be costly in

order to be beautiful, that good forms cost no more than ill-shaped, and so on; but really good furniture, it cannot be concealed, is an exceedingly costly luxury. The old Windsor chair theory is not satisfying, and picturesque, useful, and well-constructed as it undoubtedly is, it but ill compares in comfort with a well-cushioned *fauteuil* or ordinary easy-chair, a piece of furniture which we must at least give our French friends the credit of possessing in greater abundance than ourselves.

It is sad to reflect, but we fear the reflection suggests the irresistible conclusion, that cheap furniture will never satisfy the needs of our rapidly growing luxurious population, and so long as what is cheap to one person seems dear to another, and what one man can afford another cannot, there will be no end to the difference of opinion as regards the worth or the worthlessness of different kinds of furniture, but the costly, whenever it is the product of skilful art, must ever command the largest share of our respect. Artists, whatever may be said of their want of knowledge of business, have at all times contrived to find their way and to establish their workshops near to those markets that supply the wealthy with the artistic additions to their lives, and the artists have at all times possessed no mean estimate of their own services; if the artists of the past have failed in that commercial attribute of becoming rich, one element of which, apparently, consists in carefully admitting a certain amount of adulteration in some way or other into their work, it cannot be said, in spite of the prevalence of the many kinds of veneer that exist amongst us, that there are not in the present day to be found great furniture-makers who scorn to avail themselves of any improper methods or means of detracting in any way from the make or character of their production. Certainly there are furniture-makers in London, and doubtless in many other centres of industry, who, for a fair equivalent, will supply as perfectly well-designed and well-made a piece of furniture as can be pointed to as belonging to any other period of art.

How is it that throughout all the political changes through which France, but especially Paris, has gained so unenviable a reputation, "Louis XVI." and "Louis Philippe" furniture have held their own so firmly? The furniture, the style of which can be understood when it is described as belonging to Louis Philippe's period, has, we think it will be admitted, never perfectly satisfied any one who has the slightest pretensions to taste, yet it seems thoroughly to please a large number of French people, and, in fact, all those who have a desire to get up an appearance that they think looks substantial and rich; it is, indeed, precisely the kind of furniture with which we should suppose an imperfectly cultivated negro would surround himself under the impression that he was "doing the correct thing in swelldom." But the Parisians for two generations have continued, and still continue, most industriously to produce this style of furniture. Nor is it the only direction of manufacture; the Parisian shop-keepers have been for a very long time dependent on the patronage of the newly-enriched nations of the world for the enormous successes they have met with in so many branches of their ornamental industries.

As for the furniture of the so-called "*style Louis Seize*," like our own Chippendale and other furniture of the same period, it possesses many excellent qualities that not only entitle it to our regard, but, we must admit, also to our admiration; its beauty being of that peculiar order that allows it to agree and to harmonise with whatever surroundings it may be placed amongst; perhaps also we cannot help associating its possession with the idea of a period when to be the opposite of liberal combined so much that was highly respectable and even admirable, when it was a serious reproach to be a tradesman or to be common-place, when only the ruling few were surrounded by such furniture as now crowds the houses of all who can afford to purchase or to possess such luxuries.

Of course, the enormous prices that this kind of furniture commanded at the Hamilton sale astonished a great many people who were not aware of the very exceptional conditions under which such work had been produced, and still more unacquainted with the large sums originally paid, or promised to be paid, for the objects. When we take into account the difference of the value of money, the amount paid at Christie's was in many cases even less than the original cost of the objects, and some sad stories are still in existence of how more than one great furniture maker of the last century was, indeed, a loser by his transactions with his august employers. Gouthière, as we have shown in these columns, died absolutely in pecuniary trouble at a time when very large sums were due to him for the work he had produced for his patrons.

Of the kind of French furniture that the Jones bequest gives us so complete an idea, and of which we heard so much at the time of the Hamilton sale last year, the Louvre alone, among many other museums, possesses more than a hundred choice specimens, all of which, in construction, are absolutely perfect, if they may be said to be deficient in the simplicity of design and directness of purpose, which it has been said, — and correctly, — constitutes the great element of perfect art. Disposed over the many apartments of the Louvre, these specimens of the peculiar sort of furniture that pleased our ancestors in the two last centuries are exactly of the same character as those which attracted so many Londoners last year at the sale of the Duke of Hamilton's collection, and if there are few pieces of equal importance to the famous 10,000*l.* *armoires* of the Hamilton sale, it may without doubt be said that the French Government possesses at the Louvre, at the Museum of the Garde Meuble, the Élysée, and other Government offices, numerous other specimens of work in beauty, rarity, and costliness equalling, and in some even exceeding, any single piece that was sold last year at Christie's.

But the present time seems out of joint with the patient labour and slow processes through which such objects arrived at completion, and we very much fear that if the manufacturers of to-day were to inquire carefully into the history of the pecuniary transactions of their predecessors in the trade, they would be scarcely encouraged to emulate their methods. There was much, very much, in the old rules and traditions which regulated the laborious teaching and practice of the workers in the past that had to do with the perfection of their work, and when we consider how much miserably slight and ill-considered work is now produced, which, slight as it is, will still exist under some conditions to disgrace in the future the memory of this period, and how few ill-made pieces of furniture of preceding centuries are to be met with, we cannot resist the conviction that some very severe penalty should be inflicted upon the owners of those shops and centres of manufacturing industry from which such ill-made or badly-designed objects emanate. It is surely no chimerical or high-flown idea that the happiness and prosperity of the manufacturer of faithfully-constructed objects will be greatly in excess of his competitor whose aim is merely to make up and sell the largest amount of injured raw material, whether it be iron, wood, silk, or wool, or even more precious products of nature.

How is it, it may be asked, that the most favoured portion of society,—not exactly "the upper ten thousand," but the uppermost of the upper, and very nearly all those fortunate personages who have claims to some degree of certainty in regard to the possession of a remote grandfather,—how is it, we ask, notwithstanding our cry (a tolerably old one), that fashion and love of change influence us so much, that such people are unwilling to be surrounded with any furniture that is not either actually antique or is, at least, fashioned on lines suggested by old models? It is not that furniture improves by time like a few good things that a bountiful Providence has given to us, nor that age gives that peculiar charm that appeals to our memories of the past, but it is, it will be found, we think, in the fact that the possession of old work, and the acquaintance that possession brings with it, shows us how much entitled to our respect are the products of the industrious periods in which our old surroundings were made, and we find year by year and day by day that the thought and mind, the affection and the heart, put into the work have an existence as real and as abiding as the work of the writer, the architect, the sculptor, or the painter, whose labours and whose pleasures crowd every nook and corner of many of our dwelling-places.

How rarely in the present day does the workman care to put his heart or much thought, beyond that of the profit, into a piece of household furniture. How would the manager of a great furniture firm contrive to assess the rate that would satisfy the claims of the chairmaker who desired to be paid something additional for his work on the score that he had put his heart into his chair? We very much fear that he would be ruthlessly sat upon, and all such claims be thus crushed as altogether deficient in commercial soundness.

ARCHÆOLOGY AND ITS BEARINGS UPON IRISH AFFAIRS.

IT is curious that when affairs in Ireland are now forcing themselves so painfully on our attention, and occupying all the energies of our politicians, it should be found that the researches of archæology are capable of throwing a strong light upon the question. The study of archæology is not, we are afraid, usually regarded by the public at large as tending towards very practical aims; there are cases, however, where its teachings may be found to be of the utmost utility, and this, we take it, is one of these. Something more than the too often merely *dilettante* interest at present taken in these studies by the public, the press, and our politicians would, we suspect, singularly serve to elucidate many of the questions in connexion with Irish affairs which are at present employing so seriously the attention of our rulers.

How largely the difficulties of Egyptian affairs can alone be solved by an acquaintance with archæology and history in their bearings on the laws and character of the Egyptian population has long been apparent. It will be found that this is the case to an even greater extent in the existing situation of Ireland. Of this fact, apparently familiar to but a few of the many writers who daily give us their views on the question,—or, if familiar, never sufficiently laid stress upon,—we were a few days since forcibly reminded, singularly enough, by an admirable lecture delivered in Paris by M. Bertrand, the able director of the St. Germains Museum,* who, in his course on National Archæology recently commenced at the new École du Louvre, had occasion to refer to the Celtic organisation of Ireland in the Dark Ages. The bearing of this subject on the question of the national archæology of France might, at first sight, appear to be slight, but when it is remembered how purely Celtic are the origins of both France and Ireland,—how both countries, in the days when Cæsar invaded our cold North, existed under an almost identical Druidical religion, to study which it is absolutely necessary for the French archæologist to refer to the existing relics and traditions so numerous in Ireland and almost totally disappeared in France,—it can be understood that the connexion of the early civilisation of Ireland with that of modern France in its origins, warrants the French archæologist in making more than a mere passing study of the archæology of Ireland.

Where, however, the subject has its direct bearings upon our own sadly disturbed relations with the island we have so long affectionately termed our sister, is in the Celtic organisation of the early Irish society, and with it, of property generally, the traditions of which, with the ancient language, have been handed down to our own days with such tenacity. A better acquaintance with the conditions of this civilisation, so singularly well defined in Ireland at a period when the rest of Europe was plunged in a state of semi-barbarism, and so different in spirit and character from the conditions which now prevail over those portions of Europe conquered by Roman influences, will, we suspect, explain to our rulers the very great difficulties they have to encounter, and have so far encountered in the settlement of what we have now come to understand as "Irish affairs," and which can largely assist in pointing out to them the direction in which the needful reforms can be effected.

With a country which, like Ireland, has been less influenced by foreign invasion than perhaps any other portion of Europe,—no Roman foot was ever placed on Irish soil, and not till the twelfth century did the English make a feeble appearance in the country,—the tenacity of the ancient traditions can thus be explained; only within a few weeks past the evidence of the witnesses in one of the more important trials held in Ireland, had to be translated into English, and all familiar through travel or reading with the more remote portions of the

* A description of this interesting museum will be found in the pages of the *Builder*, vol. xxxix., p. 69 (July 17, 1880).

country are aware of the primitive character of the life of the inhabitants. Primitive, however, as are these people they have kept alive among them the traditions of the distant days when not only their country held a distinguished place in the history of learning and of art, but when in still earlier days their ancestors were ruled according to the laws of a purely Celtic civilisation. What the organisation of this distant civilisation was, the Irish archæologists have done much of late years to tell us, but there still remains much to be discovered. All in any way acquainted with Ireland know what a singularly-neglected and rich field of archæological inquiry is afforded by the innumerable ruins scattered over the face of the country. To this day the traditions of their past are far from extinct among the people; indeed, as has been amply shown, they are the cause of no small share of the difficulties our home Government meets with in Ireland. The Irish are, in fact, a Celtic race with purely Celtic traditions, traditions which are still full of life. Our English rule, founded on an entirely different set of traditions, finds, therefore, the utmost difficulty in gaining any hold on the people proper. The traditions of the original Celtic organisation of clans, each with its chief, and the land, not belonging to any one individual, but the property of the whole tribe, are, it will be seen, very different to the traditions of our feudal society when the land was in the hands of a series of absolute masters to whom all their tenants were but slaves, to be treated as their lord pleased. The researches of archæology prove to us that many of the features of the original Celtic organisation of Ireland lasted till comparatively recent days; the memory of the great banquets in the halls of Tara, which has inspired so often the muse of the Irish poets ("The harp that once in Tara's halls" is familiar to every one) has never died out, and the traditions of those days will foster yet for many a generation to come the feelings of independence which in reality constitute the chief cause of difficulty in treating the claims of Ireland.

It is an old proverb that lookers on see more of the game than the players. Foreign nations are, with an impartiality which must be absent with us, able to look on at the efforts of our rulers to arrange Irish grievances. The interest of our foreign critics, however, is further increased, especially on the part of France, by the historical connexion which has long been known to exist, but which the archæological research of the last few years has further proved, between the races of Ireland and those which originally peopled France, and, indeed, at one period, a great part of Europe.* Twenty-three centuries ago the Celts,—as recent archæological discoveries have abundantly proved,—occupied, not alone the British Isles, but almost the whole of France, excepting the southern portion, Spain, Belgium, Holland, the west and south of Germany, and almost the whole of Austria. Now, in Ireland, the relics of this civilisation are not only more numerous than in any other portion of Europe, but the traditions of its existence have remained in force till a more recent date. It is therefore to the language, the literature, and the antiquities of Ireland that is devoted, at home and abroad, almost all the attention of the students of Celtic. Twelve years ago the French commenced the *Revue Celtique*, and in 1876 a chair of Celtic was founded in Paris, at the École des Hautes Études, while, as already stated, last year another chair of Celtic was instituted in the Collège de France. In 1875 Professor Windisch,—now at Leipzig,—held the chair of ancient Irish languages at the Strasburg University, and Dublin and Oxford have possessed for some years chairs of Celtic.

Through these sources and the kindred researches of the archæologist, a flood of information has of late been poured on the legendary existence of the Druids and the people whom they ruled, and on that later period of Irish history, when, amidst the gloom of the Dark Ages which shrouded Europe in barbaric twilight, the Irish convents kept brilliantly alight the sacred torch of learning and of art; when from its distant shores sallied forth to Europe, not alone an earnest band of monks who have left a glorious name in the history of the church, and the men of letters whom Charlemagne summoned to his court to found the great University of Paris, but when in the Irish cloisters were produced those exquisitely illuminated missals which constitute one of the most interesting phases of the history of Classic art, and the creations by which its traditions were handed down to modern times.

A more profound knowledge of the archæology of Ireland has, therefore, its direct bearing on the Irish affairs of to-day, and in no way could the many cultivated friends and supporters of Ireland and Irish grievances more effectually recommend their cause to the attention of the world than by aiding in every way in their power to make known to the public the lessons to be gained, the deductions to be made, from the researches of the English and foreign archæologists into the history of Irish civilisation in the past.

* It was a regard for this fact which led the French Government a few months back to found at the Collège de France a chair of Celtic languages.

THE ARCHITECTURAL DRAWINGS: ROYAL SCOTTISH ACADEMY.

ARCHITECTURE having so recently been amply illustrated on the walls of the Academy buildings by the recent special exhibition, it was to be expected, as a matter of course, that little would be left for the following annual exhibition. In the one case, architecture reigned supreme, but in the other, where the more popular arts of painting and sculpture step in, it holds a very subordinate position, and there is little encouragement held out to architects, either by the Academy or the public at large.

Mr. Rowand Anderson does not seem to have taken this feeling of apathy regarding the art he represents into account when he dissolved his connexion with the Academy, and, indeed, the step he has taken has not proved even a seven days' wonder, nor appears to have excited any interest whatever outside the ranks of professionals.

Meagre as the annual display of architectural drawings usually is, it has this year dwindled down to a mere fraction. What there is of it, however, is worthy of attention, the drawings being good and the designs generally of considerable merit.

The elevation of new office for the Bank of Scotland, George-street,—Kinnear & Peddie,—if not a striking or original composition, is a pleasing and carefully-considered adaptation of Italian character of the purest type. The ground-floor is noticeable, the windows being arched, and there are two porches with decorated pediments supported by coupled columns. The windows on the first floor have triangular pediments supported by attached columns, the third-floor windows are square and richly moulded. There is a deep foliated frieze, and bold projecting dentilled cornice, the roof being covered by large slate blocks.

Much more striking, but more amenable to criticism, is "The New Club Buildings, Glasgow," Campbell Douglas & Sellars. It is French Renaissance in style, and five stories in height, including attic in Mansard roof. The basement, which is on the ground level, is subordinated to the superstructure, but forms a most important element in the composition; its most salient feature is a series of oval windows, having architraves which follow the upper line of the oval. These are flanked on the right by an arched and deeply recessed door, which rises into the story above, and to the left there is an oriel of two stories. Above the ovals the windows are clustered closely, being square-headed, and separate from each other by upright decorated consoles; and there are light iron balconies to each light. The windows on the next story are not so closely grouped; they have triangular pediments and stone balconies, and the space between the windows is richly carved with conventional foliage, which extends over the pediments to the string-course above.

This ornamentation may be considered as overdone, and rather *bizarre* in effect, but it is characteristic of much of the architecture in the second city of the empire, which is often abundant in this respect.

In marked contrast to this Glasgow Club-house is Mr. Dick Peddie's "University Club, Edinburgh." Here Classical simplicity and refinement are aimed at, and an appropriate and dignified result obtained. The chief feature of the elevation is a large two-storied semi-circular oriel, which has somewhat the effect of half of a circular temple, attached to a street façade. The building has been in existence for a number of years, and is familiar to every promenader in Princes-street.

The "Mansion House of Southdown, Caithness-shire," in course of erection for Mr. Sinclair Wemyss (Hippolyte J. Blanc), is a pleasing adaptation of the Queen Anne style to the requirements of stone construction. The architect has been careful to eliminate the more objectionable features of the style, and to retain only what is really worthy of adaptation. Mr. Blanc is equally felicitous in his rendering of the Scottish Baronial style in a house in course of erection in Ayrshire.

Mr. David Robertson seems to be a favoured individual. For the third or fourth time he has illustrated "Daneville Park," and each time has succeeded in securing a place for his drawing. If the building in question were at all worthy of attention, this might not call for special remark, but when a view of a commonplace square mansion-house, with a pedimented front, year after year finds a place when others of more importance are rejected, it is natural to feel some curiosity as to the cause of this.

"The Lady Flora Hastings Homes, Colinton," Robert Rowand Anderson, are designed in the half-timbered style, and have a picturesque, homely, and comfortable aspect. These retreats will form a charming addition to this attractive neighbourhood, which is fortunate in having Mr. Anderson as its guiding spirit in matters architectural. The place is assuming a character of its own, and has the semblance of an English village built of stone instead of brick.

Mr. John J. Stevenson has evidently aimed at imparting to "The Tower of Free St. Leonard's Church, Perth," a distinctively Scottish character. The tower is a large and massive one at the west end of the church, and is surmounted by an open crown, in which St. Giles's, Edinburgh, has been pretty closely followed. "St. Paul's Episcopal Church, Carrubber's-close, Jeffrey-street, Edinburgh" (Hay & Henderson), is a good rendering of the Early English style adapted to a rather difficult site. The surrounding buildings are lofty, and the ground falls rapidly towards the street; the entrances are placed on the higher level from the adjoining closes, and the elevation towards the street is of two stories, the lower being utilised for vestry and school with the chancel over. The chancel consists of two bays with a clearstory, having double dwarf traceried windows; the east end has three deeply-moulded lancets, and over the chancel arch there is a stone bell-turret. The body of the church is a simple parallelogram lighted by splayed lancets, but this part of the building will be out of sight when the street is completed. "The Normand Memorial Hall, Dysart" (Robert Rowand Anderson), is a small and neatly-proportioned building (apparently a double cube) after the Adams manner. A *flèche* on the roof, and a projection at one end like a shallow chancel, give it the likeness of a Nonconformist Chapel. As unlike to this as it could well be is Mr. Washington Browne's "Competitive Design for Parkhead Public Hall." The style adopted is the Scottish Baronial, the hall proper consisting of an oblong lighted by dormer windows, leaving an extent of bare wall below; at one end there is a two-story erection with a turret staircase. The group has much the aspect of a monastic establishment. Mr. Browne also exhibits an excellent pen-and-ink drawing of the west end of Dunblane Cathedral.

"The Second Premiated Design for the Glasgow Municipal Buildings" (Andrew T. Taylor), and the "Design submitted in the Final Competition" for these buildings by George Shaw Aitken, have been illustrated and commented upon sufficiently.

St. James's Hall.—One of the new rooms in St. James's Hall was occupied on Monday evening last for dramatic recitals, under the direction of Mr. Edwin Drew, by Mrs. Aylmer Gowing and Miss Gertrude Kellogg, some other ladies and some gentlemen varying the evening with vocal music. Mrs. Aylmer Gowing, besides reciting charmingly "Mary, the Maid of the Inn," "The Road to Heaven," by G. R. Sims, showed her versatility by a scene from "Phèdre," in the language of Racine, by contributing the words for a new song, "The Post Card," sung by Miss Larkcom, and the recital of a touching poem titled "Drink," written by herself. Miss Kellogg was admirable in several recitals.

THE IMPRISONED LIGHTHOUSE KEEPERS.

PUBLIC attention has been called, in the press and in Parliament, to the case of the keepers of the Eddystone Lighthouse, cut off from communication with the shore by stormy weather, and reduced to straits, or at all events to apprehension, as to the supply of food. As to the latter, we have only to remark that it is one of those instances of neglect, at once inexplicable and inexcusable, which are continually occurring, and rarely found out. But the practical bearing of the case, to which it may be of service to call attention, is this. It is a simple disgrace to civilisation that no good means should have been adopted of maintaining a communication between the lighthouse and the shore. If able to express their wants, and to receive assurance of what was being done to relieve them, the anxiety of these lonely watchers on the deep would be very greatly alleviated. This idea has already commended itself to public sympathy, and it has in consequence been urged that a telegraphic cable should be laid from the shore to the lighthouse.

As to this there are certain questions not only of cost, but of the reliability of such a line in the time when it was most needed, that is to say in stormy weather, which are not altogether easy of solution. No such questions, we at once admit, should be allowed to interfere with the execution of such a plan, if it were the only, or, all things considered, the best, mode of providing so necessary a communication. But such is hardly the case. There can not be the slightest difficulty in maintaining a communication between the tower and the shore by flashing signals. All that is requisite is that the lighthouse keepers should be provided with the inexpensive apparatus necessary for this purpose, and that they should (as well as the watchers on shore) be instructed in the Morse alphabet. They could then talk with people at home, not quite so rapidly, but fully as distinctly, as they could by wire.

The distance to which the signals given by mirrors that flash back the rays of the sun is visible is very great. Eight or nine miles is nothing to the power of that mode of signalling. But we doubt whether any form of heliograph would be suitable for the lighthouse telegraph, owing to the fact that it would be most needed in stormy weather. It would, however, be easy to supply a lamp with a good parabolic reflector, made especially for the pupose of signalling. And in the construction of a new lighthouse, it would be proper to provide a window for the purpose, far enough below the lantern to prevent any confusion between the sea-signal and the illuminated telegraph. The plan is simple, certain, inexpensive, and, we think, unexceptionable, and we beg leave to commend it to the attention of the Trinity House, and all other bodies that preside over lighthouses.

FOOD FOR THE MILLION.

WE see with no small satisfaction that the advice we have given to the working classes of London on the subject of the supply of fish has not fallen to the ground, and that efforts are now being made by those chiefly concerned to take the matter into their own hands. We have but one word to add. Very little is requisite to supply the East of London with prime fish at from 1½d. to 2d. per pound. What is that little? we may ask. It is this. Let a sufficient number of persons associate themselves together to take a truck-load of fish. For one, two, or three days in the week it would probably be possible to arrange for the transport of this truck by rail; for six days certainly so. If any opposition were made by the railway companies or by the fish ring to this simple plan, Parliament might be trusted to interfere. To send a daily truck to the appointed consignee is a duty which may rightly be expected and demanded of a railway company, nor do we suppose, looking at the competition existing for the northern traffic, that there would be any great difficulty in making the arrangement. The removal of this truck-load to the place of central distribution would be, as we before showed, covered by ½d. per pound. The great point would be to select the most suitable spot for central accessibility. The distributor would be the servant of the association. The daily order might be given in advance. The whole matter might be organised with the greatest ease and regularity. We are not quite certain about the weight of fish conveyed in a truck. Taking it at from 8,000 lb. to 9,000 lb., the association of an equal number of persons would allow to each of them 2 lb. of fish every other day for the price of between 3d. and 4d., all paid. Will there be any difficulty in collecting a list of the first 10,000 associates, and in providing the shop, the vans, and the retailers necessary for putting in activity so beneficial and self-supporting a plan?

We venture to think, that when the fish dinner thus secured, by following the advice of the *Builder*, at something like an eighth part of the cost of meat had been once set on foot, the difficulty would not be to find customers for a single truckload. Industrious and hard-working men and women at Grimsby, at Scarborough, or even at Leith, would join hands with their brothers and sisters in London, and East London would feed itself in a far better, as well as far cheaper, fashion than is now the case.

The *Builder* was the originator, or at all events the earliest public advocate, of two of the greater recent improvements of the London streets; that is to say, the cabmen's shelter and the provision of islands for foot crossers of the roads. Our efforts to aid in the cheap distribution of coal may also be named without impropriety. Is it too much to hope that a representative of this journal may, before very long, be a guest at the first fish dinner of the East End Fish Supply Association?

On the data given in our article on the subject (October 14, 1882), 8,000 lb. of fish could be delivered daily at an eastern depôt for 50*l*. Let us allow 5*l*. per day, or 10 per cent. on the cost, for rent, management, and distribution at the associate market. This would bring the cost price to 3·3d. for 2 lb. of fish; and if 4,000 persons are ready to pay that, or say 10d. per week, we see no reason why the thing should not be done at once. Of course, with large families a much larger quantity would be taken by the caterer. But then fish every day might not be desired. For that reason we put the number for starting high; but if three deliveries per week are made in the first instance instead of six, the number of associates requisite for a start may be proportionately reduced. There ought to be no difficulty with the railway companies, and the payment in advance for a month's consumption would amply supply the working capital. Never was there a case in which it was more possible for earnest men to help themselves.

SIR CHRISTOPHER WREN AND WESTMINSTER.

"For all these new additions I have prepared perfect draughts and models, such as I conceive may agree with the original scheme of the old architect, without any modern mixtures to show my own inventions: in like manner as I have among the parochial churches of London given some few examples (where I was obliged to deviate from a better style), which appear not ungraceful, but ornamental, to the east part of the city; and it is to be hoped by the public care the west part also in good time will be as well adorned; and surely by nothing more properly than a lofty spire and western towers to Westminster Abbey."—*Wren to Atterbury*, 1714.

SCARCELY have five generations passed since Wren began his extensive repairs of our great Western Minster, when we are told that the fabric is rapidly decaying,—an evil ascribed in no small measure to the fogs and smoke, fed by the Lambeth factories, which hang over the low-lying ground about Thorney Island. Torneia, the "locus terribilis quod dicatur æt West Minster" of Offa's charter, haunt, from the adjoining forests, of the wild ox and deer, whose fossil remains are still discovered here,* and itself watered by the two springs that lately flowed in Dean's-yard and the churchyard of St. Margaret's, was formed by confluent branches of the Aye Bourne and Thames. Opening from the river at Cannon (channel) Row by the southern wall of the Privy Garden, thence passing by the end of Manchester-court, the brook ran westwards across King-street, down Gardener's-lane; here turning southwards, it formed the long ditch or moat (across which Queen Matilda built a bridge) along Delahay and Prince's streets. Then traversing Tothill Fields it bent southwards at the Gate-house, and joining an affluent of the Aye Bourne formed the Mill Ditch outside the southern wall of the Infirmary Garden,—being still represented there by the sewer that flows beneath Great College-street to what were the Parliament Stairs, or "bridge," on the Thames' In the once forest primæval beyond, lay the estate of Eia (800 acres in extent), forming the manors of Neyte, Ebury, and Hyde, bounded on the north by the old British causeway, now the Uxbridge-road, and an appanage of the Stalre, or Stallere, of the English kings. The goodly manor of Eia William the Norman took from Asgar, the Stallere,* and gave to Geoffrey de Mandeville (ancestor of the present Earls of Essex and Dukes of Manchester) Mandeville, buried with his wife Athelais in the abbey cloisters, had given the monks this estate in exchange for their prayers, and further endowed them with Hurley, in Berkshire, and lands adjacent thereto, making it a cell of the abbey. Curiously enough, the abbot and monastery, despoiled at the dissolution of Hyde, Ebury, and Neyte, with other possessions, received for these the then dissolved Priory of Hurley.

Rumour, "painted full of tongues," affirms that in this island Prince Lucius,—the Lever Mohr,—built about A.D. 170 a Christian church over the ruins of the Pagan temple to Apollo, which an earthquake overthrew in the reign of Antoninus Titus, surnamed Pius. Apollo's temple is said to have been erected to correspond with that of Diana (St. Paul's), in the east. Lucius's building in turn gave place to a church and monastery, which Sœberht, king of Essex, nephew of Æthelberht, king of Kent, and co-founder with him (according to Bede) of St. Paul's, had through his uncle's influence dedicated on its site to St. Peter. His foundation was consecrated by Mellitus, first bishop of London, who had introduced the Christian faith into Essex. About the same time St. Augustine founded Rochester see, which was bestowed upon Justus. Sœberht's church,—where, with his wife Æthelgoda, he was buried, A.D. 616, and his tomb is still shown,—was burned by the Danes, but was restored by Eadgar on his coming to the throne, who established in it a fraternity of Benedictines to the number of twelve. During the abbacy of Wulnoth his nominee, King Cnut built for himself a palace close, as some chroniclers have it, to the spot by the river side, where he rebuked his courtiers. The palace and its abbey were subsequently rebuilt by the monarch, a lineal descendant of Cerdic, and the last of his English race, whose piety and virtues earned for him in a later age a place amongst canonised saints. As at Windsor, Dunfermline, and Holy Rood, the two grew up together, the monastery and church lay within the palace precincts; the church, in the words of King Edward III., was "capella palatii nostri principalis"; each of our sovereigns has been crowned "within our Palace at Westminster." On Wednesday, Innocents' Day, 1065, the king signed the charter of dedication now exhibited in the Chapter-house, and Eadwine being abbot, the new Minster was consecrated by Stigand in the presence of Harold and his sister Æditha, whose consort lay upon his death-bed. On the 5th January Eadward the Confessor died in the room of his palace, which, long known by his own name, was afterwards called the Painted Chamber. The following day they buried him in the Minster, where his shrine, still visited by devout Catholics, has ever formed the central feature of veneration.†

That the Bayeux tapestry is genuine none can question: upon its authority we may rely in some measure, keeping in view the while the circumstances and time of its production. This tapestry presents the earliest known view of the Minster, in the group of the Confessor's funeral procession. The union between the palace and the abbey is portrayed in a singularly realistic fashion by the figure of a man who steps by a ladder from the one to the other, and grasps the abbey weathercock, or vane, in his hand. St. Eadward's first shrine had not been built 150 years when King Henry III. set about the building of a chapel to the Blessed Virgin, then known as the "New Work," at the eastern end of the Confessor's chapel. About twenty years later, finding the walls and steeple of the original structure in a ruinous condition, he caused the whole to be pulled down. But death forbade him to see the completion of his own sumptuous project, which stopped at the fourth bay of the western

* See the *Builder*,—"Dying London,—p. 67, *ante* (Jan. 20).

* His office would seem to be a combination of those of the Master of the Horse, Standard-bearer, and Constable.

† The shrine, as now seen, was made for Henry III. by Pietro Calvalini.

portion, reckoning from the central cross. Of his work, for which he mostly used green sandstone from Reigate and Godstone, there remain the Chapter House,* built over that of King Eadward the Confessor's chapel, the side aisles with their nine chapels, the choir and transepts. Thence westwards the work was resumed by his son, Edward I., in the reigns of whom and his three successors the following additions were made. To Abbot Littlington, *temp.* Richard II., are attributed the abbot's refectory (College Hall), the abbot's house (Deanery), the Jerusalem Chamber, with St. Katharine's Chapel and Tower (both destroyed 1571). The cloisters date from the thirteenth and fourteenth centuries, the oldest of them being that on the north side, beneath the buttresses. In the ninth year of King Henry VII. Abbot Estney, who lies at the foot of General Wolfe's monument, built the great western window. Two or three years later that sovereign, demolishing St. Mary's Chapel, the White Rose Tavern, and Chaucer's house, began the chapel which has received his own name upon the designs, it is said, of Sir Reginald Bray, architect of the beautiful interior of Abbot Islip's chapel. The exterior of King Henry VII.'s chapel, composed of Caen stone, was extensively repaired some years ago, but it had received many lasting injuries at the hands of the Puritans. Its windows were originally of diapered glass, having in each pane an "H," a Rose of York, or *fleur-de-lis*. The infirmary, —whose fragments show it to have dated from before the Conquest,—was destroyed for the sake of the Little Cloister. It was so arranged that the sick monks could hear service in the adjoining St. Katharine's Chapel. The "beautiful," or "Solomon's Porch," and the Jewel House, at the north-eastern corner of the infirmary garden, were built in the reign of King Richard II. The latter now forms a depository for the Board of Trade standard measures. Of the monks' refectory the northern wall only stands; some arches, *temp.* the Confessor, may be seen from the garden of Ashburnham House, and in the little court now used by the clerk of the works. The muniment room is over the eastern cloister, which occupies the western aisle of the southern transept. The canon's houses along the eastern side of Dean's-yard (formerly "the Elms"), were formerly occupied by the prior and sub-prior, that nearer the archway being known in monastic times as "the Calberge." In front of these stood, until the middle of the last century, the long detached building of the convent granary, serving as a dormitory for the Westminster boys, who removed thence to that erected in the Infirmary Garden, from the designs of the Earl of Burlington, in 1722. For the most ancient remains of the abbey and its monastic buildings we must look in the Pyx Chapel, the basement of the schoolroom, and an adjoining apartment, in the lower walls of the southern cloister; for a matchless view of the Gothic style one should ascend the triforium, or stand by the mutilated effigy of the hero of Agincourt beneath the portico which overhangs the ambulatory under the oratory of Henry V. No material alteration having been made in the fabric until the days of Sir Christopher Wren, his labours will now form the subject of our notes.

In the reign of King George I. its condition had become so serious that the attention of the Legislature had been drawn thereto, and measures taken in the year 1700 for the voting of sums towards its substantial repair. Sir Christopher Wren made a survey of the structure. At the request of his friend and brother commissioner for the rebuilding of St. Paul's, Bishop Atterbury, the dean (he being then in his eighty-first year, though not yet a victim to the cabal who procured his dismissal from the surveyor-generalship), he drew up in the year 1714 the report of what he had done, and proposed to do, which is comprised in the MS. copy of the "Parentalia," belonging to the Royal Society. Writing in a modest unassuming strain, he advances many observations which, at this second crisis in the building's history, are well worthy of notice.

The report opens with Wren's arguments against the popular belief in the previous existence of a temple to Apollo at this spot. He premises that the Romans even in their colonies did not build so slightly that an earthquake could overthrow their work; he relies upon the absence of any traces in the form of cornice, capital, or the like. Earthquakes, he says, break not stones to pieces, and Picts would not be at that pains. The monks, he imagines, did not mean to be behindhand in antiquity to the citizens who pretended to a temple of Diana. But he asserts that having carefully examined all the foundations of old St. Paul's, with the desire to find some vestiges of such a temple, he discovered none; and therefore gives no more credit to Diana than to Apollo.

Camden's account of the earlier abbey-church, quoted from an old Latin MS., Wren translates thus:—"The principal aisle or nave of the church being raised high, and vaulted with square and uniform ribs, is turned circular to the east. This on all sides is strongly fortified with double vaulting of the aisles in two stories, with their pillars and arches. The cross building fitted to contain the quire in the middle, and the better to support the lofty tower rose with a plainer and a lower vaulting; which tower, then spreading with artificial winding stairs, was continued with plain walls to its timber roof, which was well covered with lead." Here were no buttresses, but thicker walls, with latticed windows, very narrow, of which, together with the round pillars and round-headed arches, examples stood in old Winchester Cathedral and yet stand in St. John's Chapel White Tower, Christ Church, Oxford, St. Benet's Church, Cambridge, and elsewhere. Wren conjectures that St. Mary's Chapel was over the steps of King Henry VII.'s Chapel, being intended by King Henry III. for his own sepulchre, since some of his own family who may be supposed to have been buried within his chapel lie below the steps. Some years later, as we have already shown, this sovereign pulled down nearly all of St. Eadward's pile to build it anew in the mode that came in vogue during the Crusades. "This," according to Wren, "we now call the Gothic manner of architecture (so the Italians called what was not after the Roman style), though the Goths were rather destroyers than builders; I think it should with more reason be called the Saracenic style; for those people wanted neither arts nor learning; and after we in the West lost both we borrowed again from them out of their Arabic books what they with great diligence had translated from the Greeks." Contending that the quarries whence the ancients took marble blocks for whole columns and architraves were abandoned, and that transport was by camels, he maintains that their mosques were adapted for small stones with columns of their own fancy consisting of little pieces, with arches devoid of key-stones which they considered too heavy. With Wren's conclusions as to the source of the Gothic style we are not now concerned: his theory has many supporters, but to discuss it is beyond the purview of our theme. After stating he found the vaulting over the choir, though adorned and gilded (which was of King Edward I.'s time), to be "without due care in masonry and worse performed than all done before," he laments over the cloisters and the high roof. Speaking of the spread of the Saracenic mode over Europe, particularly Frank-land, whose fashions we imitated alike in times of war as of peace, he says, "Nothing was thought magnificent that was not high beyond measure, with the flutter of arch-buttresses,—so we call the sloping arches that poise the higher vaulting of the nave. The Romans always concealed their butments, whereas the Normans thought them ornamental. These I have observed are the first things that occasion the ruin of cathedrals, being so much exposed to the air and weather."* Licensed by Rome to bury in churches, the abbots set their hearts upon a cloister. Scrupling to disturb some venerable corpses that lay between the outside buttresses, they allowed "a bold but ignorant architect" to build their cloister beneath the overspanning buttresses. The dangerous attempt, as Wren characterises it, was not carried out save at the expense of the abutment-foundations and the clearstory-walls. To these growing defects Wren gave particular attention, promising his repairs should leave this portion of the work stronger and securer than ever the former builders left it. "The pride of a very high roof raised above reasonable pitch is not for duration, for the lead is apt to slip, but we are tied to this indiscreet form, and must be content with original faults in the first design." Moreover, Wren found the materials badly chosen; the oak and chestnut roof, "wrought after a bad Norman manner," had stretched and damaged the upper walls. The artists fetched from Normandy resorted to Reigate stone as next in texture to their own beloved Caen stone, which proved expensive of carriage, but they chose a perishable material. Removing vast quantities of this, worked in ashlar, Wren substituted a facing of more durable body from the Burford quarries in Oxfordshire. As he expected the southern side of the Minster had suffered more than the northern from exposure to the vicissitudes of temperature and weather; the latter side he inspected and repaired with difficulty, owing to the tenements* ranging closely against the Abbey from the cross eastwards. The beautiful rose-window of the southern transept had been remodelled about forty years before. The corresponding one, in "Solomon's Porch," was obliterated with plaster. Sir Christopher had the satisfaction to see this porch freed from houses and rehabilitated† under his hands in 1722, a few months before his death. It has lately been repaired afresh. Of King Henry VII.'s Chapel, Wren writes that it is "a nice embroidered work, and performed with tender Caen stone; and though lately built, in comparison, is so eaten up by our weather that it begs for some compassion, which I hope the present powers will take, as it is the regal sepulture."

We will add a few words concerning the western towers and Wren's proposed central spire. Upon the necessity of the latter as a counterweight to fix the four piers of the cross he greatly insists, demonstrating his views with a diagram or "model." He found the pillars bent inwards, the tie-bars stolen from their hooks, and the arches of the second order above cracked and distorted. He gives designs for a tower surmounted with a twelve-sided steeple, plentifully adorned with the *calceolus*, in Gothic form, and of a style with the rest of the structure, "which," he says, "I would strictly adhere to throughout the whole intention: to deviate from the whole form would be to run into a disagreeable mixture which no person of a good taste could relish."‡ This he carried to its now extent; whether it shall be elevated in consonance with the body of the Abbey posterity shall determine. Wren further dwells on the necessary completion of the western front; the window,—Estney's window,—was "crazy," its pediment of wood instead of stone, the roof gable-ends above it but weather-boards painted.§ The towers, he urges, are too low for the due volume of the sound of the bells that hung beneath the roof-line. Whilst, as altered, their incongruous and debased design, in detail, is open to justly severe criticism, they are in height proportionate with their bases, from whose plan Wren could not depart. Finished in 1738, the year that saw laid the first stone of old Westminster Bridge, they at least stand as memorials of the extensive improvements which were then perfected in the northern and north-eastern precincts. Hawksmoor resumed his master's construction of the lower portions; dying in 1736, he bequeathed his work to James, his successor. In his "Memorials" (chap. vi., p. 476), Dean Stanley happily points out the extreme pride which Dean Wilcocks, during whose twenty-five years of office these heavy reparations were executed, took in commemorating as a glory of his tenure when dean that which the fastidious taste of a later age so largely condemns. On his monument, by Cheere, in the Abbey (he lies beneath the south-western tower), in his portrait at the Deanery, in the picture by Canaletti, which he had painted evidently for their sake, the towers of Wren triumphantly appear.

The Records of Stratford-on-Avon.—The Town Council of Stratford-on-Avon on Tuesday adopted a suggestion made by Mr. J. O. Halliwell-Phillips, that the Corporation records should be reproduced by means of the autotype process and given to the world.

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* "Dominus Rex ædificavit capitulum incomparabile."—*Matt. Paris.*

* It should be remembered, however, that at St. Paul's the upper story of the aisles, as seen from without, is but a vast screen to hide the buttresses that support the nave and choir walls.

* One being that in which Ben Jonson lived.

† A Doric passage had been thrown across the great window, the pyramids taken away, and the two side staircases covered with improper roofs of lead and timber.

‡ A view of the Abbey with Wren's spire and towers as first designed, is in the folio copy of Maitland's "London" (impr., Samuel Richardson, Salisbury-court), 1739.

§ The stained glass here was set up in King George II.'s reign.

THE DESIGN OF THE HOSPITAL AND THE SPREAD OF DISEASE.

SOCIETY OF MEDICAL OFFICERS OF HEALTH.*

THE relation between the structure of a hospital and its fitness for the purposes for which it is intended must ever be a subject of the utmost interest, both to those whose part it is to administer, and those who have to design the building; whilst to the Medical Officer of Health its internal conditions, its power for good or evil, and its influence on the surrounding neighbourhood are matters of the highest moment.

While there can be no doubt that conditions which favour the accumulation or diffusion of dirt of any kind are in themselves conditions unfavourable to the successful accomplishment of the various processes of treating the whole subject of the causation of such diseases as enteric fever, and the septic diseases of wounds, is so entirely within the region of controversy that it would be highly improper in a layman to venture further than the suggestion of certain facts for consideration.

In the selection and the recital of these facts the greatest care is necessary, since, as in the case of erysipelas, the subject is complicated by the question of incidence of the disease outside the hospital wards, and by the possibility of conveyance from patient to patient by way of nurses, medical officers, or assistants. All sources of infection ought carefully to be investigated, and if acquitted, eliminated before the structure is put upon its trial. There is in these days a certain danger which has to be by all means avoided, of referring all sanitary ills to defects of drainage.

Diseases liable to spread in hospitals may be divided into two classes:—(1) Septic or traumatic diseases; and (2) Enteric fevers.

In the first class many interesting cases are to be found recorded in the Report on the Hospitals of England, by Dr. Bristowe and Mr. Holmes.

The Ratcliffe Infirmary at Oxford was, in 1852, and again in 1874, so unhealthy that in the first case it was found necessary to cease taking in cases, in the second the whole establishment was subjected to a minute examination by Mr. Netten Radcliffe. Bad administration, defective ventilation, and drainage were the causes of disease in 1852; bad drainage and ventilation in 1874.

The question of artificial as opposed to natural ventilation is one of so great interest that it will be worth while to group together such instances as may be found of hospitals ventilated either wholly or to a large extent by mechanical means.

The following seven hospitals are or were furnished with more or less elaborate systems of artificial ventilation: Bristol General Hospital, Guy's (new wards), St. Mary's Paddington (old system), Liverpool Royal Infirmary, York County Hospital, Edinburgh Royal Infirmary, Menilmontant, Paris. In all but two the verdict is absolute failure, and in two partial and doubtful success.

The Manchester Royal Infirmary was the subject in 1876 of a very thorough examination and report of Mr. Netten Radcliffe, and his report, together with that of Mr. Rogers Field, C.E., reveal a condition of things, especially as to drainage, almost inconceivably bad.

Drains ventilated into wards and cisterns, water-supply pipes passing through drains, and the drains themselves leaky and choked with filth of the foulest description, form but a small part of the long list of defects discovered.

St. Mary's Hospital, Paddington, was in 1875 in so unhealthy a state that a thorough examination was made by Dr. De Chaumont, whose three reports to the committee are of a most interesting nature. In the result, the ventilation was to a great extent improved by internal structural alterations, and by the addition of Tobin's tubes. The unreliable nature of the latter is clearly brought out in Dr. De Chaumont's third report, but, owing to the arrangement of the wards, there was no other means available for increasing the inflow of air.

In a hospital erected within the last ten years, the occurrence, within a few months of its opening of a marked and continued series of maladies, consisting of diarrhœa, sore throat, and pyrexia, which, after careful examination, were found to be clearly due to faulty conditions of drainage and water supply, necessitated the closing of the wards and the complete reorganisation of the drainage. The faults were glaring, and consisted of badly-constructed drains, the falls varying from 1 in 124 to 1 in 24, pipes jointed with clay or not at all, and drains ventilated into wards and under ward windows. The cisterns and water-supply were so badly arranged that there was often not sufficient water to flush out the drains, and numerous other minor defects of detail showed clearly how entirely the great importance of these matters of sanitation had been overlooked or neglected.

Coming now to the subject of the spread of enteric fever in hospitals, it seems hardly possible to avoid taking notice of the difference of opinion which exists between physicians as to the mode of contagion of this disease. Whether enteric fever is propagated by way of intestinal discharges only, or also by way of the excreta from kidneys, lungs, and skin, is a question which cannot concern the architect. What does concern him to know is, whether drains have any hand at all in the propagation of the disease, and if so, what special drain conditions are favourable and what unfavourable to such propagation. And here the experience of the London Fever Hospital is of the greatest service to us. Between the years 1855 and 1878, 5,569 patients were admitted into the London Fever Hospital with enteric fever, and 19 inmates of the hospital contracted the disease. The cases are all described and the various circumstances noted in a paper by Mr. Shirley F. Murphy, in the *British Medical Journal*, of November 6th, 1880. Nine of the cases are accounted for by the occurrence of various defective drainage conditions or other equally direct causes of infection. Of the remaining ten, three only were nurses engaged in the enteric wards; of one, it is said to be doubtful if she contracted the disease in the hospital at all; the other six were four housemaids, one kitchen-maid, and one scarlatina patient. While it is unfortunate that no evidence exists to show how these ten cases contracted the disease it is interesting to note that its incidence was slightly greater on those whose duties would not bring them into contact with enteric patients than upon those intimately concerned with those patients.

In the autumn of 1881 three nurses and one ward servant, all engaged in the male enteric ward, contracted enteric fever, and co-incident with these cases successive stoppages in the sluice-pan took place. The cause was found to be the accidental blocking of a trap by a piece of slate. The defect was remedied, and no further cases occurred.

In comparing the experience of the London Fever Hospital with that of Homerton Fever Hospital, a marked difference is at once manifest. In six years and a half during which the latter hospital was used for fever patients, seventeen nurses and three laundry-maids were attacked with enteric fever. Roughly speaking the incidence is about seven times as great as at the London Fever Hospital. The cause of the discrepancy is considered by Dr. Collie to lie in the difference between the ages of the nurses of the two hospitals, those at the London Fever Hospital having been, as he affirms, of an age to be practically unsusceptible to the disease, whilst those at Homerton were all young enough to be susceptible. Mr. Murphy, on the other hand, traverses the allegation as to the age of the nurses at Liverpool-road, and attributes the difference to the differing conditions of drainage arrangements. One thing is, however, certain, that the drain conditions of the two hospitals are entirely different one from the other, and therefore for the drain theory it is impossible to compare the two buildings.

What, then, is the practical lesson that is to be learned from the foregoing facts? One lesson, and I think a most vital one, is the paramount importance of perfect, or as near perfect as is to be had, administration. Second only to this is ventilation. That the most thorough and most pure air obtainable shall be supplied in ample volume to each patient without the possibility of its being fouled by contact with any other patient or with any conditions of dirt and impurity, and all this without draught, is a fair statement of what is expected from ventilation, and the experience of the past leads me to the conclusion that this can only be successfully accomplished by means of what is called natural ventilation. And by natural ventilation I mean, namely, open windows assisted by gratings at the floor level and efficient open grates.

As to drains, the object to be sought for and at any price obtained is the speedy and effectual removal not only from the precincts of the wards, but from the hospital premises of such foul matters as are properly dealt with by means of the drains.

* From a paper read at a meeting of the Society, on February the 16th, entitled "Notes on the Relation between Structural Defects in Hospitals, and the Spread of Disease," by Keith D. Young, A.R.I.B.A.

THE GRAVITATION OF TRAVEL.

SOME time ago we commented in the *Builder* on the fact that the returns of most of the great railway companies showed that whilst there was a continuous increase in the number of persons who travelled on the railways, yet there was also a gravitation towards the lowest class. Returns that have been since issued, and that bring down the facts to the end of last year, show that there is a continuation of that downward tendency. In some instances it may be that there is a fall in the number of the travellers by the first-class, in most there is a declension in the number of the travellers by the second, and in some there is a declension in both of the upper classes; but in one of these there is a fall, and there is an almost invariable increase in the total number of the passengers, so that it is evident that there must be a large increase in the one class that has not a fall to report. In other words, there is a continuation of the gravitation of travel to the lowest class. It may be interesting to give from the official records figures that show the fluctuations in the classes on some of the chief railways of England. For the purposes of comparison, the last half of last year and the last half of the preceding year may be taken, and a very general increase, due almost exclusively to the increase in the third-class traffic, will be shown. First, however, we may take the numbers of the first-class passengers on a few representative railways, the numbers given below showing the fluctuations in the number of first-class passengers on the railways named for the two periods of six months:—

FIRST-CLASS PASSENGERS.

	1881.		1882.
North-Eastern Railway	554,173	.....	560,765
Great Northern Railway	467,186	.....	476,292
London and North-Western	1,293,465	.....	1,253,438
Midland Railway	883,337	.....	926,346

There is thus shown out of these four great railways a declension in the first-class traffic on three, and on the four, the falling-off in the number of the first-class passengers approaches 120,000, —a remarkable declension when it is remembered that it has occurred within a year, and that despite a lowering of the rates on the upper-class tickets in some instances. If we come to the second-class travellers, we shall find a large declension also. For the same period of six months the following is the number of

SECOND-CLASS PASSENGERS.

	1881.		1882.
North-Eastern Railway	629,094	.....	583,703
Great Northern	1,075,738	.....	1,040,677
London and North Western	2,113,137	.....	2,089,525

Here the fall is general, and on the three railways,—the Midland having abolished second-class,—there is shown a fall of over 130,000 in the six months, a fall contributed to by these three great railways in tolerably equal proportions. Thus it is clear that on four of the chief of the English railways there has been in a year a declension of a quarter of a million of the travellers in the two upper classes, a declension that may be said to be startling in its rapidity when the totals above given are borne in mind.

A very few words may deal with the remaining class. Taking the same two periods of six months and the same railways, we have the following as the statement of the

THIRD-CLASS PASSENGERS.

	1881.		1882
North-Eastern Railway	15,712,341	.....	17,200,503
Great Northern	10,474,126	.....	10,834,552
London and North-Western	22,641,029	.....	24,227,224
Midland	14,048,196	.....	14,597,221

The increase in this class is very large and general. In the six months the four railways have carried nearly four million passengers more than in the corresponding six months of the previous year. It is evident that not only have large numbers of the passengers transferred themselves from the upper to the lowest class, but that where fresh streams of traffic have been tapped they have all gravitated to the lowest level. It is becoming increasingly clear that it is the third-class traffic that is the most remunerative, and that it is only in it that an increase of numbers is to be looked for.

THE STUDENTS' DRAWINGS AT THE INSTITUTE OF ARCHITECTS.

THE drawings submitted in competition for prizes given by the Institute of Architects, or for the administration of which they are the responsible trustees, are not equal to the general level of merit which has been reached on some recent occasions. The Council have declined to award the Tite prize, considering none of the designs equal to the occasion, but they have recognised the comparative merit of the three best designs by awarding a gift of 10*l.* to each of the authors; in other words, they have distributed the value of the prize (30*l.*) among three competitors as an honorarium, instead of awarding the 30*l. plus* the credit of the prize to one competitor. We must entirely agree with the Council in regard to the small merit or interest of the designs, and think they were quite justified in withholding the prize, as none of the designs bore out what was the real object of Sir William Tite in making the bequest,—the promotion of the serious study of the form of architecture which, for want of a better name, is generally called Italian, and the production of designs of this class combining finish and refinement with some originality of treatment: for we do not suppose by any means that Tite wished to confine competitors to the mere reproduction of accepted details, but to promote the intelligent study of a school of architectural design which presents room for further development, and which is in the main peculiarly suited to the requirements and feeling of modern life. The neglect of this school of design by young architects at present is unwise, for they will pretty certainly find that it will revive, and those who have never studied it will be at fault.

The Grissell Medal is another prize which does not receive anything like the attention or response which it ought to receive. It is, as most of our readers know, a prize in the form of a gold medal for the best drawings illustrative of some practical piece of construction, giving all the details. Nothing could be more useful to young architects, and it is the more desirable as a counterbalance to the far too great tendency in the present day towards mere picturesque designing and sketching apart from the study of any of the practical problems of architecture. There are, however, only two designs sent in for this,—the subject this year was an open-timber roof; and of these one is quite below the mark. The other, by Mr. Paley, the inheritor of a name already much honoured in the profession, is a very good piece of drawing, and the whole construction is carefully and conscientiously shown, but we should have seen with even more pleasure a drawing of a more modern and more truly scientific form of timber roofing than the mere reproduction of a late Mediæval type which has been adopted,—a type of roof in which there is certainly more of superfluous and merely "ornamental" material than is consistent with the best construction, or even perhaps with the best design.

The drawings for the Soane medallion, for which the subject was an academy of music (an appropriate study just now), comprise several sets, none of them showing any such *outré* ideas as that to which the last Soane medallion was mistakenly given last year; they are mostly in sober style enough. The one to which the prize has been adjudged is certainly the best all round; the style is a free Classic, with circular arches to some of the openings, and mullions and circular-headed lights in Venetian style; the author has made the windows of the concert-room, which fills the centre space between the wings of the building, the main feature in the architectural design of the front, which is picturesque and at the same time well balanced and contrasted. The conical roof of the theatre, seen behind, shows clearly but not very beautifully the existence of that element in the plan of the building. The design to which the medal of merit has been given (we print the mottoes and authors' names elsewhere) is tolerably pleasing in architectural treatment; the plan shows no practising rooms, as far as we observed. It is due to the author of "Labor," which in regard to design is poor, and apparently the work of an inexperienced designer, to observe that he is the only one who appears to have made a special attempt to isolate the practising-rooms in regard to sound, by making a little lobby and apparently double doors to each room, the interior space on each side the lobby being utilised for shelves or cupboards for books and music. He deserves credit for that point, as all the others who show a range of practising-rooms seem to think it sufficient just to have a number of small rooms adjoining each other; whereas, the requirements for practising rooms are very peculiar, and should be specially considered.

The Institute silver medal and ten guineas have been given for a very pretty set of drawings of Moreton Hall, Cheshire, showing a great deal of work in the drawing of the elaborate half-timber construction and decoration. This set of drawings shows the most labour, and represents the most elaborate subject, but we can hardly say that they are superior to the drawings from St. Mary's Church, Leicester, to which a medal and five guineas have also been awarded; the drawing of the capitals and other details in this set is admirable, and truly artistic in touch and feeling. Special recognition has been given to another set of drawings, of Ashburnham House, which are very full and careful.

The exhibition of the drawings certainly shows, however, what we have noted before, that the drawing, the draughtsmanship, of those who compete for prizes is at a much higher level than the knowledge of design or plan. The drawings for the Institute silver medal (the drawings from old buildings) are as good as such things need be in any case; but this certainly cannot be said of the elements of design and plan, as shown in the other sets of drawings.

Adjudication of Medals and other Prizes, 1882-83.

The Tite Prize (value 30*l.*). An honorarium of 10*l.* to be paid to each of the authors of the designs bearing the following mottoes, namely:—No. 3, "Val d'Arno," John Wallace, 144, Bath-street, Glasgow; No. 5, "Ars longa vita brevis est," Hubert A. Gregg, Bolenna, Hadley-common, Barnet; No. 6, "Night Owl," Harry A. Paley, 8, George-street, Manchester-square, W.

The Grissell Gold Medal, to the author of the design (No. 2) bearing the motto, "Red Rose," Harry A. Paley, 8, George-street, Manchester-square, W.

The Soane Medallion and 50l. (subject, "An Academy of Music"), to the author of the design (No. 4) bearing the motto, "R. A. B.", Robert A. Briggs, Associate, 76, Wellington-buildings, Chelsea, S.W.; a *Medal of Merit* to the author of the design (No. 1) bearing the motto "Baritone," Fred. R. L. Edwards, 30, Robert-street, Chorlton-on-Medlock, Manchester; a *Medal of Merit* to the author of the design (No. 5) bearing the motto "Millrind," E. J. Milner-Allen, Associate, High Bank, Fulham, S.W.

The Institute Medal and Ten Guineas (Measured Drawings of actual Buildings).—The Silver Medal of the Institute and Ten Guineas to the author of the drawings (No. 8) bearing the motto "Pupil," James Strong, 6, Abbey-square, Chester; the Silver Medal of the Institute and Five Guineas to the author of the drawings (No. 2) bearing the motto "Per Ardua," William Henry Bidlake, B.A., 11, Alma-road, Canonbury, N.; a Certificate of Honour and Three Guineas to the author of the drawings (No. 7) bearing the motto "Study the Old Masters," A. Hemingway, 37, Hanover-gardens, Kennington, S.E.; a Certificate of Honour to the author of the drawings (No. 4) bearing the motto "Inigo Jones," Harry Sirr, 2, Hurdwick-place, Harrington-square, N.W.

The Institute Medal and Ten Guineas. Essays. Subject, "The Stallwork, Canopies, and Roodscreens of the Fifteenth Century (English only)"; to the author of the essay bearing the motto "Trailing Vine," Harry Sirr, 2, Hurdwick-place, Harrington-square, N.W.

COMPETITIONS.

Sheffield Infirmary.—A special meeting of the Weekly Board of this Institution was held on the 2nd inst., to consider the question of the enlargement of the Infirmary. Ald. Brooksbank presided, and there was a full attendance of members. For some years past the inadequacy of the accommodation for out-patients, casualties, and so forth has been very much felt, both by the medical staff and the Weekly Board, and as the result of long and anxious deliberations it has been decided to build a large waiting-hall for out-patients and casualties, with consulting-rooms and other conveniences. Plans of the proposed enlargement were sent in by several local firms, and at the meeting it was agreed to accept those prepared by Mr. J. D. Webster. The additions will be connected with the back of the old Infirmary buildings, and the entire cost is estimated at from 4,000*l.* to 5,000*l.*

The Proposed Church of All Saints, Ipswich.—The competitive designs for the new church of All Saints (West St. Matthew's), Ipswich, have been on view since Tuesday, and will remain on view (with the exception of this Saturday, the 10th) until the 16th inst. The Mayor of Ipswich kindly granted the use of the Library of the Town-hall, and also, in consequence of the altogether unexpected number of the designs, the Sessions Court. There are in all about 85 separate designs. The Committee invited designs for a substantial church to accommodate 800 persons, at a cost not exceeding £7 per sitting, exclusive of benching, boundary walls, &c., but inclusive of chairs. The Committee made it essential that the designs should satisfy the requirements of the Incorporated Society. Mr. Ewan Christian will advise the Committee as to the acceptance of one of the designs. Each design is sent in under a motto. The *East Anglian Daily Times* makes the following remarks with reference to the subject:—

"Competition run mad must be the verdict on the designs now to be seen at the Ipswich Town-hall. A few years ago a new district, and then a new parish, was created in the west end of Ipswich; an energetic vicar (the Rev. R. H. Cautley) was appointed, and a congregation secured in a temporary church. The vicar and congregation aspire to a permanent building, and recently advertised for designs for a church, the cost of which is not to exceed 7*l.* per sitting, or a total, with tower, of 5,600*l.* The position of the noble profession of architecture may be judged from the fact that more than eighty rival designs have been sent in from all parts of Great Britain. The astonished and grievously-burdened vicar and committee have borrowed the library and sessions court at the Town-hall, wherein these eighty plans and elevations are now exhibited to all who wish to ponder and grieve over the ways of architects, builders, and committees. The enormous waste of labour involved in such struggles may be seen at a glance. Each design involves, as a rule, five or six elaborate drawings, and it is said that there are not less than 560 of these drawings in all. We are credibly informed by an architect of high experience, who, fortunately for himself, is not a competitor, that, allowing a fair time for thought and reflection as well as work, each separate set of designs may be assumed to cost 20*l.* Architects' time may be of no value, but if it is of value at all, this estimate cannot be wide of the mark. Here is 1,600*l.* worth of talent thrown to the winds, wasted because the vicar and churchwardens of All Saints', Ipswich, think that it would benefit them to have an open competition. We believe that the scheme for the new church is at present little more than *in nubibus.*"

Bradford.—Plans for Day and Sunday-school Buildings, Duckworth-street Congregational Church, Over Darwen, by Mr. Jas. Ledingham, architect, Bradford, have been selected in limited competition.

OBITUARY.

Mr. George Wythes, the well-known contractor died on the 3rd inst., at his residence, Bickley Hall, Kent, in the seventy-second year of his age. Mr. Wythes was engaged in railway contracts with the late Mr. Brassey and other men of note. One of his successful efforts was the construction of a portion of the Great Indian Peninsular Railway. He was in partnership with Messrs. Jackson & Brassey and others in several railways, and in various other contracts of public utility. Bickley, one of the most healthful of all the rural retreats round London, owes its existence in its present form to Mr. Wythes. He built the parish church of Bickley and the adjoining parsonage in the park entirely at his own expense, at a cost of upwards of 20,000*l.*

Mr. Rowland Brotherhood.—On Monday night Mr. Rowland Brotherhood, formerly well known in the West of England, in that he has been associated with several large railway contracts and with extensive iron and wagon works at Chippenham, died at an advanced age at his residence, Redland, Bristol. We might instance, among the many large undertakings that Mr. Brotherhood was associated with, that he constructed the Bristol and South Wales Union Railway and piers. At his Chippenham works some of the best iron bridges ever turned out for India were made. He leaves a widow and thirteen children, ten being sons.

Colchester New Corn Exchange.—The plans of Mr. T'Anson have been chosen for the new Corn Exchange at Colchester.

THE RESTORATION OF ST. GILES'S CATHEDRAL, EDINBURGH.

A MEETING of the Edinburgh Architectural Association was held on the 24th ult., in St. Giles's Cathedral, to view the restorations which have for some time been in progress. About seventy of the members were present, headed by Mr. G. Washington Brown, in the absence of Mr. M'Gibbon, president. Mr. W. Hay, the architect of the restorations, explained the various changes which have been made in the interior of the building since 1830, when the venerable structure was modernised to the taste of that period. The lath and plaster had been removed from the walls, and from the stone vaulting of the roofs, and where stone carvings and mouldings were erased to give scope to the free use of the plasterer's trowel they had been restored. The massive octagonal piers of the nave, which had been removed for slender fluted shafts with plaster capitals, have been restored to their original shape, from fragments found under the floors. The restorations in the Albany Chapel and St. Eloi's Chapel,—which have been floored with encaustic tiles, marble, and mosaic work, and, together, with the remaining ancient chapel on the south side of the nave, enclosed with elaborate wrought-iron screens, —were examined. The visitors then proceeded to the choir, tower, and transept, where the work of restoration is now within a few months of completion. When the restorations were first commenced, under a committee, the funds were found to be inadequate to such a thorough restoration as the present. Besides, people were hardly even then educated to the idea of any church being comfortable with unplastered and unpainted walls. When the walls were uncovered to restore the stone behind, the work was considered formidable and unsightly in its rough condition, and therefore the plaster was replaced. The munificence of Dr. Chambers, however, placed unlimited funds at the disposal of the architect, and he received instructions to carry out the restorations in the most thorough manner. The choir was stripped of its plaster covering, and although some of the masonry was originally of the rudest description as regards the wall surface, it now presents a pleasing appearance of well-pointed broken ashlar, mostly old stone, with the original dressed surface, but rejointed. Mr. Hay directed attention to the peculiar groining of the older portion of the choir aisles, which was considered by the late Sir Gilbert Scott to be unique, and as the most interesting thing about the building,—the form of the groin being a sort of transition from the plain barrel vault to the later form of groined construction. He recounted the dates of the various portions of the ancient structure, and numerous vicissitudes in its history. At the conclusion of the visit a vote of thanks was warmly accorded to Mr. Hay, and the members thereafter proceeded to Greyfriars' Churchyard, where upwards of an hour was spent in examining the ancient monuments.

ANCIENT GREEK PAINTING.

PROFESSOR C. T. NEWTON'S tenth lecture on this subject, and the last of the present course, was given last week at University College. The myths chosen for illustration were the hunt of the Calydonian Boar, the carrying off of the Leucippidæ by Castor and Pollux, Heracles in the garden of the Hesperides, the sacrifice to Zeus offered by Pelops and Oenomaus before the chariot race, and the destruction of the family of Niobe by Apollo and Artemis. The hunt of the Calydonian Boar is quaintly represented in one of the pictures on the celebrated François vase at Florence. Various heroes are attacking the boar with the assistance of hounds. The names of each hero and also of the dogs are written over them, and we thus recognise Peleus, Meleager, Castor and Pollux, Atalanta, and other heroes less known to fame, whose names, like those of the hounds, are suggestive of their special excellencies in war or the chase. Two archers are evidently Scythians, and are distinguished by their barbaric dress. The tusks and the skin of the Calydonian Boar were said to be preserved in the temple of Athene Alea, at Tegea, in Arcadia, and the boar-hunt was the subject of a composition sculptured by Scopas. In the Vatican is a well-known statue of Meleager with the boar's head by his side, and the slaying of the boar is represented on coins of Ætolia and also on gems. The beautiful *hydria* in the British Museum, usually known as the Meidias vase, from the name of the potter inscribed on it, represents the two Dioscuri in the act of carrying off the daughters of Leucippus in their chariots. Polydeuces (Pollux) has already secured his prey, and is driving off rapidly. Castor has caught the other Leucippid by the waist, his chariot waits for him a little higher up in the picture. Below are Zeus and Aphrodite, seated as consenting Deities, and the three Graces. The locality is indicated by a small archaic idol, probably Artemis Laphria. The daughters of Leucippus had been betrothed to Idas and Lynceus, sons of Aphareus, between whom and the Dioscuri arose a feud after this abduction. Some think that this legend is typical of the long-standing feud between the Spartans, represented by their native heroes the Dioscuri and Idas and Lynceus, who were of Messenian descent. The legend is told by both Pindar and Theocritus. On the same vase we have below the scene in the garden of the Hesperides, where Heracles demands the golden apples. The tree with the serpent coiled round it forms the centre of the composition. The three Hesperides are present, but not their father Atlas. A goddess inscribed Hygeia is thought by Gerhard to be Athene. The third scene on this *hydria* is explained as Jason demanding the hand of Medea from her father Aietes, but the subject still requires elucidation, as a number of heroic figures are introduced into the composition, whose names inscribed over them cannot be connected with the Argonautic myth as elsewhere recorded. This *hydria* is distinguished for variety and interest of subjects as well as for beauty and refinement of composition, and well deserves the praise bestowed on it by Winckelmann. The sacrifice offered by Pelops and Oenomaus before the chariot race is represented on a vase in the British Museum found at Ruvo in Southern Italy, which is a very fine example of the later style of ceramography. The scene takes place in front of the palace of Oenomaus, King of Elis; Pelops and Oenomaus stand on either side of the altar of Zeus, as indicated by the word "Dios," inscribed on a column. On the left is Hippodameia, the future bride of Pelops, led forward towards him by her aged mother Sterope; on the right is seen the charioteer Myrtillus, whose treachery gave Pelops the victory in the race. The scene is closed on the right by a seated figure of Aphrodite, attended by her son Eros. The palace of Oenomaus, as the background of the composition, is indicated by two heads suspended on the wall. These are the heads of the luckless suitors of Hippodameia, who fell by the hand of Oenomaus after adventuring their fate in former chariot races. The death of the family of Niobe, the sister of Pelops, as represented on a fine vase in the Jatta collection at Ruvo, was the last subject noticed by the lecturer. In this composition a number of the gods are spectators, while Apollo and Artemis (Diana) slay the Niobids.

Mr. Newton's next course of lectures, as Professor of Archæology at University College, will be on "The Useful and Decorative Arts of the Greeks and Romans," and will begin on April 20.

"AN ARCHITECT ON LAWYERS."

SIR,—I should like to say a word on the letter in your last, signed "A Lawyer," chiefly because of its querulous, unlawyer-like tone. The writer is so anxious to excuse where I never accused, that he wholly misses, or avoids, the one point of my argument. Concerning the "black sheep" of his profession, of whom he speaks while I did not, I have still nothing to say: what I was dealing with in the remarks I made to the Architectural Association was the much more important question of the practical operation of English law in the hands of the whitest of sheep. Nor am I aware of having said anything new about this. The terrible pressure of the English system of litigation upon the public is notorious, and some of the greatest lawyers denounce it the most vigorously. With this I do not concern myself —it is not my special business. But in building affairs, which are my special business, I say—and I believe everybody else says the same who understands the matter—the friction of the machinery of litigation is so prodigious, its processes of movement so clumsy, and the incertitude of its action so provoking (to say nothing of the outrageous cost), that the alternative of expert arbitration is *always* preferable, whatever the nature of the dispute may be, from the simplest bill of extras to the most technical question of light and air, or of structural support. Then, as regards the species of judgment which expert arbitrators are sometimes said to favour from weak motives, namely, splitting the difference, what I said to the young men was that such decisions ought not to be too hastily condemned, as they often are, seeing that truth lies between extremes more frequently in building disputes than in many others. Lastly, when I say that lawyers cannot be got to understand "bricks and mortar," I only express a universal opinion. Counsel of the highest eminence are the most ready to recognise this fact; it is only the fledglings of the bar who could hope to find it otherwise. I remember one of these gentlemen, not out of his twenties, whose mind in respect of building affairs was so much of a blank that he declined to admit, without what he called evidence, that a brick is an incombustible material. Imagine the condition of a building dispute in the hands of two wire-drawn intelligences of this kind pleading before a third! I remember another curious case. A very estimable and single-minded barrister, now deceased (he died very poor), who had a great many of "these building cases" referred to him by the Courts as a specialist of acknowledged repute, was going through a carpenter's bill. "Very well," said he, in his kindly way, "*that* is disposed of. Now let us take the next item —the *lock*." "The *door* is it not?" said plaintiff's counsel, prompted by his client; "one 1 in. ledged *door*." "Pardon me," rejoined the referee; "one 1 in. ledged *door-lock*." "There is a comma, sir, after the word *door*." "Oh, I see! There is no comma in my copy; shall I insert the comma?" "If you please."

As regards the question of the increasing number of lawyers, I am informed that young solicitors are being now thrown upon English society at the rate of *one thousand per annum*.

Lastly, with respect to what I call "dealing in (or with) abstractions," let me cite again the case of the learned youth who declined to acknowledge brick to be incombustible. With him brick, be it observed, was *a word* and nothing more, and he simply reserved his forensic right to attach to the word whatever meaning might turn out to be most convenient for his purpose. It might, for example, be *Bath brick*, a domestic implement; *wood brick*, the fruit of a tree; *air brick*, a kind of balloon; *regular brick*, a commendable person, a trump, a jolly good fellow, and so on, as long as fancy might hold out. *Fire brick*, a lining for chimneys, he might consent to admit to be so far meant to be incombustible, but even that would be without prejudice. Your correspondent naïvely says:—"The most successful counsel are those who can state a case *most plausibly*." Well do we know this in building matters; and equally well do we know that it is only on the wrong side that such plausibility is requisite; and equally well again do we know that before an architectural arbitrator such plausibility is entirely useless. I am, myself, not without admiration for the audacious plausibility of some learned counsel—it is a fine intellectual exercise; but, as the result of it, I am constrained to repeat once more that, throughout a lengthened experience, I have never known a building case decided by a lawyer except upon a false issue. The worst judgment of an architectural referee is better than the best of a Court of Law; and I think it is the right thing, and not the wrong, to point this out, and to sound the feeling of the architectural and building world upon the question of increasing the facilities for the settlement of brick and mortar disputes without the intervention of a profession of most respectable and highly paid wranglers who, unfortunately, cannot be got to understand what they are wrangling about. In a word, I think the time has come when architects ought to be trained for the work of expert arbitration, and I believe this might be done without difficulty.

ROBERT KERR.

Shottesbrook.—Sir Henry and Lady Brownrigg have presented to Shottesbrook Church, near Maidenhead, a painted window from the studio of Mr. Taylor, of Berners-street, in memory of their eldest son, who died at the age of nineteen. The subjects are "Hope" and "The Angel of the Resurrection."

THE LONDON AND NORTH-WESTERN COMPANY'S NEW BUILDINGS AT EUSTON.

THE London and North-Western Railway Company have just completed the erection of new buildings at the Euston Station for the further accommodation of their staff. The buildings are on the east and west sides of the court-yard in front of the station. The new west wing overlooking the court-yard is 108 ft. in length, with a return frontage facing Drummond-street, 55 ft. in length. The buildings are 65 ft. in height, that portion facing Drummond-street containing four floors. The court-yard portion of the wing is built upon stone piers and iron columns, a covered way under the structure, upwards of 20 ft. in width, leading to the booking-offices and station, and the building over the covered way contains three lofty floors. The Drummond-street frontage presents a bold and commanding elevation in rusticated Portland stone, going well with the architectural features of the massive entrance portico. The court-yard frontage forming the west wing is similarly treated. The east wing is uniform in character and dimensions with that on the west side, with this difference, that at present there is no return frontage into Drummond-street, but it is stated that the erection of this frontage is ultimately contemplated. The ground and first-floors of the Drummond-street portion of the west wing contains the offices of the cashier of the company, and those of his staff, whilst that portion of the building northwards overlooking the court-yard contains the accountant's offices and the offices of his assistant clerks. The east wing contains upwards of fifty offices for the several clerks employed in the different departments of the company's business. The new buildings have been designed by Mr. Stansby, the company's architect, the contractors being Messrs. Kirk & Randall. The cost of the new structures is about 20,000*l*. In addition to the above-named buildings, another large new block, at the north end of the station, has also been completed. This block consists of new offices for the general manager and his clerks; and at present a further block of new buildings is in course of erection on the west side of the station, having their frontage to Cardington-street. This block contains additional offices for the parcels department.

NEW PROTESTANT CHURCH, LEIPZIG.

THE erection of St. Peter's Church is regarded as of some significance to the town of Leipzig, no new Protestant church having been erected, nor even any of the existing ones thoroughly restored, for several centuries. The parish of St. Peter, parted off from that of St. Nicholas, owing to the extraordinary growth of the city, numbers now a population of over 40,000 souls. Those acquainted with Leipzig will know that there is no excess of churches in the town; but there seems to be every probability that the present and the next generations will have to make good what has been postponed by their forefathers.

In the competition for the new church, no fewer than 105 of the best German architects took part, and the form which it will now receive is the result of repeated changes of the design. The architects are Herren Aug. Hartel (formerly of Crefeld) and Baurath C. Lipsius, now professor at the Royal Academy of Arts of Saxony, Dresden,—both well-known names in the history of Protestant church-building. The former is the architect of the Lutheran churches of Crefeld, Bochum, Viersen, Mülheim on the Ruhr, Neuwied, Altendorf near Essen, &c.; and both are now jointly superintending the erection of large churches at Gera (Reuss) and Lindenau near Leipzig.

The new Petrikirche (of which we give an exterior view in this week's *Builder*) will exceed in size almost every one of the new Protestant churches erected in recent years. Its nave is 61 ft. wide by 83 ft. high. The total length of the church is 248 ft.; its greatest width, 165 ft. The massive tower and spire will, when completed, have a height of 250 ft. The church, although of unusual dimensions for a Protestant place of worship, is so designed as to centralise the congregation, and its design is said to have served as a pattern for several other new churches either in course of erection or in contemplation. St. Peter's Church is Early Gothic in style, and erected in ashlar. When completed, it will be one of the most important specimens of modern church architecture in Germany.

NAWORTH CASTLE: RECENT ADDITIONS.

OUR illustration shows the Stanley Tower, which forms a part of the additions recently made to Naworth Castle, the Border seat of the Earls of Carlisle, by Mr. George Howard, M.P., the present representative of the family. The additions and alterations are from the designs of Mr. Charles J. Ferguson, F.S.A. The illustration is a reproduction from a pen-and-ink drawing by Mr. E. F. C. Clarke, which appeared in last year's Academy Exhibition, and is taken from the walk in the glen beneath the castle, leading to Lanercost.

The earliest documentary information relating to Naworth Castle is the licence to crenellate, which was granted to Ranulph de Dacre in the ninth of Edward III. (1335). It appears, however, from the buildings now existing that Ranulph de Dacre found a pele of an earlier date, which formed here, as in so many other Border fortresses, the nucleus of the greater castle which he then caused to rise.

The next documentary evidence we have is written in the heraldic devices of the great builder of the family, Thomas, Lord Dacre, who flourished towards the end of the fifteenth century. He rebuilt the upper part of the Dacre Tower, and added the great hall, 96 ft. by 24 ft., which is still in use, and to him may probably be assigned the commencement of the remarkably-constructed tower, which bears the name of his successor, Lord William Howard. To this Lord William Howard, who married one of the heiresses of the Dacres, and succeeded to the estates in 1602, is to be attributed the Domestic character that the castle now bears; and to him also is to be assigned the rebuilding of the upper part of the tower which bears his name, the construction of the great gallery along the principal front, and the decorating and beautifying of the whole structure. His household books, so admirably edited by the Rev. George Ornsby, F.S.A., show, that if the first Dacre built a fortress, the first Howard gave it a Domestic character.

In 1844, Naworth was entirely gutted by fire, and was afterwards restored under the direction of the late Mr. Salvin.

The castle, which is about eleven miles to the east of Carlisle, stands on a triangular tongue of land, formed by the castle beck on the north and a little rivulet on the south, which unite and flow into the Irthing. The buildings form a quadrangle, with the Dacre-Howard towers at the extremities of the entrance front, facing the outer bailey and gate house. The moat which protected this front has long been drained, and in its place flourishes the "Green Garden."

To the rear of the great quadrangle some very inadequate modern offices had been erected, and it is on the site of these buildings that the additions of we give which an illustration in our present number have been erected; they consist of a small external courtyard, one side formed by the ancient wall of the castle, two sides inclosed by buildings containing complete kitchen offices, with bedroom accommodation over. These buildings have towers at their external angles, of which the Stanley Tower occupies the eastern one. They have been substantially built of the local stone, lined internally with brick. A pleasant tone of colour has been afforded by a random mixture of red and white stone, in the proportion of two cart-loads of white to one of red stone, which harmonises pleasantly with the grey of the old castle. The work has been substantially done; the foundations being in all cases carried down to the rock.

The lower floor is arched in brickwork, the others being of fireproof construction in concrete. The roof is of oak, covered with the local stone slates bedded in moss. The flats are covered with 8 lb. lead, and on the leaden spout-heads are the initials of the owners, George and Rosalind Howard, and the date,—an idea borrowed from the older part of the castle, where the spout-head, with its initial W. H. and date 1602, gives the time of these additions.

Mr. Howard is doing a good deal in the way of finishing the interior, which can hardly be said to have been completed since the fire of 1844. The library has been entirely refitted, a new oak ceiling put up, with carved bosses at the intersections of the beams, and two stories of bookcases with a gallery at each end of the room. The wall space over the bookcases opposite the window has been prepared for a painting by Mr. Burne Jones, and that over the fireplace for a basrelief, the joint work of Mr. Burne Jones and Mr. Boehm, R.A.

A new staircase has been erected to the gallery, and another adjoining the Morpeth Tower. The billiard-room has been re-formed and panelled, and the refitting of the music-room is now in hand.

The work has been carried out under the superintendence of Mr. Phillips, clerk of works, and of Mr. Marshall, the estate clerk of works. The chief part of the masonry has been executed by Messrs. C. & J. Armstrong, of Carlisle; and the joiners' work by the estate workmen, and by Mr. Davidson, of Carlisle.

AMERICAN PLANNING AND CONSTRUCTION.

THESE illustrations are a selection from drawings of American planning and construction brought over by Mr. Gale, the holder of the Godwin Bursary for 1882. They comprise plans of the Mills Building in New York, and a detail of the iron staircase in the new Post-office, Philadelphia.

The Mills Building is a large structure, recently erected and let out as offices, and contains cellar, ground-floor, and nine stories above, with a flat brick roof. The arrangement of the plan will almost explain itself. The following will be noticed,—the large banking offices on the lower story, and the smaller offices above, the comparatively small staircases, and the roomy elevators, which do almost the whole of the work. The architect of the building is Mr. George B. Post, of New York.

The Post-office at Philadelphia is one of the Government buildings referred to as being under the superintendence of Mr. James G. Hill, of Washington, Supervising Architect. The large amount of iron finishings used is noticeable, among them the iron staircase, which forms the subject of the illustration. The stair carriages are rolled iron joists filled in below with panelled cast-iron soffits. Stepped bearers of cast iron support the treads and risers, which are of the same material, the treads being filled in with tiles bedded in asphalt. Staircases of this description, with various modifications, are much used in the United States.

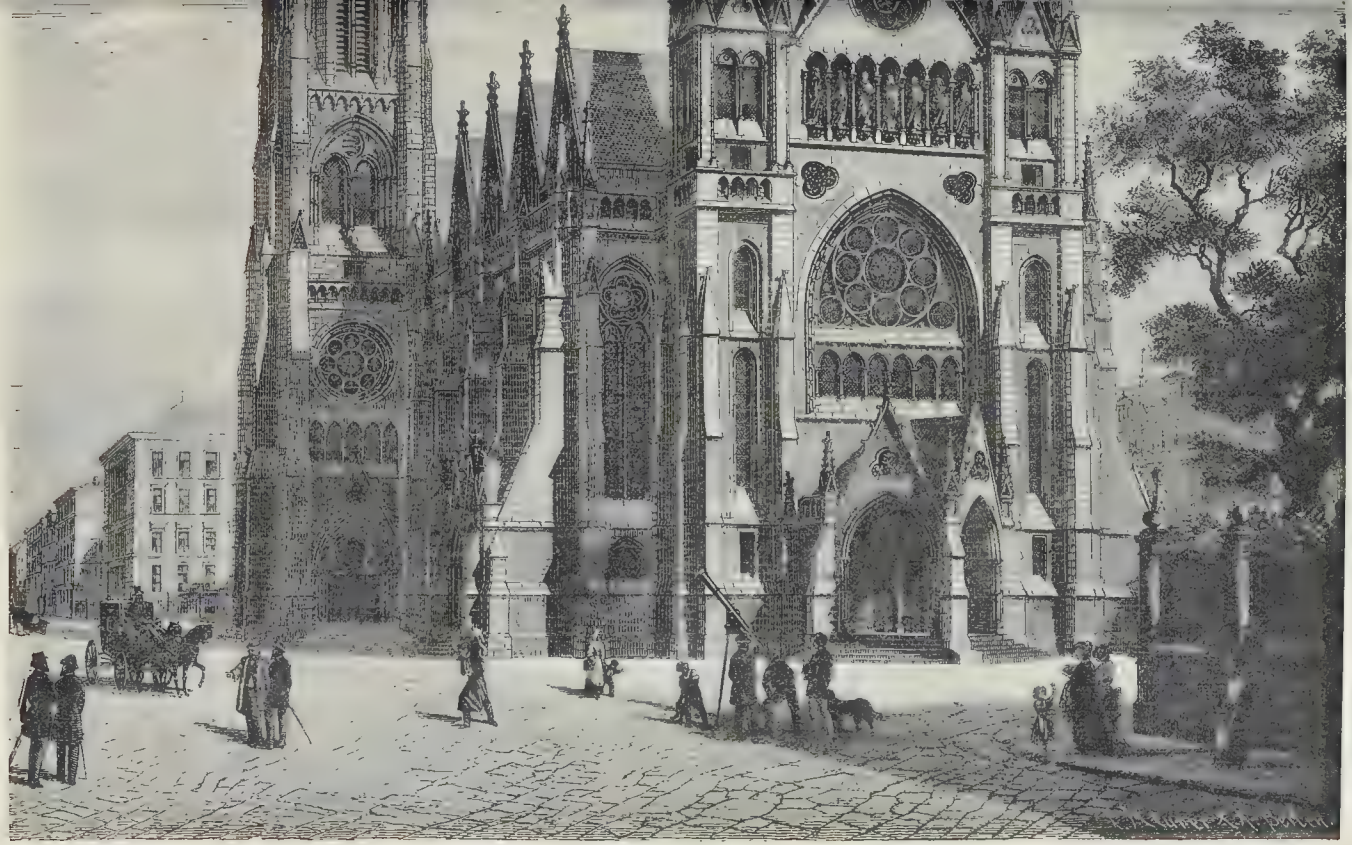
The buildings here referred to were described in Mr. Gale's paper, recently read before the Royal Institute of British Architects, and spoken of in a recent number of this journal.

The main results of Mr. Gale's visit to the United States belong, of course, to the Institute, and will probably be published, to a certain extent, in their Transactions.

THE NATIONAL GALLERY.

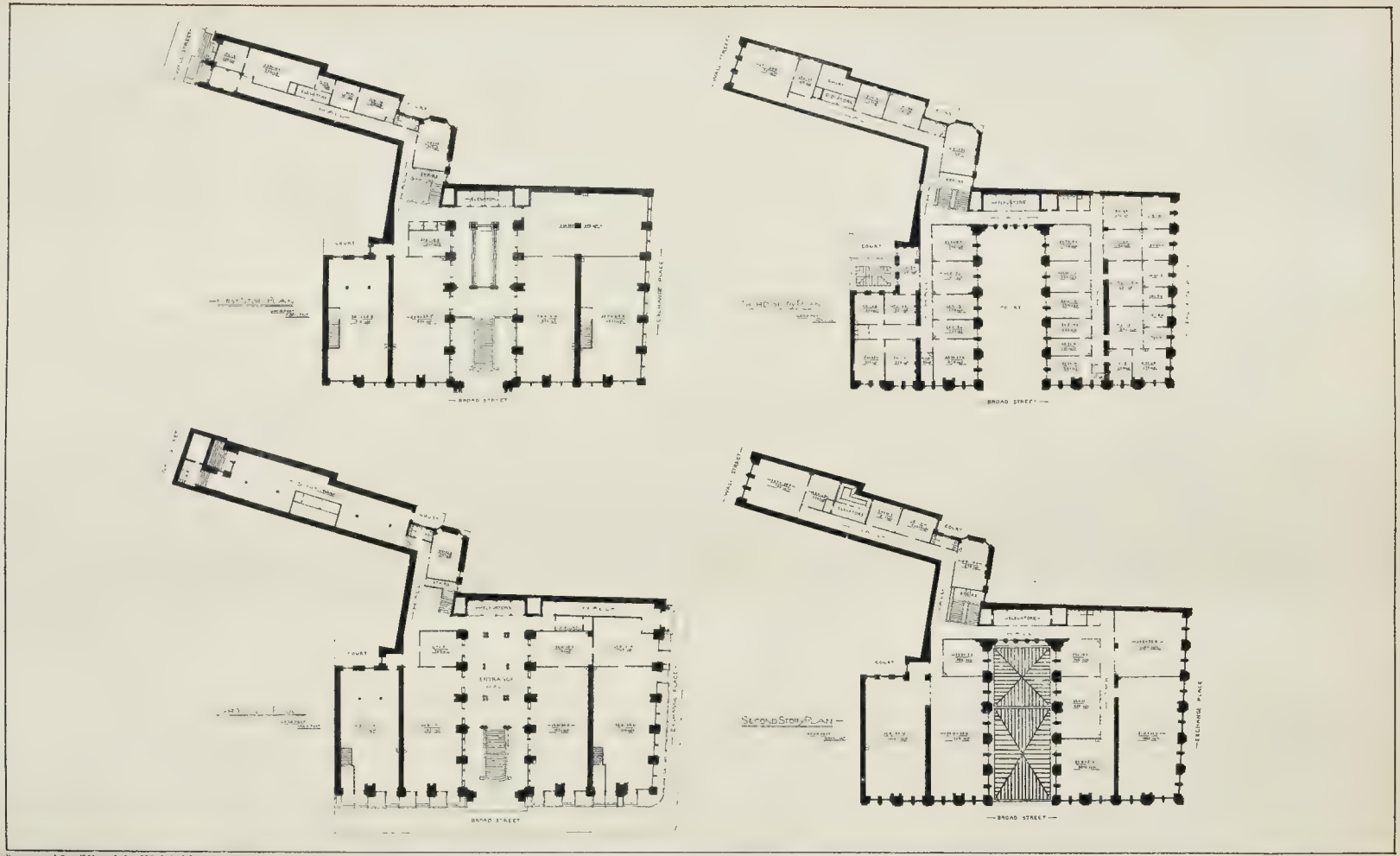
MR. COOPE, in the House of Commons, asked the First Commissioner of Works whether, regarding the present inadequate accommodation for the pictures (the property of the nation) in the National Gallery, as well as for such works of art as may be presented or bequeathed, he was prepared to sanction a considerable enlargement of the building at the rear of the present gallery, on property already in the hands of the Government; and, pending this extension, whether he was willing to sanction the lighting of the gallery by electricity, so as to give increased facilities to those desiring to visit the gallery, and especially to those who, owing to their vocations, could only do so in the evenings after their day's work.

Mr. Shaw Lefevre said the Government recognised the necessity of adding to the buildings of the National Gallery. He would submit a vote to the House for the commencement of the new buildings in the estimates of this year. He was now in communication with the trustees of the National Gallery on the subject. As to the electric light, the responsibility of such a course must rest with the trustees of the gallery, and in the present state of our knowledge with regard to that light, and especially as regarded its safety, he could not advise that mode of lighting.



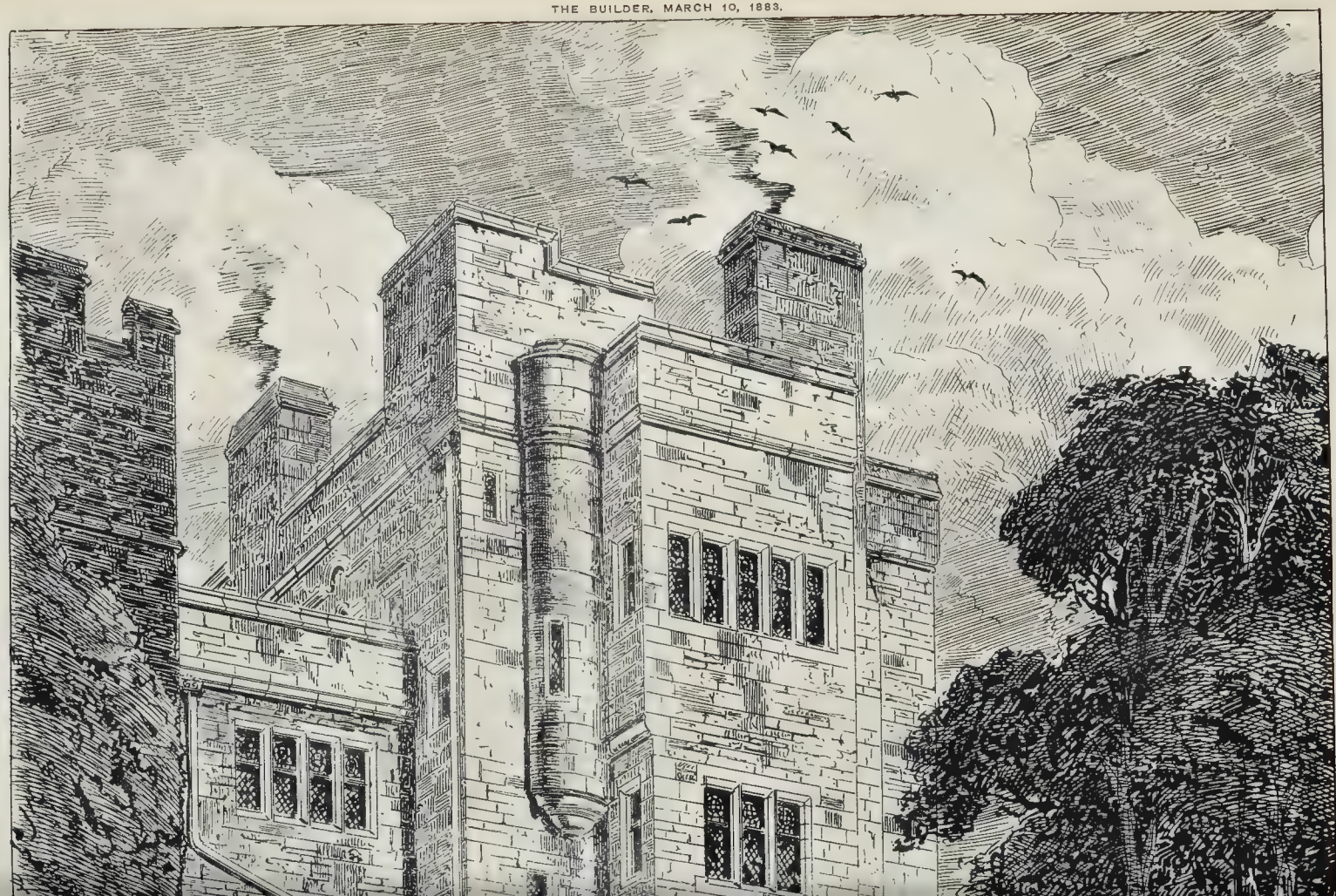
ST. PETER'S CHURCH, LEIPZIG.—Herren Aug. Hartel and C. Lipsius, Architects.





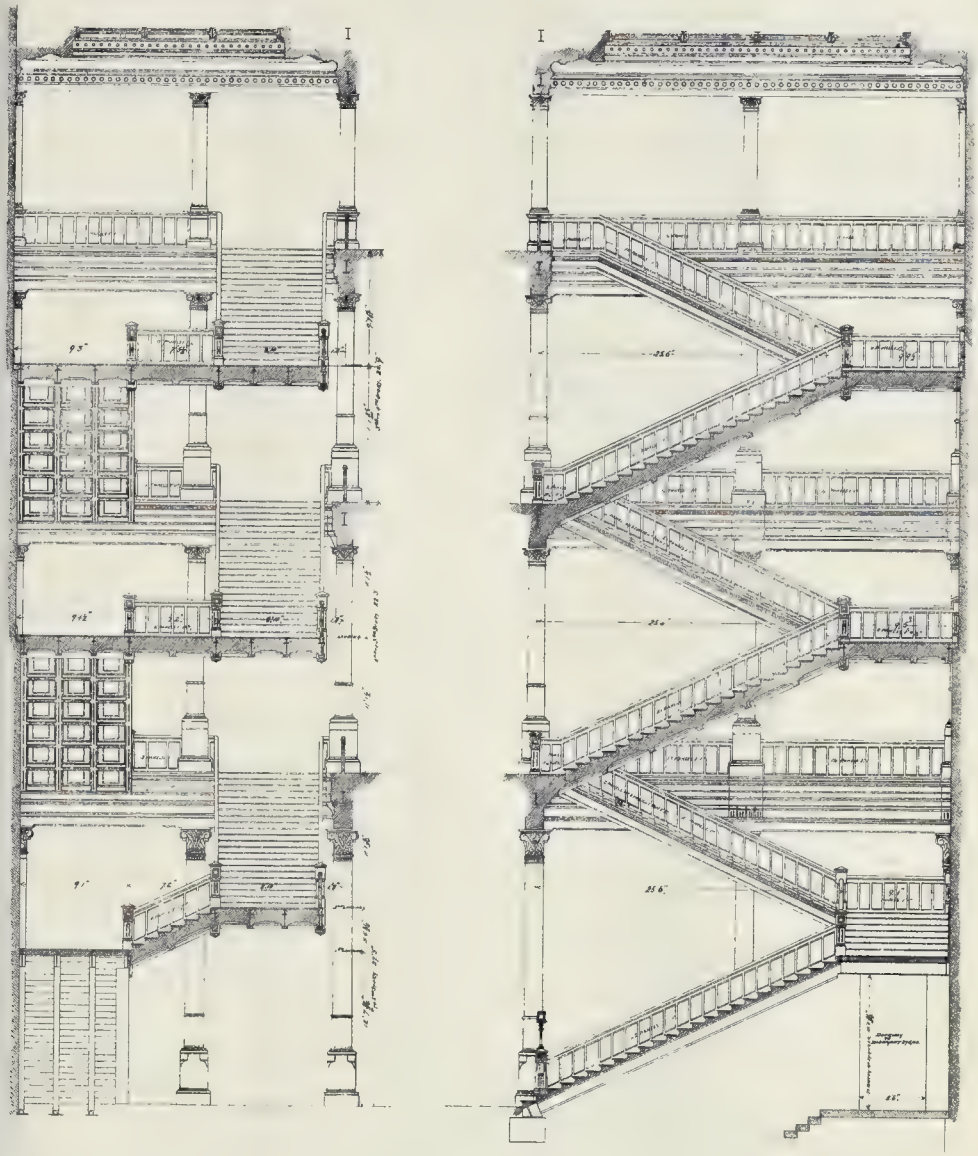
Whiteman & Bass' Photo Litho 236 High Holborn

AMERICAN PLANNING AND CONSTRUCTION: MILLS BUILDING, NEW YORK.





NAWARTH CASTLE: THE STANLEY TOWER. RECENT ADDITIONS.—Mr. C. J. Ferguson, F.S.A., Architect.



SECTIONS THROUGH MAIN STAIRS.
CHESTNUT STREET SIDE.
NOTE: STAIRS ON MARKET STREET SIDE ARE SIMILAR.

U.S. COURT HOUSE AND POST OFFICE.
PHILADELPHIA, PA.
IRONWORK DESIGNED BY MR. J. G. HILL.

SUPERVISING ARCHITECT
TREASURY DEPARTMENT.

Bierstadt & Bass Photo-Litho 236 High St. Boston.

Hymanson & Co. Printers Boston

AMERICAN PLANNING AND CONSTRUCTION: IRON STAIRCASE, NEW POST OFFICE, PHILADELPHIA.

ABOUT MODERN DESIGN.

ARCHITECTURAL ASSOCIATION.

AT the ordinary fortnightly meeting of this Association, held on the 2nd inst., Mr. Cole A. Adams, vice-president, in the chair,

Mr. W. H. Atkin Berry, one of the honorary secretaries, in proposing a vote of thanks to Mr. Thomas Verity, the architect of the Pandora Theatre, for conducting a party of the members of the Association over that building on the 24th ult., as mentioned in our last, stated that the arrangements for the next visit, to be made on this Saturday, the 10th, had not then been completed, but that any arrangements that might be made would be duly advertised. Mr. Berry referred to the difficulty experienced by the sub-committee in getting information of suitable buildings in such a state of progress as to be profitably visited, and asked for the co-operation of the members in obtaining such information.

Mr. Vacher, chairman of the class for the Study of Colour Decoration, and Mr. W. A. Pite, secretary to the class, called attention to the languishing condition of the class. Very good work was done in it by the few members who constituted it, but it was not doing the good it might do if more members could be induced to join it.

Mr. John D. Sedding then read the following paper on "Modern Design."

A short while ago I was, in an evil moment, tempted to turn my attention to nineteenth-century architecture in its relation to tradition. The choice of the subject,—or rather of the special side of the subject,—sprang from an investigation I had previously instituted into the cause of the failings of modern architectural design. The three points before me at the time were:—1. Is our architecture good or bad? To which question I gave the short answer, it is generally bad. 2. Why is it generally bad? and 3. What are its prospects of amendment?

The solution of these three points was no easy task, as you may imagine. Darwin's experiment with $6\frac{3}{4}$ ounces of pond mud, which were found to contain 537 seeds of several distinct species, is a mere trifle to the analysis of Victorian architecture. The compound thing I had proposed to resolve into simple parts was not created yesterday, but it was the fruit of the confused labours of two generations,—it was not the outcome of the blended purpose of kindred minds set in one direction, but the composite result of revolutions led by hostile minds. It is no wonder, then, if I got little presentable information out of this quagmire of opposed motives; or that I have not much to tell about its probable issues.

It would be a misapplication of terms to say that in this little effort of analysis I turned Victorian architecture inside out, because you know it has no inside,—only outsides! Just as the humourous foreigner remarked of our climate,—"Climate," said he,—"you have no climate, only weather"! so, by your grace, I am disposed to say we have no architecture now, only design. The "silver streak" of the Gothic Revival separates Old English architecture from New English design, and what we call Victorian architecture is really only a retrospective art,—an art of plagiarism—an art of odds and ends,—an art which is composed of what naturalists might call "illegitimate crosses,"—a system of design such as the "wandering Jew" might turn out if he were still on the tramp, as the result of his itinerary notes. If you inquired as to its "tendencies," I think you would see that so dignified a term scarcely befitted its present wabbling motions, for excepting a kind of blind bias towards half a dozen different types of the Renaissance at once, it is really too flabbily constituted to take a steady stride in any definite direction. To say this, however, is by no means to detract from the many excellencies of English design, or to refuse to recognise the vast improvements effected in the last few years. There is no denying the cleverness of English architecture, and I question whether, so far as actual designing power, and so far as range of knowledge and familiarity with historic types, goes, there has ever existed at one time, and in any one country, so much shining talent as is at the disposal of the British nation at the present time. In making this remark, perhaps I ought to qualify it by saying that I refer simply to the points of merit enumerated above, and not to quality of design, or of design, nor to the principle of its inspiration. Yes, and I would go yet further and say that even had we Bramante, Peruzzi, and Michelangelo with us just now, we should do no better design. We cannot want better architectural designers than many now living in our midst. It is not more talent, or more knowledge, or more invention that we want; it is not even that the times are against our producing first-class art, but it is that we have no tradition to rest upon to give back-bone to our efforts. It is all very well for our hard task-master,—the nineteenth century,—to demand better bricks and more of them; we could make them fast enough, if only the clay and the stubble were provided.

So far, then, as bare designing faculty is concerned, I am bold to say we could stand the comparison between ourselves and any band of designers of past days. Consider, for one moment, the range of our everyday work. Consider how, at anybody's beck and call, we are called upon to do, and can do, what was demanded of no other architectural designers the world has ever seen,—and that is, to design, at a moment's notice, not only in the styles, but in every phase of the styles, of the thirteenth, the fourteenth, the fifteenth, the sixteenth, the seventeenth, and the eighteenth centuries of the English, French, Italian, German, Flemish, and Dutch architecture, to say nothing of having to throw in as a makeweight the adornment of our productions in such world-wide systems of decoration as the Chinese, the Persian, the Cairene, the Pompeian, and the "Early English" (whatever that may mean).

Now, I think that even Mr. Matthew Arnold,—hard as he is to please,—might, for once, be proud of British enterprise if he realised, as I do, the magnitude of the ability and the range of the knowledge of the British architect. It is prodigious! But if we are proud of our child, it must be owned that its equivocal ancestry gives us some trouble in the matter of providing food to its liking; and if it were not for the railways,—English and foreign,—and the organisations of frequent foraging excursions, I do not know really what we should do.

But, joking apart, English architecture is not what it was in old days,—the production of English brains. In truth, designers are in that colonial condition of neutral-mindedness and variance with the past, that they might just as well be living in America or in any other scarcely-civilised country, for all the help they get from the store of tradition left them by the fathers of English design. They are little more than the fetchers and carriers of old ideas, which they mend and improve and patch up as the fancy takes them. And men, advanced in years, who have shared in the revolutions of taste of the last fifty years, and produced designs to suit each succeeding rage, are not recognisably the same men if judged by their works. The chameleon may be the same lizard, but seen under his changes of colour you would hardly know him. It is not with us as it was with the old designers,—say the Italians I have just mentioned,—whose work has a uniform style and uniform character throughout, and the periods of whose lives slide into each other from less to more, as the quarters of the moon into the full moon without sign of separation. And lest any one should accuse me of harsh dealing with a century I so sincerely admire, let me remind you of a few typical examples of nineteenth-century work. Of churches, take All Saints', Margaret-street (1858); of houses, Lowther Lodge (1875); of public buildings, the Houses of Parliament (1845), the recently completed Natural History Museum, and the Law Courts; and my list is not complete without mention of that Cockney's joy and marvel of the fishes,—the Brighton Aquarium,—which I take to be a fresh and supreme type of the versatility of the Victorian era. Will any one tell me which of these typical buildings represents Victorian architecture as Henry VII.'s Chapel or Westminster Abbey or Hatfield or any other old building represents the vernacular of the periods which saw their erection?

I have just said that we could not desire abler designers than we have now amongst us, and I have ascribed the lack of tradition to be the root of all our evils past and present. There is not, so far as I can recall, any single lineally descended type of old English design now in vogue. Everything is new, while nothing is original. Everything began since we can remember. It is competitive fashion and not ideal development that has thus pushed us along at electric speed. Fashion has been the source of our inspiration, and the bond of our efforts: break that bond and the bundle of the various phases of our design tumbles to pieces. If we want to see genuine nineteenth-century vernacular national design, we must go to France or to some other happy land where art has never been pushed adrift from tradition. As for ourselves, if we dared to speak the truth, we should almost say that our minds are vacant of ideas when left to themselves, and that they need the ideas of others to fill the void; one would almost declare that the inward spring of thought was dry, or we should not have these strange omnivorous appetites which make us run about with wide, open mouths eating all that comes to hand.

These and other reflections of an equally depressing nature forced themselves upon me as I stirred the muddy waters that flow about the bases of modern English design. Most of us have at times felt the irritation of thoughts and views which instinct told us were true, but which we nevertheless let flit vaguely before us without closely following them up to their conclusions. Thus it was with me in this matter. I had long dimly felt all was not right with us. I had a sense of the deficiencies of our work, and the inconsistencies of its sources of its inspiration; I knew we had only been eating "angels' food," which we picked up at night, and devoured in the morning. I instinctively felt that we were powerless without this artificial supply from a source external to ourselves. Yet hitherto I had shirked the inquiry, and had tried to bolster up one's courage with dreams of the infinite possibilities of the types in vogue, and had indulged in high expectations of what the inventive genius of this inventive age might evolve. But daring now, for the first time in my life, to walk boldly up to this brave-looking Temple of Modern Art of miscellaneous design, and in an evil moment to lift the veil and to look straight into its innermost sanctuary, I confess that I was scarcely prepared to find what I did find therein,—only dead men's bones, and echoes of the past, but no living voice.

Yet in spite of the sad lessons of this vigil of analysis I am to-night among young men, and am young again and full of hope about the destiny of art and for the share they will take in framing it. But before going further I would advise them (after my own experiences) to try synthesis, and not analysis. The problem is to mend the failings of nineteenth-century art, to fuse the broken elements, to fix the fluent and to reconcile the far-fetched type, to unite the scattered energies at play, and to shake anarchy into order. We do not want dissection of our present chaotic effort carried out by the cold-blooded hand of the pessimist, but done mercifully by a sympathiser, much as Izaak Walton fixed his worm. We want to know the worst, and yet, withal, to get our faith in human progress stimulated and revived. We want to feel the self-regenerative power of human effort, when honestly meant, however faulty and misdirected it may be in scope and method. Our dear friend, Mr. Ruskin's, "Oh! the blessed blind men who talk of progress" does not help matters a bit. What we want is to know the bad points, yet recognise to the fullest extent the good points in modern design, and seeing these, to take heart of courage from them, to magnify them, to make much of them as the bases of future improvement. Having, then, laid down what I take to be the only helpful, healing way of touching the sores of modern design, I will endeavour to follow it in the remarks I am now about to make.

First, then, our design is wholly eclectic, and I have just said that the root of this,—yes, of most of its failings and failures,—is the loss of tradition. This central defect brings in its train a multitude of inevitable evils; yet while recognising these evils as inevitable, it is clear that they may be aggravated or alleviated, according as they are met. This eclecticism,—how is it manifested?—how is it to be met?—and what are its results? When an architect has to make a certain design, he manages, by one of those strange strokes of nineteenth-century power not found out in old days and not yet patented in these, to convert his mind into a magic-lantern. If the man be of methodic habits, he simply goes to a well-assorted bundle of slides that generally lie hard by his sketchbooks, each slide representing a special phase of historic art. Having duly selected the period he will adopt, he slips his slide into his mind, colours it with a little of the light of his own fancy, and, *voilà*, the thing is done!

This constant and seemingly inevitable resort

to types of bygone days is bad, if for no other reason than as a proof of our lack of inspiration, and inspiration has accompanied the development of every phase of historic art, whatever its date in the world's history. This is a hapless state to be in, but who shall say our present straits have not been greatly aggravated by the narrow spirit which guided the early days of the Gothic revival. With something of the pride of our first parents after they had eaten of the tree of the knowledge of good and evil, these arch-rebels from authority and exiles from tradition, the Gothic revivalists, laid down hard and fast rules as to what was to be studied and what was to be religiously eschewed. It was demanded of us that we should look at, and imitate, only the rudimentary Mediæval art, and chronology, and not the law of human development, was to settle the question of the relative merit of God-inspired art. So many flaming swords were brandished about at the time, so many vials of wrath were held in the air, that everybody (except the impious few) fell on his knees at once and straightway worshipped what and how he was told, and a pretty bit of genuine nineteenth-century ritual it made. But human nature, which can stand a great deal, must have its way at last, and it came to pass that the theories that were gulped down with apparent relish in 1840 and the types of art then admired did not satisfy the minds of the people of 1850, and the theories and types worshipped in 1850 would not do for 1860, and those of 1860 would not do for 1870, and so it has gone on, and we have "succeeded in failing" in everything, and perchance the mind of 1890 will, with equal disdain, reject the types in vogue with us at the present day. And the long and the short of it is, we are suffering from dissipated eclecticism, and we are now arrived at that luckless state when even the power of selection and the faculty of concentration of thought seem to have left us, and all forms of art are viewed with equal concern or unconcern as the case may be.

One of the most saddening, if not one of the most serious, results of this anarchy of taste is evidenced in the attitude towards old art of the younger architects of the present day. A few months ago and I was one of a select party of architectural students on a sketching excursion. The excursion was perfectly planned, and admirably presided over. There was plenty of the oil of good companionship to make things run smooth. The choice of subjects was faultless, and yet, though everything was attractive all round, something was lacking. The choice of subject, I have said, was admirable both as to range and arrangement, for it included nearly every phase of every period of English architecture, from the "undoubted" Saxon of Brigstock to the most adorable declensions of the latest phases of Queen Anne. There was architecture ecclesiastical, episcopal, monastic, civic, domestic, baronial, cottage, manorial, scholastic, and yet,—dare I say it?—the appetite to thoroughly enjoy so fascinating a bill of fare was wanting. You got a sense of nausea, of distaste, of the lack of appetite we usually associate with a pampered stomach and a gorged digestion. And will you believe me, that throughout the whole excursion, surrounded as we were by the very pick of grand old English work, the only things which seemed really to awaken the fire of the susceptible soul of the younger men into real rapture was some trumpery Jacobean pew-moulding or organ-gallery baluster, or some petty school exercise-book flourishes and sign-board writing scrabbled on an eighteenth-century memorial slab, or some heraldic devices and a detail or two (suitable for a Queen Anne fireplace) from an Elizabethan tomb, or a curly-headed Georgian head-stone? Yes, to this day, though I have thought a great deal about it, I cannot make out that rage for memorials of the dead, unless it be that the Architectural Association has offered a prize for the best Queen Anne design for a monument to the Gothic revival now considered to be in the very last stage of a rapid decline. But why not let the dead bury their own dead?

Now, this strange lack of ardour in our younger architects, this absence of a generous abandonment to present delight and trustfulness as to the future, this prevision of coming evils so unusual in youth, this want of sense of proportion and of power of estimating the relative value of things to be studied and drawn and loved, struck me greatly. I thought of my own green youth twenty years ago, when, like Gray's "little victims," one played regardless of one's doom. It made me feel how much there is in the point of view. Here the youth of 1882 looks at every period (even those in vogue) as though it had a halter round its neck. Here was plenty of admiration, but of the serious adult type; the young students had drunk of the same cup of bitter experience as their elders. They knew we had "succeeded in failing" in every period we had laid hands on, and even as they rushed at their scrabbled slabs and pew mouldings,—

> "Still as they run, they look behind,
> They hear a voice in every wind,
> And snatch a fearful joy."

Alas! alas! we may never say of them as of the young students of 1860, "Where ignorance is bliss 'tis folly to be wise." These are not ignorant, they have no bliss, they have no sublime folly.

But to return to the eclecticism of modern design. See how our architecture suffers by it in detail and in style, and although the former may be generally fairly correct, the style is almost invariably misrepresented. You know that (*pace* Mr. Gotch) it is not the dress that makes the man. His personality consists rather in his expression, in his build, his manner,—his style, in fact. And so in architecture, the type of plan, the manner of grouping, the *expression* of the structure, as well as its actual features, go to make up the style, and the style is as essential to the rendering of a period as the details employed. But we have had so much to do to keep our heads above water during the torrent of changes of the last twenty years that only the strong swimmers have been able to carry away more than a superficial knowledge of the periods that have been run through; and, consequently, our imitations must be either exact copies, or inexact imitations. The deficiences in modern design of matters relating to style are very glaring, we may copy the details, but I say we almost invariably miss the essentials of style. May-be we dress up our Mediæval work in the proper Mediæval tunic and beef-eater's hat,—or our Queen Anne in the correctest breeches and buckles, and coat of a delicate ginger, but the jaunty air and self-conscious look and twinkle in the eye betray the period it is of. Of course we know that the Americans beat us on this point as on most. The American architect is altogether a smarter fellow than the English. His Queen Anne has a sprucer dandyism than ours because he travels more. The shoe-buckles in his case are from Normandy, and the flowered waistcoat is of Franco-Anglo-Dutch extraction worked on a ground of Italian satin (cotton back), with new brass buttons of home manufacture. His Mediæval work is altogether ahead of ours in dash and daring, and it covers a wider chronological and geographical scope. He can combine circular dungeon keeps like the Tower of London (and equally awe-inspiring) with a dainty mansion dressed in half-timber work, like a Sussex or Normandy cottage, presumably representing a wall of 4½ in. thick, whose terraced ramparts and cross-bow slits, though they command only a cabbage garden, suggest to the imaginative mind of a susceptible Yankee a siege at any moment from real knights in real armour not made in Birmingham.

And now a word as to our attitude towards traditional art and our methods of acquiring and applying its types. It is plain to me that although the *many* are too inartistically inclined to study anything but photolithographs in the journals, the *few* who are doing their best to improve themselves and the art they practise, are terribly tempted to make too much of old examples and to use them unwisely. If a nineteenth-century architect studies a style too exclusively he puts himself at the mercy of the old work, he thinks any variation wicked, and he ceases to be in harmony with the spirit of the present day because his heart is where his treasure is, in the past. We cannot fail to see that excessive resort to old example for every detail and every leading thought in design is bad. (1.) We may get to rely exclusively upon the honey of the past (and hunger justifies any theft) and make no effort to coin food for ourselves out of the best tendencies and opportunities of the day in which we live. (2.) We may get to imagine with many excellent but moody-minded people that the conditions which surrounded old art are part and parcel of its merit, and that these must be stereotyped in the nineteenth century ere we can hope to do good work. (3.) We may have too many "excitants" for healthy design (and every idea is an "excitant" to the mind). (4.) We may get to consider the stimulant as a necessary of life, and cease to nourish ourselves by the food of self-cultivation. (5.) We may err by this radiation backwards by taking to copy things outright,—a practice not at all infrequently adopted, which will do neither ourselves nor our fellow-craftsmen in the workshop of the nineteenth-century world an atom of good.

Of course, what applies in these remarks to contemporary architecture applies also to the allied branches of design, such as furniture, stained glass, wall-papers, woven fabrics, metal-work, and the like. Now I do not think any decent publisher could be found to issue a bit of old poetry or old music, franked with a living man's name upon it, and none other, while it was no more his composition than the man's in the moon! And if he did, the transaction would be described by the world in fitting terms. Think how the world yet rates poor Chatterton's forged "Balade of Charitie," although, forsooth, it was the immortal boy's own production, and teemed with strokes of genuine poetry. Yet, as you know right well, in all branches of decorative design this sort of counterfeiting goes on, and manufacturers and designers do not blush for it, and the world does not characterise the transaction by the hard term of forgery, although in this case the things produced are real counterfeits that are foisted upon the public as genuine productions of the age that has rescued them from oblivion.

It may be urged that where an old thing possesses real excellence it were a pity everybody should not be able to enjoy it, or it may be said that as accuracy of presentment of a period aimed at is so excellent a thing in itself, such forgeries are free from blame because no living designer could touch them by original effort. This may all be very true, but do not let us point to such art as nineteenth-century art, or as a token of progress. All is *not* fair in love, nor in war, nor in design! If you get your end by wrong means, it were better not attempted. All this sort of art reminds me of an embalmed corpse in a ball dress. It is historic art made histrionic. It is like a scene in a theatre, where all the stage properties, and dresses and wigs and pigtails, are true to a hair, and you value the presentment as a piece of patient archæological research, yet are none the less glad to find when you get home that you are still in the century in whose workshop God gave you a bench.

What then should be our attitude to old art? This is really one of the great questions of the day. Let us look for a moment at the attitude of artists of old days when they desired to get the influence out of antiquity, or to work in accordance with it. Every one knows how ardently the Italians loved Greek sculpture and Greek detail. But what they did was to study it so closely as to draw the nectar out of the old example, to cull its esssence, to bring the spirit of the antique into contact with their own responsive spirits, and out of the impact to get fresh life and fervour. "Out of the strong came forth sweetness." As with the bees searching for secreted nectar, so with the student of historic art, the result not only supplies him with food personally, but the search is the means of fertilising the flower and of preserving the species.

It is true we have no living art to fall back upon, as the Italian had, but *we have one to make*, and we have ourselves and the best imaginative tendencies and capacities of the age, joined to the lessons derivable from antiquity wherewith to make it. Let us, then, be determined, however much the effort may add to the difficulties of our personal work, to be true to our own highest ideals and the highest ideals of our generation, and there will be hope for Victorian architecture. Nay, there are so many ways in which modern work may not only vie with, but beat, old work. Old art is not always individual, it is not always good, it is not always sincere, it is not always interesting, for there were dull British architects in old days as in these. Now we may not only cull all we can from antiquity, and impart the result to the structures we rear, but we can imbue them with the more cultured individuality of an architect of the nineteenth century. We can grace them with more finish; we can plan them with a more gifted sense of artistic planning and we can put into them more thoughtful detail and more romance and poetry (and science too) than can be found in many a phase of historic art.

There is another point connected with this very idolatry of old art which I should like to say a word upon. From what one sees in the most recent developments of Victorian architecture, it appears to me that we are suffering from what I would call a penitent enthusiasm for the types that we had prejudged falsely. You know how twenty years ago "Christian architecture" was all the rage, and the term included only that which was not later than the thirteenth century. We were taught to cross ourselves at the sight of the Perpendicular; and, as for the Renaissance, even the most artistically elaborated vindictive of Mr. Ruskin could not fitly express one tithe of the loathing all pious-minded people should instinctively feel at the ungodly results of ungodly types of art. Broader views now happily obtain, yet the errors of past prejudice have left their stings behind them. Under the circumstances of the case it was inevitable that when once the spell of prejudice was broken, and the cast-iron barriers hurled down, it would be impossible to regulate, much more to check, the flood of admiration that would set in. And that is our present case; our admiration for the Renaissance enfolds in indiscriminate embrace all that had been so undiscriminatingly abused in the past, whatever its quality in the scales of good taste.

Now, I am not for a moment desirous to see another court of art-inquisition erected upon the ruins of the last,—far from it. I love not to condemn the fruits of any well-meant service of man to mankind. Yet no one will say that the intrinsic value of all phases of art is the same. Vanbrugh's Renaissance is good of its kind, but the degree of its goodness can only be rightly measured by comparison with Bramante's; and I cannot see that because our sympathies have widened, our power of comparison should by the same token have lessened. Liberty of range ought to be possible without necessarily meaning contamination of taste. Because the Gothic revivalists used the tar-brush so liberally over the Renaissance generally, that is no reason for our indiscriminate employment of whitewash. Let us bear in mind that as there is noble and ignoble Early English and Perpendicular, so there is noble and ignoble Renaissance. We ought still to practise selection.

Seeing, then, what I do see in modern design, —an entire absence of proportionate valuation of merit and of power to discern defect, seeing that the silliest, the most contemptible, the most glaringly bad features of historic art are copied by modern architects with the same innocent ardour and peculiar devotion as accompanying good features, I venture to characterise such violations of the true canons of good taste as mere licentiousness and Chinese tailorism.

To sum up briefly, how we shall most profitably deal with old example, let me say we should study it with loving sympathy,—we should turn to it constantly for refreshment amid the heart-breaking failings of our own efforts,—we should take it with thankfulness as the good grain from God's garner, laid by for our special needs (for none so needed the inspiration of old art before), as the good seed that, if put into the earth, and watered by our own endeavour, will grow and fructify as of old. To use its *motifs* is not wrong where we cannot get on without them. We should study it so that it should not only help the formation of our own taste, but lift our mind to a high level and hinder us from grovelling in routine. But do not let us borrow in order to compose a new design, but only use it to stimulate our ideas before they are expressed, and in order to get into relation with traditional methods of treating such subjects as we may have in hand. Do not let us, however, suppose that because we have hit upon an entirely new treatment that is still in accordance with artistic rules, that we are wrong,—it is a blessed thing to be able to make breaches in the four walls of present circumstances. The system of design that never gets beyond the tether of the leading-strings of antiquity is not a living thing. The ancient example which, to my mind, is calculated to impart the most useful lessons to the modern architectural designer is that of Lot's wife. Remember Lot's wife!

The best corrective to all our improper leaning upon old art is, then, the fostering of individuality. And there never was a time more favourable to the exhibition of genuine individual character than the present. Let us note, moreover, with due satisfaction the evidences of this excellent trait in the work of many of our leading architects. In this emphasis of personal character lies, I verily believe, the brightest hope for modern art. Yet who is not aware of the vast amount of commonplaceness that stares you in the face as you walk the streets of London, or of any of our large manufacturing towns? London has been practically rebuilt during the last fifty years, and what have we to show for the unspeakably vast opportunities nineteenth-century architects have had placed in their hands. Goethe has called architecture "petrified music." Well, I hope we shall hear the music, in this case, some day! But at present I would ask you how many of these enormously costly edifices do you suppose will figure in history, except, perhaps, as the scene of a well-deserved bonfire! Which of them gives you a spark of imaginative delight? Which creates in you a sense of that captivating and communicative thing,—human interest? Which of them speaks of spontaneous inspiration,—"fresh as wild roses"? Which of them has "quality"? Which suggests the divine origin of the gift of its design?

And why is our city architecture and much of our general design so very uninteresting? For this very reason, that the designers are not interesting men. It has been said of life, that you find in life exactly what you put there; and so it is with architecture. If we were to put more thought, more poetry, more intensity of personal power into our work, if we crooned over it more, and let it be interpenetrated with our own character, it would add to our own personal interest in it,—it would gain new charm and new power of appeal to our fellow-men, and would be a worthier offering to posterity. Our work may be never so faulty, yet if the stamp of personal thought and of the mould of our own mind be there, it will cover a multitude of sins. Granted, moreover, that Victorian art is bound by the circumstances of our age to be a mongrel thing, this is only the more reason for the exercise of some controlling personal faculty to draw everything together and so preserve the unities of art. And let none of us think to escape this necessity for doing true individual art by the plea of the smallness of the works it is our lot to do. If you think the matter over, you will find that the very pick of the world's best productions are small things. How little Niccola of Pisa guessed that he was building himself an everlasting name, and earning a place among the immortals, when he made his pulpit! And even the smallest details of stone or wood or ironwork are capable of taking the very finest artistic expression. Nay, the things that seem to have the simplest range and the tiniest area for display are usually those which most tax a man's invention, and best represent his peculiar power.

The next point I would refer to is the limited range of our architectural design. No one expects, or ought to expect, to find work done nowadays that represents the highest summits of ideal art. We cannot forget that all art of the highest class,—such as that of Greece in the days of Phidias, of France in the thirteenth century, of Italy in the fourteenth century, of England in the fifteenth century,—comes only as the result of long preparation, as the *crême de la crême* of art that has stood a long time. How can our architects attain all at once to balanced qualities? And beyond the condition of the artists themselves, it also occurs to one to say that only a prepared public can appreciate really *big* art. Yes, I can conceive the possibility of offered "pearls" being obstinately refused by other people's clients,—*not mine!*

I have already descanted in my bravest tones of the extreme cleverness of modern design. Yes, gentlemen, the pity of it is that it *is* so clever; for that is just what the best historic art is *not;* it is inspired, but it is not clever. You know what Pascal says of eloquence:—"True eloquence," he says, "is that which laughs at eloquence." So, I would say, true design laughs at design. Look at any fine old building, with its calm front, its simple structure, its composed manner, its large effects and free spaces, and note how if it be audacious here and there, it is placid as a whole,—how, if it indulge in graceful refinements and delicate felicities, it does not rely on them, but upon accurate proportion, rhythm, and other simple or solid elements. Then turn to our Victorian designs. How much faddle there is about them, —how inflated and self-conscious and concocted they look,—how whimsical their air, with their bastard archaisms and their garniture of superfluous and often spurious prettinesses.

And what I say on this head I say specially with regard to the Renaissance side of our design, and not so much of the Gothic. To speak truly, the present outburst of Renaissance design ought to have been preceded by strenuous study and a long vigil of preparation; had it been so, we should have a different tale to tell at this present moment. With the exception of such Renaissance as that of Mr. Norman Shaw (the man who, more than all the members of the Royal Institute of British Architects put together, has enfranchised modern design, and who, perhaps for that reason, seems least eligible for the honours of the Institute),—I say, with the exception of the Renaissance of Mr. Shaw, Mr. Bodley, Mr. Philip Webb, and a few more,—that is, of men whose sympathies and studies have set in this direction for full twenty years,—you will find abundant testimony of complete unpreparedness in our designers in this class. Hence the failures of our Renaissance work; hence, too, the greater excellence of our Gothic work, because here we have had fifty years to prepare for its practice, and the Gothic designer is far too well charged with Mediæval ideas, and far too deeply read in Mediæval secrets to wish to spread himself out on a wall, and deploy before the eye of the astonished spectator all he knows, and all he could tell if he chose. Perchance, too, there may be something in the fact that the ranks of the Gothic school have been weeded of the half-hearted, half-taught adherents, and that only the chosen few of trained ability and tried spirit are left, —the few whose quest has been crowned with spoils too blest to relinquish their gains at the bidding of a fashion-mongering crowd. For one or both of these reasons, I am bold to say that the general run of our Gothic work is less forced, less spurious, less concocted, less inflated, less amusing,—I had almost said, in regard to the radiant imbecility of its applications of cribs from the past,—than our Renaissance.

Lastly, may I crave your indulgence while I say, in the presence of young men how much I, personally, deprecate the prevailing practice of calling upon young men to design. I never encourage a young man to design at all, and because I believe it to be against his own best interests and the interest and honour of art that he should trade on insufficient knowledge, or make a call upon a personality which is only in embryo. Why; he cannot render the great qualities of a great thing even if he tries to *copy* it, any more than a thrumming schoolgirl can play a bit of Beethoven! What was the good of that young prig Mozart trying to compose at five years old? What is the good of a young architect spinning thoughts out of brains whose fibres are not equal to the strain of weaving! Let him rather, like the novice in a monastery, learn to keep silence,—yea, even from good words. Let him, during a long noviciate, learn the real nobility of his high calling. Let him read his Ruskin; plod patiently on in the modelling class; let him learn the true principles of design; sketch and study the best examples; train his hand, his soul, his imagination; let him go to concerts, read poetry, prose, and romance, and combine with this all that he can possibly cram up of the history and composition of glue; of the newest electric light; the choicest method of laying drains and ventilating them with Imperial self-acting exhaust ventilators; and know all about warming, and acoustics, and girders, and the virtues of Portland cement: let him draw and study flowers, foliage, animals, men, birds, trees, rocks, glaciers; let him seek to gather all that is "fair and fit" in all creation, *but not design.* I know my "Pope" too well to recommend that flattering folly.

"A little learning is a dangerous thing," &c.

Having trespassed so long on your patience, I must draw my paper to a close. You may remember that I began with stating the position I should take in this paper. I undertook to look modern architectural design full in the face, to learn the worst about it without flinching, and to pick up such crumbs of comfort as came in our path. There is so much more, however, to be said before its present condition and its future prospects can be adequately told that I feel I must apologise for the little I am able to offer to-night. The line I have taken in discussing the perplexities of our work is to concede as much as one can to the modern

world, and to the conditions of our age while still claiming high ground for the pursuit of our vocation as artists,—as, for instance, the inevitableness of our resort to ancient art of all possible kinds with the consequent certainty of reaping a harvest of mixed types, and such like matters. Where you have a tangled skein and cannot unravel it in any other way, you break some of its threads and the thing is easier at once. Modern design, as I am never weary of reiterating, is full of great faults and great qualities. There never were grander times for a man of metal to be called to work in than the present, and just because the difficulties are so trying, the way so steep, the mists so dense about our feet and round about us. Yet there are moments when the watch-fires glimmer out in the heights above us, and we know that our labour is not in vain, and we press on. The great thing is that no one shall be indifferent to what is going on about him, and that every one shall make a point of trying to crystallise the good tendencies of his design in the present day, and to amend its bad ones; and every one can do something. Let us, moreover, try each in our little way to cultivate the virtues opposed to our present vices. To make of our changefulness of purpose, flexibility; to build chastened hope on the ruins of our despair; to bring upon our gross licentiousness of taste the light of a more exact knowledge and clearer views; to let our love of faddling excessive ornament grow up into refinement and finish. And *finish* means not only to add refining touches, nor to make work as beautiful and simple and pure as may be, but it is to add something to it, by virtue of what, in Carlyle's language, "comes from under a man's hat," guided by the utmost knowledge and taste attainable from the highest imaginative tendencies of the day in which we live. Finally, my younger brethren, "Don't talk of what you are going to do. Do it!"

The Chairman, in inviting discussion upon the paper, referred with satisfaction to the large and attentive audience which had assembled. Mr. Sedding seemed to take a somewhat melancholy view of the present condition of architectural design, but had given the meeting a receipt which he thought was calculated to effect an improvement. What was that receipt? Practically it amounted to this,—that architects should be thoroughly in earnest in their work, and that they should go to the best examples for study; but was there any enthusiastic man in that room who had not started on his career in that manner? He was inclined to take a more hopeful view than Mr. Sedding, for he believed that within the last thirty or forty years a great deal of thoroughly good work had been done by architects,—work, some of it, that would stand comparison with the work of any age. He had hoped that Mr. Sedding would have laid down some specific rules or suggestions for the guidance of students, so that they might go on their way hopeful and rejoicing; but, instead, Mr. Sedding seemed to think that the only motto that could be appropriately inscribed over the portal of architecture as a profession in the present day was,—

"Abandon hope, all ye who enter here!"

Mr. Sidney Vacher, in proposing a vote of thanks to Mr. Sedding for his paper, said that the young men who came into the architectural profession consisted of two classes,—those who wanted to make a living by it, and those who wanted to make a name in it. As time went on, it appeared that the great difficulty of both classes of men was in finding clients. When the clients were obtained, they must be retained, but they could not be retained unless their wants were complied with. Of course, a man who wanted to make a name would have a preference for a particular style, but nevertheless he must try to please his clients if he wished to retain them. But why cry out against the opinions of the public in architectural matters when the public were taught all they knew concerning them by architects? Certainly the greater part of works on architecture were written by architects, and in other ways, such as by the Academy lectures, the public was taught by the profession, but by the successful men in it rather than by the enthusiastic men. It was his decided conviction that if any improvement was to be made in modern architectural design, it could only be effected by each member of the profession taking up and lovingly adhering to whatever might be the style of his choice, seeking to fittingly adapt it to all possible requirements, and carrying out his works in that style whenever he had the chance to do so, although he might sometimes have to work in other styles. Mr. Sedding had argued that students sketched too much, and tried their hands at design too early. Now he (Mr. Vacher) did not think it possible that a student could sketch too much or too many things. Let him sketch all that pleased his eye. Indeed, the fact that a thing was sketched at all might be taken as proof that the sketcher saw something in it. Street and Burges sketched pretty well everything they saw if it pleased them. Neither did he agree that it was a bad thing to allow young architects to make designs of their own; for such works possessed a high educational value, and when they were older and had more matured ideas, their very failures would be fraught with useful lessons to them.

Mr. Aston Webb, in seconding the motion for a vote of thanks to Mr. Sedding, said the paper which had been read was one likely to be found useful and helpful by all of them. He (Mr. Webb) agreed with the Chairman in wishing that the author had found more to say of what was good and hopeful in modern design. But, in reality, he did not think it was for the architects of the present day to be concerning themselves by looking too closely into the results of their work, for they were not really in a proper position to judge of it. It was not desirable that a plant should be retarded in its growth by its being continually dug up in order that its roots might be examined to see what progress was being made. He thought that there was a good deal of architecture done in the present day of which, if we were not proud, those who lived after us would be. Nineteenth-century architecture would be judged of, after all, by the great examples of the buildings of the present day, and not by the speculative or temporary works which were so largely the result of our present system of land tenure. The question of style had been mooted, and he noticed that the members of the Birmingham branch of the Association had been discussing the merits of the Classic and Gothic styles, and had decided by a large majority that the Gothic style was the best adapted for the present day. Now, any one turning off Sloane-street into a square now being built would see a corner building of Gothic character, designed by the late Mr. Street, and three other houses in "Jacobean," "Queen Anne," or whatever might be the correct name of the style. Notwithstanding the difference in style between these buildings, it seemed to him that there was perfect and thoroughly suitable work in each of them; indeed, both styles of architecture, as adapted to modern wants in these buildings, approximated very closely to each other. Then, to take another instance, that of Wakefield Town-hall, of what style was it? He should say Nineteenth Century, and nothing else. He thought it would be a building of which English architects would be very proud. A large amount of attention had been paid of late years to the internal arrangement and adornment of our buildings, and the advance in this direction had done much to foster the public appreciation of architecture. He agreed with Mr. Sedding, as most of them would, in saying that what our architecture needed was rest. Simplicity and repose were two characteristics which were never absent from a good design.

Mr. J. A. Gotch, in supporting the motion, said Mr. Sedding had said a great deal about the uninteresting and commonplace work of the present age, but it should never be forgotten that the commonplace would always be in excess of the *uncommonplace*. The practice of sketching was useful to young architects, not for the chance of reproducing the works sketched, but for its educational value. In spite of Mr. Sedding's doleful view, he thought there were many signs of encouragement. As long as architects stuck to common sense, and made their work as beautiful as they could, they would not go very far wrong. As to the practice afforded by designing, how long was the practice to be prohibited? Surely a young architect ought to be allowed to try his powers as a designer as soon as he felt himself in a position to make a beginning. He would have to design for himself some day, and so must make a beginning at some time or other. A man could not swim before he went into the water. Mention had been made of the "Victorian style" of building, but if that style existed at all, it was to be found, not in architecture, but in our railway stations and other engineering structures, which were the characteristic buildings of the present century. If there was to be a new style, it must be founded on the proper treatment of new materials.

Mr. R. C. Page said he was inclined to agree with Mr. Sedding in thinking that the aspect of modern architecture was most discouraging.

Mr. Martin saw no reason for discouragement. Plenty of good architectural work was done now, and it was noticeable how buildings which had been constructed on true principles had stood the ordeal of the Wood-street fire, while the sham architecture of stone plastered over iron had been levelled with the ground.

Mr. F. R. Farrow regarded the New Natural History Museum at South Kensington as an example of good augury for the future of the profession. Here was a successful building with an essentially modern plan thoroughly well adapted to an essentially modern requirement. In conclusion, Mr. Farrow defended the practice of allowing young men to design for themselves.

Mr. H. W. Pratt, having said a few words in support of the vote of thanks, it was put to the meeting and carried, and Mr. Sedding having briefly replied, the meeting terminated.

HINDRANCES.

LEEDS ARCHITECTURAL SOCIETY.

MR. J. HONEYMAN, President of the Glasgow Society of Architects, delivered a lecture before the members of the Leeds Architectural Society on Monday evening last, Mr. J. B. Fraser presiding. In the course of his lecture Mr. Honeyman considered some of the hindrances which affected architects, their profession, and their art. Dealing first with the hindrances which began with their education, he said they might do much to further the movement which seemed now at last to be taking shape for the establishment of technical schools in the larger towns. They could also assist greatly in removing a serious hindrance to the earnest student of limited means,—he referred to the want of good books of reference. He suggested that the architectural societies should each in its own locality endeavour to get a selection of the best architectural works added to the public libraries. Coming to the hindrances affecting their art, he observed that architecture, more than any other, was a popular art, and there was one hindrance to the progress of their art which had hardly received the notice it deserved,—namely, the bad effect of every hideous building that was erected. He utterly repudiated the idea that the architects of the country were responsible for the monstrosities which shocked artistic sensibilities in almost every important town. The responsibility lay with those outside the profession altogether. The public did not employ the best architects to do their work, and with them rested the blame. They could not hope to see anything done towards diminishing the output of bad work, and encouraging the growth of architectural art, until the public entirely changed their attitude towards architects, and learned to treat their art and their profession as they treated other arts and other professions, giving due deference to the master, and acknowledging the worth of experience. Meantime we are helpless; a Beckett is confounded with a Street or a Waterhouse, and art critics, whom they might hope to aid them, served but to darken counsel by words without wisdom; lacking the discrimination to perceive that their art, for the most part, was misrepresented and caricatured by the obtrusive productions of enterprising novices. It might be contended, with some plausibility, that they were beneficial to the profession as a business,—a means of earning a living,—but it seemed to him to be beyond question that their influence upon our art is wholly pernicious. As in the past, so still,—art's epochs culminate in the achievements of veterans.

Removal of Steel Works.—Last week the rolling of the last rail took place at the Dronfield Steel Works, near Sheffield, belonging to Messrs. O. Cammell & Co., previously to the removal of the works to Workington, on the Solway coast.

THE WORKS OF THE LATE HABLOT K. BROWNE.

As we have already announced, a collection of the sketches made by the late Hablot K. Browne (better known as "Phiz"), principally for book-illustrations, is now on exhibition at Liverpool, under the auspices of the Art Club. On Monday evening last, the president and members of the Club invited a large company to listen to a paper "On the Artistic Character of Hablot K. Browne," by his son, Mr. Edgar A. Browne. Unfortunately, owing to the serious illness of a child, Mr. Browne was unable to attend, to the great disappointment of the assembly, and in his absence the paper was read by Mr. R. D. Radcliffe. The paper contained the following passages:—

In these days when many men discourse mellifluously on the arts, and a new dialect has been invented to do justice to the emotional nature of our younger critics, when a vast amount of dogmatic and flamboyant writing pervades our magazines, our newspapers, and our reviews, when high-minded young ladies dress up to their drawing-room wall-papers, and good people live up to blue tea-pots, a plain man, speaking in a plain language, about the simple, old-fashioned arts of the past generation, will probably seem flat and dull, perhaps even uncouth and archaic from a neglect of the proper transcendental adjectives, and some apology may be almost necessary for his intrusion into the sacred arena of culture and criticism. But I derive some courage from the discovery, made after many observations, that the majority of these gentlemen who lay down the law in honeyed cadences about the province of art in human life and the reaction of yellow ochre on the soul, are not always comprehensible, even to themselves, not to mention their readers, and are for the most part quite innocent of any capacity to practice the arts which they so eloquently define and expound. I also derive courage from having lived sufficiently long in the world to see that fashions in the arts and their critics undergo change, and to have observed that the most eloquent prophets of one decade go to the butterman in the next. I am sanguine enough to hope that my subject may have attracted a certain proportion of old-fashioned people to whom a less transcendental, not to say less "high-falutin," mode of treatment than is at present in vogue may not be unwelcome. In consonance with that idea, I will ask you to take the unusual course of endeavouring to understand what we are talking about. Let us, as far as possible, define our position and arrange our standards, so that we may be in agreement and I may not be talking about one thing while you are thinking about another. One of the most grievous errors that can be made in criticism is to form a judgment on any artist,—whether he be painter, actor, writer, or musician,—without understanding his aims and intentions, without taking account of the influence of his age, surroundings, and circumstances. Now any superficial acquaintance with the graphic arts shows that artists naturally fall into two broad divisions. First, the men who paint the visual aspects of things: men who delight primarily in the colour, form, and texture of objects. They may be satisfied to paint things as they are, in a pure spirit of imitation, like Gerard Dow; or they may seize upon the colour, as did Titian; or delight in the beauty of line as did Raffaelle, or in the subtlety of modelling as did Ingres, or in delicate gradation of tone as did Corot. To these men the glow of colour, the play of light and shade, the balance of chiaro-oscuro, the harmonious accordance of graceful lines, or the tonic relations of values will be all sufficient. But to the second class these purely visual properties of objects must be associated with some intellectual idea,—they look upon form and colour, not as the final end of their art, but as vehicles for the expression of mental or emotional impressions. These men are stimulated to paint not by a delight in scarlet or azure, but by their interest in human actions, passions, and emotions. They regard human beings as the actors in the great drama of life, not as so many models for the studio. They paint not so much for the sake of painting, as for the purpose of recording the scenes and incidents to this drama, tragically, pathetically, humorously, or grotesquely, according to their mood or their prevailing tone of character. The first class are painters pure and simple,—specialists; but in the second, painting is united with a form of literary activity. Although artists, and expressing themselves by the brush rather than the pen, they may be endowed with the dramatic faculty, or the power of story-telling, or even of making puns and jokes. And observe that this literary faculty is an integral and essential part of their artistic character. The story or idea permeates the drawing, and often great pictorial sacrifices are made in the attainment of the desired end. These men are frequently less accomplished in technical matters than the more genuine painters; indeed, one of the greatest ornaments of English art, Blake, expresses himself with scarcely more knowledge of the grammar of art than a schoolboy with a slate and pencil. In this latter class we place a group of men who, from the beginning of the century till within some ten years past, have afforded us great amusement, instruction, and delight, Cruikshank, Seymour, Leech, Richard Doyle, and Hablot K. Browne. These men, differing in many things, have all a common aim and impulse in their art. They all desire to express themselves rather than to represent objects. They desire to arouse in the spectator the same sensations that scenes or incidents have aroused in them. They are less concerned with truth to natural facts, than with the expression of their ideas. Their representation of objects is often purely symbolical, and by no means in accordance with scientific accuracy. Indeed, the detailed study of nature as we understand it did not exist. People had not begun to take the world or themselves seriously. The age had its ideal,—every age has. In art its true ideal was a development of the romanticism of Scott, —a romanticism partly picturesque, you will remember, but leavened and sweetened by a hearty delight in human character and natural scenery. Its false ideal was classical, borrowed from the French. We thought we admired Greek art, and we erected hideous square boxes, with six or eight columns and a portico, because we persuaded ourselves that the Parthenon was the proper model for Christian churches. Our public men who had the misfortune to have statues awarded them were represented in togas, and with legs uncovered by those garments without which Respectability (south of the Tweed) never appears in public. You will find in Browne's work both these influences plainly visible. His natural impulse was towards picturesque and romantic treatment of subjects. But the taste of the age influenced him, and we find a strong leaning towards classicalism. Whenever he intended to do something particularly good I think he turned towards Lemprière, although the real constitution of his mind, apart from educational influences, was essentially Gothic. He very closely resembled in many respects the remarkable genius with whom he was for years associated; but Dickens was entirely unaffected by scholastic education. He was his own educator, and fortunately for the world his enormous ability was allowed to develop itself without hindrance from conventional ideas or academical prejudices. He was probably one of the most genuine natural types of his age, as well as one of the greatest. What do we find? Strong animal spirits; a great deal of boisterous fun; a true Gothic love of contrasts, the grotesque being placed beside the beautiful to heighten the effect; a vivid imagination, enabling its possessor to recall and reproduce the scenes, incidents, or characters necessary for his work without effort and without aid from book, place, or model; a scintilating and delightful fancy, which enabled him to decorate his work by magically bringing the commonest inanimate objects into relationship with the human element. In all these characteristics, partly personal and partly due to the influence of the times, the two men agreed. Probably no such close mental correspondence between author and illustrator has ever occurred. "Pickwick" was originally projected as a publisher's speculation. The original intention was undoubtedly to rely as much on Seymour's reputation as on Dickens's humour, which had been faintly but surely adumbrated in the "Sketches by Boz." Seymour was a Cockney of the Cockneys,—a humorist of a broad, good-humoured, coarse, rollicking type, thoroughly well acquainted with the manners and customs of the town. He had established a reputation as the delineator of the embarrassments of the Cockney sportsman, and he was undoubtedly the originator of the early history of Winkle and Tupman. Dickens had scarcely fired a gun in his life. But the shrewd publishers foresaw that the humorist who could describe the election of the beadle might be trusted to make fun of a group of Londoners wandering into the country on sporting bent. How successfully the two coadjutors performed their task is now a matter of history. The lamentable death of Mr. Seymour on the completion of the third or fourth number,—I am writing without means of reference,—created a panic. A wreck was anticipated. Jury masts were rigged, but leeway was made. An illustrator was wanted. Among others, two young men who were flirting with the muse of painting offered specimens. One was Thackeray, the other Browne. Thackeray was, I believe, the ambassador, and, fortunately for himself and us, the defeated candidate. The two competitors supped together when the decision was made known. The success of the new illustrator was immediate and pronounced. From within a few months after the appearance of his first plate in Pickwick the greater part of his time was occupied in illustrating books. Some, like the works of Dickens and Lever, inspired him with interest; but more frequently he had a sort of good-natured contempt for his authors, and the task of illustrating them was a weariness to the flesh. He had no intention of becoming an illustrator. He adopted the pseudonym by which he is so well known in order to conceal his identity. But he rose into popularity suddenly. He was besieged by commissions from all sorts of publishers and authors. Like most young men (and he was but a lad of twenty when he became famous) he did not see the evils of early success. He never at any time was able to say "No." And against his own will, against his intention, and in spite of the promptings of his own genius he drifted into a groove, and never was able to get out of it. Many of you may have formed your idea of an artist's life from novels, or those picturesque glimpses which the present practitioners of the art now-a-days afford us. But in the old days of which we are speaking artists bore a singular resemblance to other men,—in fact, you could not tell one from another. I have known a great many in my time, and they were astonishingly like the cotton-brokers and ship-owners with whom I have since become acquainted. They went to their work in the morning, and became hungry for their dinners in the evening, just like common men. In those days they knew nothing of the mission of art, and if they were offered work they took it. Hence it came about that Browne, having scored a success, and having a very moderate estimate of his own importance, was sucked into the vortex of the publishers' maelström. Day after day commissions flowed in,—all sorts of books were illustrated, the majority quite worthless. A few copies only survive to gladden the hearts of collectors and second-hand booksellers. But taken as a whole, the work was a waste of energy. Occupied with the regularity of a man in an office with the production of routine work, he had no time to cultivate his talents or acquire technical information. The taste of the age required vigour rather than correctness, and so Dickens, naturally one of the most truthful of writers, heightened his effects by an amount of caricature that to us is fatal. Browne followed suit. At first he copied the method of Seymour as nearly as he could, but very shortly his individuality asserted itself. The first illustration, showing that a master had come to the work, is that of Mr. Tony Weller and his brother coachman drinking Mr. Pells's health. I am not acquainted with any drawing of fat men quite so subtle in discrimination of abdominal curvature. What is the secret of his enormous success in his time? In the first place, what I have suggested,—the introduction of subtlety into broad caricature. It was new and entirely his own, and is due to the fact that he was by nature a seeker after beauty, and only by *malice prepense* a caricaturist. In the second place, he had a perfectly unique power of drawing a definite, distinct, and wholly unexpected character, and maintaining the individuality of that character all through the book. The faculty that enabled him to do this is not purely artistic,—it is dramatic. It is essentially the same faculty as that of the actor. It requires in both cases a clear, vivid conception of a character. Granting the imagination sufficiently powerful to accomplish this feat, its presentation becomes a matter of detail. The actor imitates by means of facial expression, gesture, tone of voice, and well-chosen costume the character

that he has seen with his mind's eye. The draughtsman,—the imaginative draughtsmar, —sketches the character that he sees in exactly the same manner as the unimaginative draughtsman works from a model. The faculty is at the basis of all fine acting, and those endowed with it generally become actors. It is not common among artists, and few have possessed it in so high a degree as Browne. We must remember the circumstances under which the productions were produced in order to estimate his power. He had not the whole books and the completed character before him, but merely a few lines, sometimes in MS., and not always exactly those which were afterwards printed. The work was always done in haste. Dickens was frequently late, and Lever invariably so. He generally took a day over each plate, making the design, and etching it on the steel himself. The little pencil and charcoal sketches were merely as guides to the position of his figures (about which he was very particular). Those humorous little touches, by which he made the furniture contribute to the general effect of his picture, were often added during the progress of the etching. If I have succeeded in making myself clear, you will understand by this time how his great success in the department of periodical art prevented his true development. Not only did it absorb his time and energies, but it had an injurious effect, in stimulating him to seek short and easy ways of expressing himself. His great facility and wonderful memory for all sorts of action, whether of men, horses, or dogs, still further tended to divert his mind from the necessity of study and observation. His shy and retiring habits caused him to shun the assemblies of artists in schools, and so it came about that he never really had any technical instruction after his boyhood, and then only of a desultory and imperfect character. But drawing in some shape was a necessity of his nature, and his prolific and inventive mind could not long remain satisfied merely to interpret the thoughts of others. I have pointed out how his humour, as shown in his illustrations, was in accordance with the taste of his time. But I would draw your attention now to his natural humour, which is of a totally different quality. It is quite distinct from the humour of the merely funny man. It is almost always accompanied by an under-current of sentiment, and generally by a didactic purpose. Look at the engraving "Labour in Vain." A poor old blind man has wandered to the gateway of a long-deserted house. The walls are in ruins, rank and tangled herbage has grown over the broken steps and twined about the heraldic monsters that crown the gate-posts. The blind man's dog crouches in a corner and watches his master uselessly playing on his battered clarionet, with an expression of sulky contempt impossible to describe. Now, observe, amidst the weeds is the fragment of a sundial, bearing the word "ruit," and from the broken board we learn that the name of the desirable family mansion is "Paradise House." Here is a glimpse, plain to all who know the man, of his peculiar mode of hinting at the deeper truths in a grotesque manner. It is a variation on the old, yet ever new, theme of the vanity of human wishes. Vain is our playing, and deaf the ears we essay to please only too often, and blind are we to perceive that our paradises are only heaps of worthless rubbish. That all things are equalised by time and death seems to have been an abiding idea in his mind. We see it here in one of his earliest works; it is indicated in his latest. Look at the design called the Book of Science. It is a design full of the wildest caricature,—literature, astronomy, geology, chemistry are symbolised by the most grotesque and humorous figures. But at the bottom is a heap of litter, wherein we find a Pope's tiara, a broken crown, an old shoe, scientific instruments, all now of equal value,—that is to say, none at all. Laugh! He will make you laugh. He will dash off pleasantries for you with a few touches of chalk and a slight wash of colour, such as the "Toper's Guardian Angel" or the "Serenade on a Post." He will take you and show you the happy and beautiful side of childhood. He will amuse you frankly and cheerfully with the mishaps of the hunting-field. But always he seems to return to the old, old mortality. Life is a drama, more a dream than a reality, and the grisly hand is always there to let down the curtain upon us poor actors. Those who have watched a beloved life ebb away, and have experienced the helplessness of human learning, skill, and science in the presence of the great master, will best appreciate the beautiful lessons on this theme which abound in this gallery. He was a professional jester, and wore the cap and bells, but beneath his mirth was a deeper meaning, and he seldom makes a joke without preaching a sermon.

Mr. P. H. Rathbone moved, and Mr. F. G. Prange seconded, a vote of thanks to Mr. Browne for his admirable paper, and to Mr. Radcliffe for the reading of it.

THE TEACHING AT ART SCHOOLS.

At the recent prize distribution to the students of the Newton Abbott Art School, a report was read of the judges (Mr. J. C. Horsley, R.A., and Mr. R. Norman Shaw, R.A.) at the last exhibition held in connexion with the school. We are glad to find in it the following passage:—"In your school this good work might be at once commenced by forming a class or classes of those who intend to devote themselves professionally to designing for, and painting upon, pottery and china, and for whom the chief requirement is a real power of drawing,—in other words, the training of the eye to observe accurately, and the hand to represent correctly what the eye has observed. This is to be obtained, under careful and devoted teaching on the part of the master, by a reasonable study of the human figure from flat and round examples, and, in advanced students, from occasional drawing of heads and hands from the life. This mode of study is recommended because errors made in representations of the human form are so much more readily detected than in those of any other objects. At the same time care must be taken that such work is not unduly prolonged or extended, and the student tempted into purely artistic studies, rather than those fitted for a decorative designer of the nineteenth century. Study of the human form should always be combined with that of other natural objects, and instructions given in treating such examples in a decorative spirit. It may be confidently anticipated that if such training as that we have now merely hinted at were carried out, the fact which came to our knowledge after the prizes were adjudged, that some who received them, as we intended, for designs in pottery, could neither design nor draw at all, but simply copied the design and detail of their exhibits from the works of others, would never occur again. It is scarcely necessary to say that, for the proper conduct and instruction of such classes, the master must be thoroughly trained in art matters generally, and well acquainted in the true principles of design as applied to varied forms of manufacture, and thus able to prevent that misapplication of means which is so constantly seen in exhibitions of decorative art."

HYGIENE IN DUBLIN.

HEATING AND LIGHTING.

The third of a series of six lectures delivered before the Dublin Ladies' Sanitary Association was given on Saturday last, at the Royal Dublin Society, by Prof. W. F. Barrett, P.R.S.E., on "Heating and Lighting." Prof. Barrett said he had thought how useful it would be if they had in Dublin some independent authority which would enable them to have periodical inspection of their houses. A scheme for a Hygienic Institute had been drawn up. There was in London an association of a similar kind, called the London Sanitary Protection Association, and what he thought should be established in Dublin was a Sanitary Protection Association, which any one might join on paying a small sum, and which would send out competent inspectors to report on houses. The disadvantage of the present system in Dublin was that tradesmen were very apt to recommend their own manufactures,—he did not say they did so,—and to go to work in an expensive way. He hoped this project would not be allowed to drop. The subject of his lecture was a very vast one. In heating, they wanted an equable temperature; they wanted the air not vitiated or over-heated; they wanted cheerfulness and brightness and artistic merit in their fireplaces; and, lastly, they wanted economy. The lecturer explained the principles of convection, conduction, and radiation, by which heat flowed from place to place. The principle of "cosies" applied to teapots was a very scientific one; for the cosy, being composed of an exceedingly bad conducting body, prevented convection and conduction taking place, and stopped radiation, and therefore the heat of the teapot was kept up. If perverse human ingenuity were to seek to construct an arrangement for wasting coal, no more efficient machine could be devised than our ordinary fireplace, which gave out the least possible quantity of heat with the greatest consumption of coal. In the ordinary open fireplace the back of the fire was turned to the room, and the front to the chimney; but by closing the aperture under the fireplace by an iron economiser a body of air was imprisoned, and the lower part of the coal was prevented from cooling down, the front of the fire was turned to the room, and the fire always kept bright. The result of the trials of a number of fireplaces and stoves was that close stoves were undoubtedly the most economical, but they were not as good ventilators, and not as cheerful. Underfed grates gave a bright, cheerful fire, with enormous ventilating power, with the least possible amount of coal consumed per hour and the highest heat in the room. The same heat was obtained from 10 cubic feet of gas as from ½ lb. of coal; ½ lb. of coal cost ·107 of a penny, 10 cubic feet of gas cost ·42 of a penny, so that it cost four times as much to heat a room by gas as by coal; for sick bedrooms or for cooking gas was the best; a 12-lb. joint could be cooked by one pennyworth of gas. In lighting they required the same four requisites as for heating. In future lectures he proposed to show that the gas that we burned at the present moment could be made to cost nothing at all,—that was to say, that the cost of gas should be only the cost of distributing it through the mains. At the present moment in Leeds and Birmingham gas was made for nothing at all, the residual products entirely paying for coal, and almost entirely for labour, and the Corporations of those towns had made large profits.

A NEW SYSTEM OF PRODUCING SEWAGE MANURE.

At a meeting of the Society of Engineers, held on Monday, March 5, in the Society's Hall, Victoria-street, Westminster, a paper was read by Mr. Harry Olrick, entitled "A new System of treating Fæcal Matter."

After describing the factory for the treatment and disposal of fæcal matter and town refuse erected by the Manchester Corporation, and which works at a profit, the author proceeded to explain, by the aid of drawings, the system pursued by Baron de Podewils, of Munich. The claims for novelty consist in constructing a factory so that the operations are comparatively automatic; that no unpleasant odours can arise, since the operations are all performed in closed vessels; that by a system of quadruple evaporation the fuel necessary is reduced to a minimum, and that the resultant manure is of high quality and is sold at from 9*l.* to 10*l.* per ton.

The drawings showed the arrangements of a factory erected at Augsburg, in Bavaria, which treats about 7,000 cubic mètres of matter per annum, representing the excreta of about 17,000 people.

The matter is delivered into closed tanks, the gases generated being drawn under the steam boiler and burnt. From these tanks it is taken into a mixing machine, where a proportion of sulphuric acid is added, the effect of which is to generate carbonic acid and other gases, which are conveyed away and burnt. From the mixer the matter is forced into a fumigator where part of the products of combustion are drawn through it from the flue of the boiler; from this machine a *monte-jus* forces the material into a series of evaporators, the vapour from one serving to evaporate the moisture from the next at a lower temperature and below atmospheric pressure, thus saving 75 per cent. of fuel. From these evaporators the matter is forced into a closed tank placed above a special drying-machine, consisting of ring-shaped steam-jacketed plates. By means of a spout attached to a revolving hollow spindle, a thin layer of the pulp is spread on these plates, which is afterwards scraped off by knives also attached to the revolving spindle. From this drying machine the dried matter is elevated into a disintegrator, which delivers the manure as a powder, containing less than 10 per cent. of moisture, 8 to 10 per cent. of nitrogen 3 to 4 per cent. of alkalies, and 3 to 4 per cent

of phosphoric acid, and consequently as good as imported guano.

This factory has been in operation three years, and although labouring under the disadvantage of having to use coal costing 23s. per ton, is earning 20 per cent. dividends.

DISTRICT SURVEYORS AND DANGEROUS STRUCTURES.

The decision of Mr. Sheil with regard to the alleged dangerous chimney-stack at the house of Mr. Vernon Lushington's Q.C., 36, Kensington-square, appears to indicate a change of policy on the part of magistrates in dealing with these troublesome questions. The lessee of the house, 37, Kensington-square, being apprehensive that the chimney-stack of the adjoining house which was about 5 in. out of the perpendicular, would fall, gave notice to that effect to the Metropolitan Board of Works, who thereupon, as is their practice, instructed the district surveyor to survey and report as to the alleged dangerous structure. The district surveyor having certified that in his opinion the chimney in question was dangerous and required to be pulled down, the owner, Mr. Vernon Lushington, was summoned by the Board to the Hammersmith Police-court. On the hearing, the defendant produced two professional witnesses (Mr. J. H. Middleton and Mr. J. T. Micklethwaite) to contradict the evidence of the district surveyor, and the magistrate under these circumstances intimated that he could not decide the case, but suggested that the matter in dispute should be referred to an independent surveyor. This course was agreed to, and Mr. H. A. Hunt was agreed upon as arbitrator. Mr. Hunt eventually made an award to the effect that, having made a careful survey of the chimney-stack, he was of opinion that it was not dangerous, adding, however, that its appearance was sufficient to justify the reasonable apprehensions of the adjoining owner. Upon this award being made known to the magistrate, he dismissed the summons, with 9*l.* 16s. 6d. costs against the Board, being the costs of the last day of the hearing and the arbitrator's charges for the award.

The course pursued by the magistrate in this instance will, if followed in other cases, bring about considerable alteration in the conduct of proceedings affecting alleged dangerous structures. Hitherto the magistrates have almost invariably accepted the evidence of the district surveyor as to the state of the structure in question, and have declined to hear witnesses which were proposed to be called on behalf of the defendants to rebut the district surveyor's testimony. There can be little doubt that this practice has frequently inflicted considerable hardship on owners of small property, especially those taking only a life interest, or having the fag-end of a lease, and it is consolatory to think that there is an appeal from the certificate of the district surveyor. There have been instances in which an architect not being able to obtain the condemnation of a party-wall which it was desired to rebuild has given information to the district surveyor that the wall was dangerous: this information the district surveyor imparts to the Metropolitan Board, who thereupon instruct their officer to survey and to report to the Board. If the district surveyor reports that the structure is dangerous, the Board take proceedings to pull down, secure, or repair the structure, as the case may be. The result of such proceedings is not unfrequently that the wall, which may possibly have been rendered ruinous by the pulling down of the house adjoining, is ordered to be taken down, and the adjoining owner is put to the expense of paying for half the cost of the party-wall, the magistrate declining, as a rule, to accept any responsibility with regard to a structure which has been pronounced to be dangerous by a public officer.

If Mr. Shiel's decision is followed by other magistrates, we may expect the police-courts to be turned into so many hostile camps, in which half a dozen witnesses on the part of the Metropolitan Board will affirm that the structure in question is dangerous, and an equal number of witnesses upon the opposite side will declare that it is perfectly safe, and the case will be finally disposed of by the magistrate referring the whole matter to arbitration. This seems to point to the desirability (we do not assert it) of appointing a professional assessor to decide upon disputed questions as to dangerous structures, and the necessity for the removal of the jurisdiction from the police magistrates, who have but little liking for the work. The matter is one of detail, but it may be worthy the attention of the Government when they come to deal with the Bill for creating a new municipality for the metropolis.

CENTRAL ASSOCIATION OF MASTER BUILDERS OF LONDON.

The annual general meeting of this Association was held on the 27th of February, at the offices, 27, King-street, Covent-garden, Mr. F. J. Dove, the president, in the chair.

The meeting was largely attended, and included the following:—Messrs. W. J. Adamson, H. H. Bartlett, S. G. Bird, J. H. Colls, Jas. Greenwood, Thos. Gregory, Thos. Patrick, G. S. Pritchard, H. G. Smith, Geo. Wall, Geo. Adamson, W. J. Botterill, F. J. Dove, J. D. Hobson, W. J. Lister, Wm. Macey, Jno. Robson, W. Thomerson, Wm. Scrivener, &c.

Mr. Jas. Chitty Hannen, counsel, and Mr. L. J. Maton (Messrs. Mackrell & Co.), solicitor to the Association, were present.

The balance-sheet, as vouched by the auditors, was approved and adopted.

The report having been read, the Chairman said, The Association were to be congratulated upon the near approach of their incorporation, which had been under consideration for a long time past, but owing to the requirements of the Board of Trade could not be accomplished. These, however, were now in a fair way of being complied with. The year had been comparatively a very unexciting and uneventful one, perhaps principally owing to the continued depression in trade, the only gleam of comfort to be gleaned from this state of things being that the masters and workmen had been able to work harmoniously together; for, although it would have been an easy matter to have reduced the wages, it had been thought better to exercise forbearance rather than disturb the existing good feeling; he hoped, therefore, whenever a revival of trade took place, the men would show similar consideration. The most important feature connected with the report was the question concerning "forms of contract," and "forms of tender." It derived its importance from the fact that, owing to some members of the Association being willing to accept a "form of contract" differing from that form mutually agreed upon in the year 1874 between the Royal Institute of British Architects and the Builders' Society, and which has been recommended and disseminated amongst all the members of the Association, and also by the National Association of Master Builders of Great Britain, of which Mr. Stanley G. Bird is the president, as a most fair and equitable one between contractor and contractee,—owing to that, he said, one of our most valued members, the late president, Mr. Trollope, had retired. No surprise need be felt that he should do so, as he had laboured most diligently to obtain it in order that the great diversity which previously existed might be avoided; therefore, when he saw one of his most cherished objects set at nought after so much labour, his retirement was not to be wondered at; but, on the other hand, although we deeply regret our late president's retirement, this Association felt it could not depart from the principles laid down for its guidance when first formed, viz., not to fetter any of the members in their business transactions, but to leave them perfect freedom of action. All the Association could do it had done, which was to recommend uniformity in all such matters. The same observation applied to "forms of tender," some of which were at entire variance with the Association form. If something could be done to get the architects to work in accordance with them in this matter, it would obviate much inconvenience and bitterness. The amendments to the Building Act had been under consideration, and those parts affecting builders had been adjusted in such a manner as to meet the views of the Association. The water companies' legitimate charges had been printed and circulated for the members' guidance. The Builders' Accident Insurance, Limited, which was brought out under the auspices of the Association, is in a flourishing condition, on which subject he should ask Mr. Bird to say a few words; and he was glad to state that the financial position of the Association was better than it had ever been before.

Messrs. Adamson, Scrivener, Greenwood, and Bartlett (Perry & Co.), were of opinion that builders should refuse to tender when the conditions were not in accordance with justice and equity.

Mr. Stanley G. Bird stated that the National Association had appointed a sub-committee for the purpose of seeking an interview with the architects upon the subject of conditions of contract, and he hoped that much good would result from a conference. As chairman of the "Builders' Accident Insurance, Limited," he again urged upon the trade the importance of insuring in this Company, which had already given a bonus of ten per cent., and a rebate of ten per cent., in addition to a reduction of twenty-five per cent. in the rate of premium, and he was very sanguine that the company would be able at the end of the present year to declare another bonus.

Mr. Maton, the Association solicitor, explained the exact position of the incorporation scheme.

Mr. Colls thought it would be a good thing when the Association was incorporated to obtain suitable premises, similar to those possessed by the Surveyors' Institute, so as to create more friendly intercourse, and where a kind of club might be carried on.

The president was then re-elected, as were the vice-presidents, treasurer, and committee also. A vote of thanks to the chairman closed the proceedings.

THE VENTILATORS FOR THE DISTRICT RAILWAY.

At the meeting of the Metropolitan Board of Works, on the 2nd inst., a deputation from the Westminster Board of Works was introduced by Mr. White, to present a memorial against the erection by the Metropolitan District Railway Company of ventilators and ventilating-shafts in one of the principal roadways of the district, and on the Victoria Embankment. The memorial set forth that the memorialists had viewed with alarm the erection by the Metropolitan District Railway Company of ventilators in the roadway of one of the most important thoroughfares, where the traffic was fast increasing, and also on the Victoria Embankment. Since Captain Douglas Galton had made his award the company had forwarded to the memorialists a plan, showing an opening in the roadway of the Broad Sanctuary, 35 ft. in length, 12 ft. in width, and rising 8 ft. 6 in. in height; also an opening in Tothill-street, adjoining the Broad Sanctuary, 40 ft. long, 5 ft. wide, and 8 ft. in height, as well as others in Victoria-street. The memorialists were of opinion that the appropriation of a considerable portion of the public street in these crowded thoroughfares would be destructive to traffic and inconvenient to foot-passengers, and, it was feared, would prove dangerous to life. Owners of property were precluded from representing their objections to these ventilators, and were not afforded an opportunity of appearing before the arbitrator. The memorialists trusted the Board would take such steps relative to these openings as the circumstances of the case might justify to prevent the alienation of portions of the public thoroughfares and the ornamental grounds on the Thames Embankment from their original use by the public. Mr. White moved that the memorial be referred to the Works Committee for consideration, which was put and agreed to.

In the House of Commons, on Monday last, Mr. Buxton asked the hon. member for Truro whether he had sanctioned the proposed opening of eight shafts along the Thames Embankment which the Metropolitan District Railway desired to build; whether some of these shafts would seriously diminish the space now allotted to public gardens on the Embankment; and whether this House would have an opportunity of considering such a proposal. Sir J. M'Garel-Hogg.—I beg to inform my hon. friend that the shafts referred to were provided for in a Bill promoted by the District Railway Company in the last session. The Metropolitan Board and the Corporation of London vigorously opposed the Bill before both Houses of Parliament, and the Board through their engineer, Sir Joseph Bazalgette, offered evidence to show that the ventilation could be managed by mechanical means in a way which would not be detrimental to the public. The opposition, however, was unfortunately unsuccessful, and in accordance with the terms of the Act, the matter had recently been before the arbitrator appointed by the Board of Trade, before whom evidence for the Board was given by Sir Joseph Bazalgette, myself, and others, and whose award is now being carried out. There is no doubt that these shafts will seriously diminish the space now allotted to public gardens on the Embankment, and will also interfere with the road space; but I am afraid that, as matters stand, the Board is powerless to prevent the erection of these hideous structures. Lord A. Percy asked the hon. gentleman if he would inform the House whether the Metropolitan District Railway had paid the metropolis or any local authority any sum of money for the ground taken for these ventilators. Sir J. M'Garel-Hogg said that the sum of 200,000*l.* was originally paid by the company for the accommodation on the Embankment, but not a penny had been paid for the destruction of the gardens and obstruction of the roadway. If he was

rightly informed, the company had let land which they might have applied for the purposes of ventilation, and then made application to Parliament for the powers they obtained last year. Mr. Yorke asked the right hon. gentleman the President of the Board of Trade whether the Board could not do something in the matter. Mr. Chamberlain said he would have the matter looked into further, but he was afraid that nothing could be done.

THE FOUNDATIONS OF WATERLOO BRIDGE.

A VERY interesting piece of engineering work is just now in progress at Waterloo Bridge. When four or five years ago the Metropolitan Board of Works purchased this bridge for 475,000*l.*, it was done, we believe, in the full knowledge that there were symptoms of decrepitude indicating a subsidence of some of the piers such as would probably demand a considerable outlay upon it. About twelve months ago the work of repair was commenced at the Surrey side of the bridge, and is now going on right in the middle of the river. The *Daily News* gives some particulars of the progress that has been made.

Passengers over the bridge may see indications of what is going on below, but without making a rather perilous descent from the parapet right down to the foundations of the structure, they will hardly be able to form an idea of the extensive and difficult nature of the undertaking with which the engineer to the bridges belonging to the Metropolitan Board, Mr. Edward Bazalgette, is charged. The first thing to be done was to ascertain the cause of the ominous cracks discovered here and there about the bridge, and for this it was necessary to examine the foundations. Dams were made round portions of the piers by driving in huge piles and caulking up the interstices between them with oakum and puddling with clay. The water was then pumped out, and the mischief was at once revealed. The subsidence of the bridge was quite apparent. Each pier from which the arches spring is apparently based on huge blocks of rough stone of the kinds technically known as Bramley Fall and Craigleith, and these blocks have been visibly crushed down by the superincumbent mass, calculated to bear with a pressure of somewhere about 11,000 tons for each pier. The cutwaters, not being a part of the actual bridge, have retained their original level, and afford therefore a gauge by which the dropping of the bridge between them may be clearly perceived. To ascertain the real cause of the subsidence it is necessary to go below the footings, the huge blocks which, as has been said, constitute the apparent base of the pier. They, in their turn, rest on a foundation of wooden piles, which originally, no doubt, were embedded to a depth sufficient to insure their perfect stability. The idea of so tremendous a mass of solid granite as Waterloo Bridge resting on wooden piles is rather a startling one; but they may have originally afforded a fully sufficient foundation. They are beech piles, disposed in rows, 3 ft. 6 in. from centre to centre, and combined in a solid mass by a filling-in of rough masonry. Had the river-bed undergone no alteration, such a foundation would perhaps have served as long as the bridge above it held together. The river-bed, however, has undergone very considerable alteration. Since the bridge was built the stream has deepened under it to the extent of 8 ft.* The gravel has been washed away from the piles, and their power of sustaining the mass overhead consequently diminished, and they have sunk under it. Nothing could remedy the subsidence that has already taken place, but Mr. Bazalgette's efforts have been directed to the prevention of further mischief. Dams have been constructed all round each pier dealt with, and the water pumped out at half-tide. Enormous blocks of concrete, each weighing from four to five tons, have then been lowered into position round the pier on the bed of the river, so as to constitute an apron from 4 ft. to 5 ft. 6 in. thick, and as hard as the solid rock. This apron slopes outward from the pier at an inclination of 1 in 5·6, and extends 18 ft. all round. The outer edge of it reaches to the piles constituting the dam, and which of course run down a great depth into the bed of the stream, where the lower portions of them will be left to constitute a kind of outwork for the defence of the foundation piles should the river still go on deepening. They are massive beams of American rock elm, an intensely hard wood, well suited to this purpose. They are cut off just at the level of the concrete apron, and will no doubt effectually prevent any scouring away of the gravel beneath it. Altogether it looks to be a very neat and effective contrivance for arresting a process which, if neglected, would undoubtedly eventually bring down Waterloo Bridge in ruins as complete as Macaulay's New Zealander could have desired for his sketch of St. Paul's Cathedral. Mr. William Webster is the contractor, and there are some ninety or a hundred men engaged on the work, which, from the river bed, has a much more serious aspect than when seen from the parapet of the bridge. The middle piers are now under alteration. What will be required for those on the Middlesex side has not yet been determined, no thorough examination having yet been made.

* This subject of the change in the river, especially as affecting the foundations of Waterloo Bridge, was referred to by us nearly a year ago (see *Builder*, vol. xlii., p. 44). When, some years previously, we ventured to suggest that the effect of the great alteration made in the *régime* of the Thames by the removal of Old London Bridge, and by other improvements, was likely to be such as to demand that great attention should be paid to Waterloo Bridge, we were accused of being alarmists, and, indeed, were denounced for what were regarded as our pessimist views of the matter. But the fact is now revealed affords ample justification of our warning.—ED. *Builder*.

PROPOSED STREET IMPROVEMENTS IN EDINBURGH.

THE OLD INFIRMARY GROUNDS.

IN connexion with the question now under consideration of the Edinburgh Town Council, as to how best to utilise the ground on which the Old Infirmary buildings stand, Bailie Cranston has revived a scheme for improving this locality, mooted by him some twelve years ago. The main features of the proposal are the widening of South Bridge-street opposite the University, and the construction of a viaduct across the Cowgate from Drummond-street to a point on the High-street facing John Knox's house,—one important object of the latter part of the scheme being the relief of the South Bridge from some of the traffic by which it is now inconveniently crowded. The idea of widening South Bridge-street, between Infirmary-street and Drummond-street, so as to open up to view the noble front of the University, is not a new one; but nothing practical could be done to carry it into effect so long as the old Infirmary was occupied by patients. According to the *Scotsman*, the plan which Bailie Cranston has had prepared shows at the distance of 70 ft. from the present line an elegant crescent of four-storied buildings in the style of Regent Quadrant, London, the architectural details corresponding to those of the University.

The proposed viaduct, starting from a point opposite Roxburgh-street, would be about 1,000 ft. in length. Its width would be 50 ft. It is submitted, as one important element to be taken into account in considering the possibilities of this portion of the scheme, that only two or three dilapidated tenements would have to be pulled down to make way for it. A large portion of the ground has already been cleared, and is partly in the possession of the City Improvement Trust. The line of the viaduct in approaching the High-street would be by South Gray's-close and Foulis's-close; and debouching, as it would, nearly opposite John Knox's house, by the rounding of the corners at each side, the Nether Bow at its narrowest end would be considerably widened. The gradient of the viaduct would be 1 in 31, which represents a slight rise from High-street to Drummond-street.

EXHIBITIONS.

AMONGST the most recent announcements of exhibitions is that of one which has been accepted by the Congress at Washington, and which it is proposed to hold in that city in the year 1884.

The International Colonial and Export Exhibition at Amsterdam will be opened on the 1st of May next by the King of Holland. Nearly all the nations of Europe will be represented. Those which have not colonies, but which will send manufactures suitable for export thereto are as numerously represented as the Colonial Powers. Thus, from Germany, which does not possess an inch of colonial territory, no fewer than 800 exhibitors are announced.

At Leipzig, on the 1st of February, an important exhibition of a novel character was opened. It was that of the Society of German Cooks and Confectioners, who exhibited a rich variety of delicacies, the product of the German *cuisine*.

There is an agitation on foot in Adelaide, the capital of South Australia, in favour of holding a Universal Exhibition in that city. An Adelaide paper states that it is proposed to invite the participation of the entire world, "together with all the surrounding villages."

THE PEABODY TRUSTEES AND THEIR BUILDINGS.

ACCORDING to the financial statement of the Trustees of the Peabody Fund, which has just been issued, the expenditure on land and buildings to the end of the year amounted to 970,500*l.* 14s. 1d. Up to the same period the statement says that the trustees had provided for the artisan and labouring classes of the metropolis 7,289 rooms, exclusive of bath-rooms, laundries, and washhouses. These rooms comprise 3,533 separate dwellings, occupied by 14,604 persons. The statement adds that the average weekly earnings of each family in residence was 1*l.* 3s. 6¾d. The average weekly rent of each dwelling was 4s. 7d. per week, and of each room 2s. 1d., the rents in each case including the free use of water, laundries, sculleries, and bath-rooms. The returns, after payment of all expenses, give a percentage of three per cent. profit. The statement explains that there are two trusts, the capital of the first now amounting, with the past year's profits (6,439*l.*), to 255,105*l.*; and that of the second, with loan from the Public Works Commissioners of 255,166*l.* 13s. 4d., and profits, 17,723*l.* 14s. 3d., to 804,522*l.* 16s. 5d. The gross rents, in the first case, are nearly 9,000*l.*, and in the second, 28,729*l.*

MEDALS FOR BUILDING SUCCESSES.

IN Prussia, medals have already been awarded as a rule to those who have distinguished themselves in commerce and agriculture. A similar kind of distinction is now in contemplation in that country for those who have rendered noteworthy service to the national building industry, either in an artistic or a technical sense. Gold and silver medals are being struck off from a design of Professor Bendeman, of Düsseldorf. The former will be distributed by the Emperor, while the Minister of Public Works will be charged with the selection of fitting candidates for the latter decoration.

SALE OF THE HORSE ARMOURY BUILDINGS AT THE TOWER.

ON Friday, the 2nd instant, Messrs. Horne Eversfield, & Co. sold the first portion of the materials of the building at the Tower until recently occupied as the Horse Armoury. The building, which is situated on the south side of the White Tower, was erected in 1826, or more than half a century ago. The structure is about to be demolished in consequence of the horse armoury having, a short time since, been removed into the upper floor, or what is known as the Council Chamber of the White Tower. The removal of the armoury buildings will open out a more complete view of the south frontage of the White Tower, including the original plinth of this historical old keep. The several lots realised nominal prices only, the highest sum being for the lead in the flat and gutters, and which fetched 76*l.*

Strike of Joiners at Lerwick.—The Lerwick journeymen joiners recently asked their employers for an advance of wages, to commence on 1st March, and as the masters have refused to grant the terms asked, the men came out on strike. The wages hitherto paid were 4½d. per hour, and the men now ask for 5½d. Nearly every one of the journeymen in the town has come out, but as yet the masters have shown no signs of giving in. The most important building the joinery work of which has ceased in consequence of the strike is the new Town Hall. The men say they are determined to hold out for the advance, and intend, if the masters do not come to terms at an early date, to commence work on their own account at the rate of wages they demand. It is stated that they belong to no trade society.

AN ITALO-SICILIAN CHANNEL TUNNEL.

IN Vienna a company has been formed for the purpose of driving a tunnel under the Straits of Messina, to establish unbroken railway communication between the island of Sicily and the mainland of Italy. The projected tunnel would run from Reggio, in the peninsula, to the opposite port of Messina, in Sicily. The plans for this purpose have recently been submitted to the Italian Ministry. The total length of the tunnel is 13,546 mètres, or about eight miles and a half. The estimated cost is 71,115,440 francs, or about 2,844,617*l.* sterling.

PRIZE ESSAY ON THE IMPROVEMENT OF THE SYSTEM OF UNRESTRICTED TENDERS IN THE BUILDING TRADE.

THE Association of German master builders announce that they have resolved to offer a prize of 500 marks (25*l.*) for the best essay on the above subject, "in the hope that by this means they may obtain proposals adapted to mitigate or remove the evils attaching to the system of unrestricted tender."

Every competitor is to send in his essay to the secretary of the association, Herr L. Meyerstein, 92, Wilhelm-strasse, Berlin, by May 1st next, together with a sealed envelope enclosing his name, and bearing outside the same motto as the essay. The author of the best production will be awarded the prize of 500 marks, and his essay will be published and circulated by the association.

The gentlemen who have undertaken the duty of judges are Messrs. Otto Bernoully, Baurath Boekmann, Baumeister Felisch, Bau-Inspektor Häger, Zimmermeister A. Niess (of Brunswick), and Rathszimmermeister F. Schwager. The announcement is advertised in the name of the association by the acting committee, and dated Berlin, January 24, 1883.

LONDON SCHOOL BOARD.

ARCHITECT'S DEPARTMENT.

AT the last meeting of the School Board, Mr. Lee Roberts called attention to the present cost and working of the architect's department, and said that when Mr. Robson was appointed he had to give up the whole of his time to the service of the Board during office hours, at a salary of 500*l.*; but now his salary was 1,000*l.*, and he was allowed to carry on his private practice, and by the proposed enlargement of the Board's offices he would receive, in addition to his salary, 1,050*l.* for commission. He contended that if such arrangements had been made by an unreformed corporation it would have been strongly denounced, and it was not creditable that such an arrangement should have been made by a board so recently constituted. The total charge for the year of the architect's department was 6,273*l.* He moved:—"1. That, in the opinion of the Board, it is desirable to put an end to the present arrangement with Mr. Robson and with Mr. Young, and to secure the entire services of the requisite staff of the architect's department at fixed inclusive salaries. 2. That it be referred to the Works Committee immediately to consider and report to the Board the steps necessary to give effect to the foregoing resolutions."

The discussion was adjourned.

THE WELLINGTON STATUE.

SIR,—I am not aware whether the following suggestion as to the future destination of the Wellington Statue has been made; if not, it may be worthy of consideration. The Green Park has been subjected to a variety of alterations of late years, and will be yet more so in connexion with the Hyde Park Corner alterations, now taking place. Whether these will turn out to be "improvements" remains to be seen. But the die is cast, and we have to submit to the inevitable. Some time since it was pointed out in the pages of the *Builder* that the turning of every footway crossing the Green Park into roads almost equal to taking two vehicles abreast,—thus curtailing the expanse of green turf to a lamentable degree,—was a doubtful proceeding in regard to the beauty of the park, though it possibly may have some practical advantages as regards pedestrian passage through it. However, dealing with it now as a *fait accompli*, we find that these widened paths converge in the centre of the park, and make a wide expanse of bare gravel very unsightly, upon which it is surprising that nothing has been done in the shape of erecting a fountain, or a refulgent ornamental lamp,—which would be a great boon just here. But now the question of the disposition of the Wellington Statue has arisen it would seem that this spot has been reserved as the very place for it. It would meet all the question of the expense and difficulty of transit, being comparatively but a few yards from its late position, and would be in an open space, from which it could be well viewed from all elevations. The erection of a sufficiently high pedestal surrounded by seats, with lamps at corners, and possibly *bassi-relievi* illustrative of the Duke's achievements, would give a character to this part of the park, and be in entire harmony with all the associations of the statue,—near Apsley House, &c.

There is but one other destination which seems to me at all suitable, and that is the centre of Waterloo-place, on the side nearest the Park, where so many military statues now are, but the colossal proportions of the duke and horse would dwarf the others,—even now an odd collection,—into most insignificant and ridiculous proportions. There would also be the additional difficulty and expense as to transit.

It has doubtless been taken into account that the reconstructed arch at the top of the new Constitution Hill not being surmounted by its late figure will need treating in a much lighter style as to the upper portion on which the statue stood. If no expense is to be incurred by placing some appropriate light group of statuary to finish off the sky-line, a well-designed iron railing all round and an arrangement for hoisting the royal standard when the Queen is in town,—at present so imperfectly seen from the garden-front of Buckingham Palace,—would perhaps be a suitable and inexpensive substitute. B.

SUPERINTENDENCE OF BUILDINGS.

SIR,—I have been some years a working mechanic, some years a general foreman, some years have had heavy work on my own account, and have also been some years a clerk of works. I have been employed in buildings nearly forty years,—from the humble cottage to the magnificent mansion. Yet I must confess I am not practically acquainted with all the branches of the building trade. Therefore, I fully endorse all a member of the "Clerk of Works Association" says with reference to a junior pupil being a fit person to fill the office of clerk of works. Most likely such a person would be very agreeable to some builders. I, for one, think there is no difficulty in procuring honest and experienced men. I will give you a few outlines of what is expected of a clerk of works.

To represent the architect in all matters on the work. To see building accurately set out; foundation solid; a supply of water; and, the most important, all drainage to be perfect. Concrete, mortar, bricks, tiles, slate, to be best quality; stone converted so as to lie on its natural bed; timber to be free from sap; all ironmongery, glass, &c., to be as specified. Give answers and instruct excavator, bricklayer, mason, tiler, slater, plasterer, carpenter, plumber, painter, glazier, joiner, gas-fitter, bell-hanger, and house-decorator. Keep account of all extras and omissions, and, should disputes arise, measure and value the work of all trades so in dispute. I admit there are some who make application and get appointed to the post that are very inexperienced in a practical point of view. They may have worked at the bench; they may be very well read up in a theoretical point, good penmen, and good talkers, still there is something wanting,—that is, years of experience. I am happy to say I have been employed by architects nearly forty years, and have found them most honourable men, and, with one exception, never had a dispute.

BENJAMIN INKPEN.

Fire in Beverley Minster.—A fire, which caused considerable alarm, broke out in the second transept of the north aisle of Beverley Minster on the morning of the 28th ult. It originated on a flue connected with the vestry chimney, in close proximity to the tomb of the Hotham family, and not far from the celebrated Percy shrine. There was, fortunately, a plentiful supply of water at hand, and a number of workmen being engaged in the interior at the time the progress of the fire was checked, but not before considerable damage had been done to the vestry and other parts of the fabric.

CASE UNDER THE METROPOLITAN BUILDING ACT.

LINE OF FRONTAGE.

MR. ROBERT BLACK CLARK, of Kennington-road, appeared last week to an adjourned summons, before Mr. Chance, at Lambeth Police-court, taken out against him by the Metropolitan Board of Works, for having, on the 21st of October, unlawfully erected, or caused to be erected, without the consent of the Board, certain buildings or structures beyond the line defined for buildings in the said thoroughfare.

Mr. Lambert appeared for the Board, and Mr. John Haynes for the defendant.

Mr. Vulliamy, the Superintending Architect of the Board, was now called, and spoke as to the line of frontage given, but upon being pressed for an answer as to the average line, declined to answer the question.

Mr. Haynes urged that the witness should answer this question; but Mr. Chance said he must rule that he was not bound to do so.

Mr. Haynes urged that even if the present little woollen structure, for which the defendant was summoned, had to be removed, the Board was out of time in taking proceedings according to the Act.

Mr. Chance said he thought that certainly was so, and he could not impose a penalty, even if he convicted the defendant. He had been to see the place, and certainly could not come to the conclusion that the structure now complained of was a building within the meaning of the Act. There might be some ground for saying such an erection was a nuisance to others; but with that he had nothing to do, and had it been the larger building, he should certainly have objected to it. The structure now under consideration was not, in his opinion, such an erection as to be called a "building" within the meaning of the Act. He therefore dismissed the summons.

Mr. Haynes asked for costs, to which application Mr. Lambert objected; but in the end Mr. Chance allowed 3*l.* 3*s.* costs against the Board.

Books.

The History of the Year: a Narrative of the Chief Events and Topics of Interest. From October 1, 1881, to September 30, 1882. Cassell, Petter, & Galpin, London, Paris, and New York. 1882.

A SERIES of such volumes as these, if continued, ought to have a considerable value as books of reference, for refreshing the memory in regard to recent history. It may be questioned, however, whether the tone of the book is not too critical, for a publication of this kind. We do not complain of the tendency of the criticism, which, whether on politics or not, seems in the main healthy and tolerably thoughtful. But we are over-run with criticism now-a-days, and when we take up a book professing to be merely a useful record of the year's events, and find it bristling with judgments on men and things, we are inclined to think that we have got a little more than we bargained for. If the compilers would, in next year's issue, drop the critical tone, and confine themselves to a record of facts, they would produce a book quite as useful and more suitable for its ostensible purpose, at less expense of "copy" and printer's labour.

Miscellanea.

The Artisans', Labourers', and General Dwellings Company.—The sixteenth annual general meeting of this company was held on Wednesday, at the Westminster Hotel. Mr. Ernest Noel, M.P., presided. The report stated that the net revenue for the year ending Dec. 31, 1882, amounted to 43,156*l.* 9s. 1d., being an increase of 6,740*l.* 17s. 5d. over last year. The amount available for dividend, including the balance brought forward from last year, after deducting the preference share dividend, was 37,452*l.* 17s. 7d. The interim dividend of 2½ per cent. on ordinary shares, paid Sept. 9, 1882, amounted to 17,552*l.* 7s. 1d. leaving 19,900*l.* 10s. 6d., which enabled the directors to recommend the payment of a further dividend of 2½ per cent. on the ordinary shares, and leaving a balance of 1,021*l.* 17s. 2d. to be carried over to next year's account. The Chairman, in moving the adoption of the report, congratulated the shareholders on the prosperity of the company. The report and accounts were unanimously adopted, and the retiring directors were re-elected.

The Payment of Wages in Public-houses.—The Parliamentary Committee of the Liberty and Property Defence League, has drawn up a report stating that,—

"This Bill proposes to make penal the payment of wages to workmen in public-houses or on any premises or land belonging thereto. The practice which the Bill seeks to stop prevails to some extent in the suburbs of London and the provinces amongst contractors employing navvy labour, and builders when conducting their work at distances from their central yards, and to a greater extent in the East of London and seaports generally amongst the foremen of dock labourers engaged in ladening and unladening vessels. In all these cases the nearest public-house is frequently the only place of shelter with sufficiently large accommodation for the payment of wages. In the first two instances the choice generally lies between the large room at a public-house and a clerk of works' office quite inadequate for the purpose. In the last case there is no alternative, the foremen and his dock labourer having no office of their own and no claim to accommodation on board ship. After full inquiries in the most likely quarters, the committee cannot discover any fact showing that this usage has in any degree tended to increase drunkenness amongst workmen paid in this manner. On the other hand, there is every reason to believe that the practice is one of great convenience, to workmen no less than masters, in the trades where it prevails, and in the opinion of the committee it is most undesirable to uproot a custom of proved utility in deference to an agitation based, not upon observed facts, but upon a sentiment in itself no doubt excellent."

The second reading of the Bill was moved in the House of Lords on Tuesday last by Lord Stanhope. Its rejection was moved by Lord Bramwell. After a debate of some length, the second reading was carried by 58 votes to 20.

Ownerless Houses.—At the Middlesex sessions on the 3rd, the court was occupied with the appeal of Graham and Goodwin against a conviction of the Highgate magistrates. The Finchley Local Board had issued summonses against the defendants in respect of certain breaches of the by-laws of the Finchley Local Board in the construction of ten houses in Manor Park-road, and the magistrates convicted the defendants, inflicting a penalty of 40s. Against this conviction the defendants appealed, on the ground that they were only architects of the houses, and had no sort of title to the property. It appeared that the houses in question were commenced by a man named Butcher, who has been lost sight of for about two years. The appellants, after Butcher's disappearance, seem to have taken upon themselves the completion of the houses, and to have made arrangements for letting them; but they denied that they considered themselves the owners of the houses, and that they had any documentary title at all. The respondents contended that, by direction and interference, the appellants had rendered themselves ostensible owners of the estate, and therefore liable for the breaches complained of. The property seems now to be repudiated on all hands, and the occupants of the only two houses which are inhabited are living rent and tax free. After a hearing extending over three days, the court quashed the conviction upon one case on the ground that the statutory limitation of twelve months had expired before the information was laid; but the court would not give costs.

Artisans' Dwellings.—On Monday evening the members of the Ebor Literary and Debating Society were entertained by a lecture on Artisans' Dwellings, delivered by Mr. W. Brown, architect, at the Friendly Societies' Hall, Castlegate. The attendance was good. The lecturer treated his subject in a practical and comprehensive spirit, and advanced arguments in favour of changes, chiefly of a sanitary nature, in regard to the construction of dwellings, those of the working classes in particular, so as to render them more healthful and more conducive to happiness and comfort. A discussion followed, and a vote of thanks was passed to Mr. Brown.

Coffee Taverns.—The first coffee tavern built by the Finchley and Muswell-hill Coffee Tavern Company, Limited, was opened on the 24th of February, by the Hon. Mr. Justice Fry, when about 400 persons were invited to witness the ceremony. The architect is Mr. J. Treadway Hanson, and the builder was Mr. W. J. Adcock, of Dover. The building is of red brick, and in the style of the Late French Renaissance.

Portable Electric Bells.—Messrs. Hodge & Co., of Hatton-garden, are just now introducing some handy and compact electric bell sets, which should be looked at.

The Electric Lighting Act.—The Board of Trade have drawn up and published a series of clauses which are submitted for consideration as rough drafts of model clauses proposed to be inserted in provisional orders, and so far as applicable in licenses granted under the Electric Lighting Act, subject to such modifications as local circumstances may in any case render expedient. They do not constitute a complete order. Clauses applicable only in particular cases, clauses with regard to the breaking up of private streets, railways, tramways, &c., general clauses as to notices, &c., saving clauses and others are omitted; but they are intended to include the main subjects of general interest as to which any controversy is likely to arise. The following points require special attention:—The choice of the area of supply, the question of capital, the modes of supply, and the time of supply. As to price, it is proposed the light should in all cases be charged for by meter; but as at present it seems doubtful whether there is any reliable meter for quantity or energy, a power is given to the undertakers to charge for the present, and until the Board of Trade otherwise direct, by the maximum current required, and the number of hours during which electricity is used. No clauses are inserted as to limitation of profits, revision of prices, monopoly, &c. In the case of local authorities there will be not only competition to look to, but also public opinion, and the Board of Trade prefer to rely upon the above considerations rather than to attempt to impose artificial restrictions, which in other cases have not proved too successful. Any person desirous of offering any criticisms or suggestions with regard to these clauses is requested to do so by letter, addressed to the Board of Trade, and marked on the outside of the cover enclosing it "Electric Lighting Act," on or before the 14th day of March.

Another Country Mansion Burned Down.—On Tuesday afternoon a fire broke out in the mansion at Wrotham Park, Barnet, the seat of the Earl of Strafford. His lordship and Lady Strafford were then at home. The fire originated near the centre of the mansion, and spread rapidly in all directions. The efforts of the firemen were unavailing, as a gale of wind carried the flames through the building. By eight o'clock the mansion was totally destroyed, but a valuable collection of paintings, together with plate and a quantity of furniture, were saved. The building, which stands in the parish of South Mimms, Middlesex, about a mile north of High Barnet, is, or rather was, a handsome mansion in the Classical Italian style, and was erected from the designs of Ware in 1754, its then owner being the unfortunate Admiral Byng, who was executed a few years afterwards under circumstances well known to every reader of English history.

Royal Hibernian Academy.—On Monday last the forty-fourth exhibition of the Royal Hibernian Academy, Dublin, was opened. One of the Dublin papers, in its account of the private view, says:—"No one can walk through the rooms without being struck by the fact that, save for the works of a comparative few, the pictures are below the merest mediocrity. There is an almost absolute absence of any picture by an Irish artist requiring imaginative treatment. Respectable dulness is the pervading characteristic presented by very many of the canvases. In what is euphoniously termed in the catalogue the 'inner room,' but called by artists the 'dungeon,' the 'black-hole,' and various other endearing names, there are some pictures whose only interest is derived from the fact that they are about the very worst pictures that ever were seen even in this condemned chamber."

The Channel Tunnel.—Another visit from Paris was made last week to the Channel Tunnel Works on the French side, at Sangatte. M. Ludovic Breton conducted the party, which consisted of several of the leading promoters of the scheme. Great satisfaction was expressed at the progress of the works. During the last six weeks no less than 560 mètres have been bored.

Lydd Town-hall, Kent.—A meeting of the Bailiff and Corporation of Lydd was held last week to consider the propriety of rebuilding the ancient Town-hall on a scale, in regard to dimensions and architectural appearance, more in accordance with the improved prospects of the town than the present structure. After discussing the proposal and the probable cost, it was resolved to erect a much larger building.

Proposed Memorial to John Milton at Horton, Bucks.—An effort is being made to raise some memorial to John Milton, in the village of Horton, in Buckinghamshire, where he lived with his father and mother, and in the church of which village his mother, Sarah Milton, is buried. About six years ago, during the incumbency of the late Rev. J. L. Prior, the restoration of the church was placed in the hands of Mr. J. Oldrid Scott. The rector and churchwardens now suggest that it would add considerably to the beauty of the church if the east window were filled with stained glass, and it is now proposed to try and carry this out in memory of the poet. The rector says that during the time Milton lived in the village of Horton he wrote his "Il Penseroso," "Arcades," and "Comus." There could not, therefore, be a more suitable memorial to him than the one proposed, because it is in his "Il Penseroso" that he says:—

> "But let my due feet never fail
> To walk the studious cloysters pale,
> And love the high-embossed roof,
> With antick pillars massy proof,
> And storied windows richly dight,
> Casting a dim religious light."

The Ashburnham MSS.—The trustees of the British Museum held a general meeting on Saturday last, in regard to the proposed purchase of the Ashburnham MSS., but postponed their final decision until negotiations can be completed, which the French Government have opened with them, to come to an arrangement about the MSS. which have been declared to have been filched from French libraries. The French Government are ready to purchase such MSS., and it is not anticipated (says the *Daily News*) that there will be any very long delay in the matter. There will no doubt be an amicable arrangement, and when that is settled it is hoped that her Majesty's Government will be induced to complete the purchase of the collection. M. Delisle's statements, already published in the papers, point to the more ancient volumes of the Libri section of the MSS. as those which he is chiefly desirous of re-acquiring.

A Presbyterian Mission Church in Earle-road, Liverpool, was opened on Thursday, the 1st inst. The body of hall or church will seat 500 people; it contains at one end two committee-rooms, 12 ft. by 10 ft. each, leading from platform, two class-rooms on the ground floor about 18 ft. 6 in. by 13 ft. 6 in. each, and a large room or hall below 38 ft. by 19 ft. The exterior is Gothic in character, faced with Doulton's bricks, and Edwards's moulded bricks and terra-cotta. The roofs are covered with Phillip's patent lock-jaw tiles. There is a tower and spire 80 ft. to the top of the vane; it contains a lumber-room and all conveniences below. The whole has been carried out by local builders. Mr. James N. Crofts, of Harrington-street, Liverpool, was the architect. The seating was supplied by the North of England School-Furnishing Company, of Darlington. The cost of building, exclusive of land, has been about 2,800*l*.

A Pastoral Staff for the Bishop of Lichfield.—On the 2nd inst., in the Chapter House, Lichfield, the Dean of Lichfield presented to the Lord Bishop of the Diocese a pastoral staff, the gift of a number of the clergy. The staff is a handsome one, of silver gilt, having in the centre of the crook a cross jewelled with five stones. Below the crook is a silver canopy, in which are figures of St. Chad and St. Peter enamelled. It was designed by Mr. A. W. Blomfield, M.A., architect, and was supplied by Messrs. Stephen Smith & Co., of King-street, Covent-garden, at a cost of 260*l*.

Defective Girders.—Major Marindin's report to the Board of Trade upon the accident at Inverythan, on the Great North of Scotland Railway, last November, when a bridge gave way, causing the death of five persons, was published on Wednesday. Major Marindin considers that the disaster was due to the failure of a girder, caused by careless casting, and attaches no blame to the company, as the defect could not have been detected by outward inspection. He recommends the use of wrought-iron girders where the span exceeds 25 ft.

Messrs. W. F. Dennis & Co., of 101, Leadenhall-street, sole agents in Great Britain for Messrs. Felten & Guilleaume, Mülheim, near Cologne-on-the-Rhine, telegraph engineers, and manufacturers of iron and cast steel wire, wire strand and fencing, wire ropes, &c., have now opened a branch office at No. 3, Tower-chambers, Water-street, Liverpool.

Sir John Steell's "Alexander and Bucephalus."—On the 1st inst. a large company of ladies and gentlemen assembled by invitation at Sir John Steell's foundry to witness the casting of the principal portions of his group of "Alexander and Bucephalus," soon, it is expected, to take its place among the public monuments of Edinburgh. The work in question was designed by Sir John about fifty years ago, immediately after returning from Rome, with his youthful enthusiasm fired by the masterpieces of Classic sculpture. It deals with the incident of the taming, by the young Prince of Macedonia, of the high-mettled steed, whose spirit had previously defied all control. The horse is represented as in the act of rearing, its figure being poised on the hind legs, and the fore feet thrown freely into the air. On the near side stands Alexander, whose head has been modelled from a bust in some Florentine gallery. He is firmly planted on his limbs, of which the right is advanced; and while his right hand, drawn back with strong muscular action, reins in the fiery animal, and his left soothingly pats its shoulder, he coolly watches its excited eyes, as if to ascertain the effect of his treatment. A loose garment, shuffled off from his shoulder by the energetic movement of the right arm, still droops in graceful folds over the left side, and falls in a voluminous mass under the horse's hind-quarters. Besides this work, Sir John Steell has now on hand commissions for two Burns statues,—one to be placed on the Thames Embankment, London, the other for Dunedin, New Zealand.

Working Children.—The *Freeman's Journal* reports the proceedings at an inquest held on Saturday last at Mercers' Hospital, Dublin, on the body of a poor little fellow named Edward M'Donnell, aged twelve years, the son of a hackney cardriver. From the evidence of a working man named Edward Daly, it appeared that the deceased was engaged in assisting witness, who had been employed to repair the roof of the house at the corner of Anne-street and Duke-lane, belonging to Mr. Twamly, plumber and gasfitter. Witness was engaged in putting on the ridge-tiles, standing upon a ladder which rested in the valley between two roofs. While doing this he saw the deceased child suddenly disappearing on the opposite side of the roof at which he (witness) was working. The child fell about a depth of 16 ft., and died a day after he was admitted to the hospital. The coroner in very strong terms expressed his condemnation of the employment of a child of the age of the deceased at such an occupation as had been referred to, which, as everyone was well aware, required both experience and care, and such a care as could not be expected from the deceased, in order to prevent an accident. The jury returned a verdict of accidental death.

The New Sheriff Court Houses at Paisley.—On the 1st inst. a meeting of the Commissioners of Supply of the county of Renfrew was held in the County Hall, Paisley, —Sir Michael R. Shaw Stewart, Bart., Lord-Lieutenant of the county, presiding,—to consider and dispose of communications from the Home Secretary and the Commissioners of the Treasury regarding the plans of the proposed new Court-houses at Paisley. It was reported to the meeting that the plans as originally adopted had been submitted to the Home Office and the Treasury. They had now been returned, containing conditions to the effect that the accommodation which had been proposed to be provided for the Sheriff, Procurators of Court, and otherwise, should be curtailed as unnecessary. The meeting having considered the communications, unanimously resolved to carry out the plans in their entirety as originally passed, and to defray themselves the extra cost of providing the extra accommodation which was objected to by the Government authorities.

Baths for Rotherham.—At the meeting of the Rotherham Town Council on the 7th inst., the Baths Committee recommended that the borough surveyor be instructed to prepare an approximate estimate, together with a plan for baths, to comprise first and second class swimming-baths, each 50 ft. by 27 ft.; twelve slipper baths for gentlemen, and six for ladies, together with residence for manager, all to be erected on the site in the main street, near the bridge over the river; and also to report as to the additional cost of the erection of Turkish baths on the same site, in connexion therewith.

TENDERS.

For the erection of a school for boys, Marsh-street, Walthamstow, for the Walthamstow School Board. Mr. W. A. Longmore, architect, 7, Great Alie-street:—

A. C. Barton	£6,765	0	0
Balaam Bros.	5,964	0	0
Thomerson & Son	5,495	0	0
J. Robson	5,376	0	0
North Bros.	5,350	0	0
Tarrant & Son	5,072	0	0
Johnson	5,037	0	0
J. & T. Wood	4,983	0	0
W. Gregar	4,977	0	0
J. Horlock	4,930	0	0
E. Good	4,890	0	0
B. T. Wood	4,885	0	0
J. Webb	4,791	0	0
F. Higgs	4,778	0	0
Morter	4,760	0	0
S. Scott	4,723	0	0
Parrish & Hawker	4,719	0	0
J. R. Hunt	4,657	0	0
G. Crabb	4,600	0	0
Turtle & Appleton	4,500	0	0
Palmer & Son	4,495	0	0
Priestley & Gurney	4,494	0	0
G. Parker	4,476	0	0
Fidler	4,473	0	0
A. Capsey	4,454	15	0
J. Reed, Walthamstow (accepted)	4,377	0	0

For building a stone retaining wall, laying down kerb and channelling, and forming gravel footway, in connexion with the widening of Smedley-street, Matlock, for the Matlock Local Board. Mr. J. Bourne, surveyor to the Board:—

W. D. Askew	£113	8	10
Crowder & Dunn	107	10	0
L. T. Wildgoose	105	0	0
G. Hawley (accepted)	95	0	0

For alterations and additions to the schools, Crouch End, for the Hornsey School Board. Mr. T. Chatfeild Clarke, architect. Quantities by Mr. H. H. Leonard:—

	Alterations and additions.	Painting, &c.	
Conder	£3,335	£195	
Ashby Bros.	3,269	484	
Mattock Bros.	3,393	293	
Colls & Son	3,330	333	
J. & J. Greenwood	3,230	345	
Grover	3,208	308	
Clarke & Bracey	3,210	359	
Williams & Son	3,275	277	
Nightingale	3,212	323	
Lawrence	3,099	348	
Scrivener & Co.	3,119	290	

For the erection of a house and shop at 409, Strand, for Mr. S. Ullman. Mr. F. Wallen, architect. No quantities:—

Hanley	£2,490	0	0
Drew	2,400	0	0
Tann	2,462	0	0
Julian & Co.	2,227	0	0
Mattock Bros.	2,191	0	0
Faulkener	1,995	0	0
Jackson & Todd	1,959	0	0

For the erection of a house and shop, 182, Drury-lane, for Mr. Harrison. Mr. G. Bickerton, architect. Quantities by Mr. E. J. Paine:—

Lane & Son	£1,573	0	0
Grover	1,483	0	0
Greenwood	1,483	0	0
Mattock Bros.	1,439	0	0
Stimpson & Co.	1,425	0	0
Hobson	1,387	0	0

For erection of Sunday-schools, Rushey Green, Lewisham:—

Kennard Bros. (accepted)	£750	0	0

For completion of seven houses, Beckenham-lane:—

Rice	£2,643	0	0
Lathby	2,600	0	0
Marshall	2,025	0	0
Ladd	1,988	0	0
Kennard Bros.	1,600	0	0
Trelevan (accepted)	1,345	0	0

For block of dwellings, Sayer-street, New Kent-road, after deducting for old materials:—

Macey	£4,824	0	0
Nightingale	4,792	0	0
Patman & Fotheringham	4,761	0	0
Ransom & Co.	4,750	0	0
Colls & Sons	4,681	0	0
Savoy & Son	4,656	0	0
Downs	4,580	0	0
Sharland	4,568	0	0
Higgs	4,420	0	0
Canning & Mullins	4,307	0	0
Crocker	4,190	0	0
Tarrant & Son	4,150	0	0

For a villa residence at Norwood. Mr. C. Brinsley, architect, 30, New Bridge-street. Quantities not supplied:—

Norris & Chandler	£1,343	0	0
W. Ellis	1,158	0	0
Loe & Son	1,042	0	0
Hunt & Challis	1,018	0	0
F. Carman	997	7	0
J. Hurst	997	0	0
C. J. Bartlett	979	0	0
W. Avis	975	0	0
H. R. Swain	925	0	0
J. Newton	913	0	0
E. H. Mapleseden	897	10	0
G. Kemp	850	0	0
Lorden & Son	845	0	0
Aldridge & Jenley	840	0	0
W. Smith	825	0	0
H. J. Player	822	0	0
C. Whitlock	815	0	0
S. Harrison	793	0	0
S. R. Best	725	0	0

For new wing and sundry other additions and alterations to Havelock House, East Liss, Hants, for Mr. Geo. Wright. Mr. Mark H. Judge, architect:—

G. Snow	£833	0	0
J. Andrews	797	10	0

For pulling down old, and building a new, warehouse of five floors, and additions to a range of stabling adjoining, at Staple-street, Long-lane, Borough, for Messrs. Edward Fink & Sons. Mr. E. Crosse, architect, 32, Bermondsey-square. Quantities by Messrs. J. S. Lee & Sons, and Mr. J. S. Matthews, 35, Craven-street, Strand:—

		Weeks.
B. Wells, Bermondsey	£8,096	... 29
Colls & Sons, Camberwell	7,538	... 12
Jerrard, Lewisham	7,383	... 20
Greenwood, Bermondsey	7,140	... 21
Tongue, Plumstead	7,120	... 19
Nightingale, Lambeth	7,093	... 15
Rider & Son, Southwark	7,040	... 18
Tyerman, Walworth	6,988	... 30
Shepherd, Bermondsey	6,979	... 17
Croaker, Borough	6,837	... 16
Brown, Son, & Blomfield, Broad-street Buildings	6,834	... 16
Higgs & Hill, South Lambeth*	6,694	... 14

* Accepted.

For proposed timber stowage, Maidstone, for Messrs. Smythe Bros. Mr. E. W. Stephens, architect, Maidstone:—

Avard	£995	0	0
Cox Bros.	990	0	0
Elmore	986	10	0
Wallis & Clements	986	0	0
White & Joy	936	0	0
Barden	929	0	0

For construction of new roads and sewers on the Victoria Embankment, for the Commissioners of Sewers of the City of London. Mr. William Haywood, engineer. Quantities by Messrs. Arding, Bond, & Buzzard:—

McKenzie, Williams, & Co.	£11,800	0	0!
Smith	10,253	0	0
W. Neave & Son	9,847	0	0
W. Harris	9,480	0	0
G. Munday & Son	9,314	0	0
W. Crockett	9,200	0	0
C. Killingback	8,690	0	0
W. Fortesque	8,687	0	0
Nowell & Robson	8,467	0	0
W. Griffiths	8,000	0	0
T. Turner & Sons	7,950	0	0
J. Mowlem & Co. (accepted)	6,790	0	0!

For rebuilding No. 84, Hatton Garden, Holborn. Messrs. Bray, Web, & Bray, architects:—

Smith & Co.	£3,537	0	0
Lawrence	3,310	0	0
Forest	3,287	0	0
J. O. Richardson	3,159	0	0
Brown	2,993	0	0

For the erection of three houses in Elms-road, Clapham Common, for Mr. F. C. Smith. Mr. Isaac Jones, architect:—

D. S. Rice (accepted)	£3,366	0	0

Accepted for extension of plant at the new brewery, Burton-on-Trent, for the trustees of the late Mr. P. Walker. Messrs. Scamell & Colyer, 18, Great Georgestreet, Westminster:—

Contract No. 4.—Machinery, &c.

G. Waller & Co.	£1,052	0	0

Contract No. 8.—Copper-Work and Pipes.

Bindley & Briggs	£550	0	0

Contract No. 10.—Backwork.

R. Carty & Co.	£300	0	0

For the erection of villa residence for Mr. Richard Harper, Firs-street, Dudley, Worcestershire. Mr. Thomas Harper, architect:—

W. Holland	£509	0	0
Mather	450	0	0
Webb & Round	437	0	0
Meridith	410	0	0
J. H. Bate (accepted)	400	0	0

For the erection of warehouse and stable buildings at No. 344, Mile End-road, for Mr. E. R. Goodrich. Messrs. H. S. & C. A. Legg, architects. Quantities by Messrs. Stoner & Sons:—

C. Lemon	£1,036	0	0
F. & F. J. Wood	947	0	0
Culnan & Co.	875	0	0
Hearle & Son	772	0	0
Parrish & Hawker	723	0	0
J. R. Hunt	715	0	0
J. Wyard	687	0	0

Accepted for the erection of new extracting works, at East Audsley, near Wakefield. Mr. Page Spencer, C.E., architect, Batley Carr, Dewsbury. Quantities by the architect:—

Masons and Bricklayers.
J. & T. Audsley, Dewsbury.
Joiners.
Land & Nettleton, Ossett.
Plumber, Glazier, and Painter.
J. Snowden, Ossett.
Ironfounder.
T. Howden, Wakefield.
Plasterer.
W. Parker, Heckmondwike.
Slater.
G. Hargreaves, Dewsbury.

For the erection of steward's house, Muntham Court, Findon, Worthing, for the Marchioness Dowager of Bath. Mr. Resta W. Moore, architect:—

Stourbridge (accepted)	£950	0	0

For the restoration and reseating the parish Church of St. John the Evangelist, South Brewham, Somersetshire. Mr. Henry Hall, F.R.I.B.A., architect, 19, Doughty-street, W.C.

	Church.			Add for Repairs to Tower.		
Stephens & Bastow, Bristol	£1,080	0	0	...	£120	0 0
Soper & Son, Salisbury	1,016	18	6	...	191	17 0
Johns & Guy, Poole	1,000	0	0	...	51	0 0
Abley, Salisbury	967	13	0	...	182	7 0
Bunning, Camberwell	873	0	0	...	25	0 0
Hooper & Barber, Mere	862	0	0	...	40	10 0
Vallis, Frome	852	10	0	...	185	0 0
Crook, Salisbury	832	0	0	...	66	0 0
Pittard, Langport	821	0	0	...	84	0 0
Oborne, Shaftesbury	800	0	0	...	95	0 0
Merrick & Son, Glastonbury	767	0	0	...	77	0 0
Hiscock & Dean, Shaftesbury	732	0	0	...	99	0 0

For new dwelling house and stable, Stoke Fields, Guildford, for Mr. John McDonald. Messrs. Peak, Lunn, & Peak, architects, Guildford. Quantities supplied:—

			Extra for roof boarding.
T. E. Downes, Guildford	£351	0 0	£6 10 0
G. & R. Smith, Guildford	770	10 0	4 10 0
Garnett & Mills, Guildford	765	0 0	3 0 0
G. Strudwick, Guildford	755	0 0	7 0 0
R. Park, Milford	746	0 0	3 10 0
Martin, Wells, & Co., Aldershot	736	0 0	4 0 0
E. Elliott, Guildford (accepted)	698	0 0	3 0 0
T. Swayne, Guildford (withdrawn)	593	0 0	4 15 0

For warehouse, Ivy-lane, for Messrs. Smith Bros. Mr. Wimble, architect:

Ramsey	£3,244 0 0
Moore & Son	3,101 0 0
Lawrence	2,987 0 0
Falkner	2,965 0 0
E. Conder	2,889 0 0
Morter	2,887 0 0
Scrivener & Co.	2,749 0 0

For the erection of a reredos for St. Giles's Church, Northampton. Mr. Edmund Law, architect, Northampton:—

Phillips & Pullin, Northampton	£288 9 0
Farmer & Brindley, London	282 0 0
Margetson, London	263 19 0
H. Hems, Exeter (accepted)	240 0 0

For shops and warehouses, High-road, Lower Tottenham, for Mr. G. S. Richards. Mr. D. Campbell, architect. Quantities supplied:—

Greenwood & Sons	£5,067 0 0
Humphreys	4,944 0 0
Shaw	4,404 0 0
Fairhead, Enfield*	4,238 0 0

* Accepted, with modifications.

For the erection of chancel, organ-chamber, vestry, &c., at St. Paul's Church, New Swindon. Mr. John Bevan, architect, St. Leonard's Chambers, Nicholas-street, Bristol. Quantities supplied:—

Willshire	£1,088 0 0
Eastabrooke & Sons	1,080 0 0
Stevens & Bastow	1,050 0 0
Barrett	1,019 0 0
Wilkins & Sons	990 0 0
Jones, Gloucester (accepted)	948 0 0
Forse	860 16 0

For the construction of Maypole-road, East Grinstead, including main drain and manholes. Mr. S. W. Houghton, surveyor, East Grinstead:—

J. Morris, Ashurst Wood	£250 0 0
Beard & Foster, East Grinstead	210 13 0
W. Pledge, East Grinstead (accepted)	188 10 0

For the erection of "Ellerslie Tower," Ealing, for Mr. R. H. W. Dunlop. Mr. Robert Willey, architect, 66, Ludgate Hill:—

Clarke & Bracey, London	£3,688 0 0
Smith, Kennington	2,995 0 0
Brown, Southall	2,725 0 0
Penny & Co., Ealing	2,650 0 0
Nye, Ealing	2,395 0 0

For new cart-sheds, stables, office buildings, and boundary wall, for the Board of Works for the Plumstead District. Mr. F. F. Thorne, architect. Quantities by Messrs. Osborne & Russell:—

Mowlem & Co.	£4,600 0 0
Morter	4,542 0 0
Kennard Bros.	4,489 0 0
J. O. Richardson	4,349 0 0
Howell	4,346 0 0
Powell	4,324 0 0
Tongue	4,250 0 0
Jerrard	3,973 0 0

For additional stabling, smithy, &c., Kilburn-lane, Kensal Green, for the London General Omnibus Company. Quantities by Mr. A. J. Bolton:—

Dearing & Son	£994 15 0
C. Crabb	990 0 0
Scott	987 0 0
Niblett	895 0 0
A. G. Bolding	893 0 0
Higgs	870 0 0
Richens & Mount	858 0 0
Garrad	849 17 0
Evans	847 0 0
Jackson & Todd	836 0 0
Harfaes	830 0 0
Parker	779 0 0

For the erection of two warehouses, Windmill-street, Finsbury, for Mr. T. C. Usher. Mr. J. Groom, architect. Quantities by Mr. Mark W. King:—

Pocock	£4,430 0 0
Dove Bros.	4,295 0 0
Grover	3,937 0 0
Morter	3,847 0 0
Bangs & Co.	3,690 0 0
Mattock Bros.	3,673 0 0
Langmead & Way	3,520 0 0

For house and stables at Reedham. Oldham Chambers & Willins, architects, Bank Plain, Norwich:—
J. Mutton, Halvergate (accepted).

For the erection of dining-shed, Kempton Park Racecourse, Sunbury:—
B. Cook (accepted).

For additions to the Weaverham schools, for the united districts of Weaverham, Acton, and Cuddington. Mr. M. K. Ellerton, architect, Northwich:—

Forster	£169 0 0
Leicester	165 0 0
Molyneux (accepted)	164 10 0

For additions to the Hollies, Northwich, for Mr. Thos. Williams. Mr. M. K. Ellerton, architect:—

Molyneux	£524 0 0

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H. J. B.—E. H. M.—A. F.—T. W. A.—J. N. C.—S. F. C.—S. W. H.—J. B.—B. I.—M. R. E.—J. T. E.—P.—W. H. W.—J. B.—E. S. H.—J. W.—E. C.—J. H. B.—J. B. T.—C. A. L.—J. T. H.—D. R. N. M. Bros.—M. & S.—H. K.—D. S. R.—J. L.—J. W. N.—R. C.—S. & C.—J. T. B.—Bombazine (galvanised iron makes a good supply tank).—J. H. B. P. (too late).—E. J. M. (next week).—C. B. (next week).—Thanks with compliments.

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DRY WALNUT,
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London. [ADVT.

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The Builder.

VOL. XLIV. No. 2263. SATURDAY, MARCH 17, 1883.

ILLUSTRATIONS.

Portal of the Church of San Pedro, Avila, Spain (Double-page Engraving) ... 348
Battersea Town-hall (Double-page Engraving).—Messrs. Morris & Stallwood, Architects ... 350
Parish Halls, Jersey: St. Ouen; St. Lawrence.—Messrs. Hayward & Son, Architects ... 352, 353

CONTENTS.

The Ventilators on the Embankment and in the Roads 337
Acragas, Agrigentum Gergenti 338
The Forthcoming Paris *Salon* 339
Archæological Research 340
The Building Trade in Paris 340
Private Bill Legislation 341
The New Opera, "Henry VIII." 341
The Works at Parkeston: Civil and Mechanical Engineers' Society 341
The Female School of Art 342
The Church at Kew 343
The Smoke Nuisance, and an Account of some Experiments relating thereto 344
Portal of the Church of San Pedro, Avila, Spain 359
New Town-hall, Battersea 350
Parish Halls, Jersey 352
Hurtmore 352
Fulham Infirmary Board of Guardians 360
Builders' Clerks' Benevolent Institution: Annual Dinner 360
International Electric Exhibition, Vienna, 1883 361
The Paris École de Medecine 361
Chiswick Church 361
Machine Tools: the Institution of Civil Engineers 362
Exhibitions 362
The Brickwork of Chimneys 362
An English Church at Berlin 362
An Account of the Architects' Benevolent Society: Report of the Council, 1881 363
The Street Memorial 363
Healthy Houses: York Architectural Association 364
Sewerage at Slough 364
The Vaux Bars of the Pantheon 364
Roofing-Linen 364
Sanitary Inspection at Coventry 364
The Drainage of Amsterdam 364
Architects' Benevolent Society: Annual Meeting 365
Liability of Gas Companies for Accidents: Hornby v. The Liverpool United Gas Company (Limited) 364
From South Africa 365
Ripley Schools Competition 365
Competition Designs for Improvements in the Madeira-road, Brighton 365
Competitions 365
Surrey's County School, Somerset 365
Building Patent Record 365
Living in "Flats" 366
An Architect on Lawyers 366
The School Board and its Architects 366
Gloucester Cathedral 366
Corner Buildings and the Line of Front 367
A Difference 367
Cornwall Wesleyan Middle-class School Arbitration 367
Varorum 367
Miscellanea 367

The Ventilators on the Embankment and in the Roads.

VERY rarely does it occur that so great a storm of public indignation is excited by the perpetration, or proposal to perpetrate, any architectural enormity, as in the case of the projected ventilating-shafts on the Thames Embankment and elsewhere. In our last number (*ante*, p. 331) we gave an account of various protests made against the plan, and the indignation has only gathered strength as time has rolled on, without the railway company making any sign of yielding to the public feeling. Theirs is a dangerous confidence. Mr. Chamberlain, indeed, said that "he was afraid there was nothing to be done." We venture to differ from the President of the Board of Trade. Where there is a will (accompanied by power) there is usually a way.

It may, perhaps, be of but little immediate use, now that the Metropolitan District Company have obtained their Act, to say that they desire to exercise under it powers which it was not the intention of the Parliamentary Committee to grant them. Such, however, is, no doubt, the case. And we may be allowed to point out that, at all events, the spirit of the Standing Orders is most distinctly opposed to the carrying out such a surprise as is now sprung on the public. Whether, in the case of the Bill in question, the letter of the Standing Orders was or was not complied with, it is not for us to say. And supposing it to be proved that the latter was the case, such evidence would not, of itself, invalidate the Act, even if it were shown to be obtained under false pretexts. But it is of great importance to ascertain the real right and wrong of the case, not in a mere legal or technical sense, but as regards both public faith and the good faith of the railway company. To this end it is desirable to note, first, that the Act of Parliament now relied on is one that comes under the Second Class of Private Bills. In that case, it is provided by clause 47 of the Standing Orders (1882) that sections shall be deposited which shall show the surface of the ground marked on the plan, the intended level of the proposed work, height of every embankment, and the depth of every cutting,—all referred, by means of a datum horizontal line, to some fixed point.

Is the intended level of the proposed height of the ventilating-towers shown on the plans deposited by the District Railway Company? We recommend those who are now moving in the matter to have a careful examination made of the deposited plans, as it is quite conceivable that grounds may exist for obtaining an injunction if the company persist in carrying out, under the panoply of their Act, works as to which they did not take the legal and specified means of informing the public beforehand.

It is, of course, a question for legal advisers whether any such legal ground of arrest exists. We are now speaking of the moral right,—the sense of fair play which has not yet altogether deserted England,—and we think there can be no doubt that the company are carrying out an unexpected power obtained by surprise.

How, then, about the powerlessness of the Government to interfere? Do they wish to do so? It is not a question, be it remembered, of administrative action *mero motu*. As to that, there might be something to say, but we have not yet advanced so far. The actual state of the case is this. The inhabitants of the metropolis, especially those most concerned from the locality of their residences, come to the department of the administration which exercises a control over the construction and management of railways to complain that the directors of the Metropolitan District Railway are about to exercise powers which they claim to be conferred by their Act, to the great detriment of important parts of the metropolis. Here, it will be seen, such arguments as to Standing Orders and the like, as we have suggested, come in, as affording reasons for those who approach the Board of Trade to urge that the case is one most proper for Government to interfere about. There is a great mischief about to be perpetrated: we ask you to stop it,—at all events, until the opinion of Parliament can be taken on the subject.

"How can we interfere?" asks the President of the Board. Thus, we reply. It is within the competence of the Board (supposing all that we have before said to be correct) to make an official representation to the directors of the railway company to the following effect:—The Board are informed, and believe, that works are about to be carried out by the railway company of which no distinct plans or elevations were deposited before obtaining the Act, and which the Committee were not aware that they were authorising. These works are most strongly objected to by the neighbourhood, and, had they been distinctly shown to be in contemplation when the Bill was applied for, would have raised so strong an opposition that the Bill would probably have been lost. Further, the Metropolitan Board of Works have opposed the execution of this scheme, and the advice of competent experts is condemnatory of its details.

Under these circumstances, the Board of Trade may call the attention of the Company to the fact that their position before the country is undesirable. That it is even possible that they may not be altogether so sound as to their legal rights as they conceive, and that in any case, if the scheme is now pressed in face of so weighty an opposition, the Government may probably think it proper to oppose any future Bills promoted in Parliament by the Metropolitan District Board, unless they contain a clause repealing the obnoxious power of which complaint is now made.

The functions of the Board of Trade are, to some extent, indeterminate. The utility of the action of the Board is not always above criticism. In the case of railway returns the inadequacy of the present return made to and by the Board has been long lamented by their own most efficient officers. The Board shelter themselves under the plea that their inefficient returns are sanctioned by Parliament, and that it is for the shareholders to complain if they are not distinct enough. This plea,—which we have under our hands in black and white,—is only one instance of the anxiety "not to do it" which has so long since been pointed out as a striking characteristic of the subordinate officers of our public administrations. If in the present case the same spirit is allowed to prevent any interference on the part of the Board to defer a great public mischief, the public will form their own conclusions as to that portion of their administrative machinery.

We venture, however, to suggest, at all events for public consideration and discussion, a *modus vivendi* in the matter. Let us hear, or imagine, what the railway company may have to say in their own behalf. "Here," they may say, "is a pretty case! You have been for years complaining as to the atmosphere in our tunnels. We take measures to improve the ventilation,—a practical matter,—at our own cost, and we are met by a storm of sentimental complaint as to the unpicturesque character of our engineering works. What do you want us to do? How can we help smothering you if you will not let us build chimneys?"

This, we take it, is as fair a statement of the case for the Company as their most unhesitating advocates could put. What is the reply? In brief, this:—Two things require making plain. First, are the ventilating-shafts in question the only, or the best, method of effecting what is required? On that we are not at the moment prepared to say more than that the statement is disputed. As to that, then, the public, the Master of the Rolls, Parliament, or whatever may be the ultimate tribunal in the matter, will have to be satisfied.

Secondly, supposing a certain number of shafts are necessary, or desirable, in certain ascertained localities, is there any good reason why they should be hideous? Is a blank cylinder of brickwork, such as might be erected in such an abode of ugliness as,—let us say, Widnes,—the nearest representative on our shores of the infernal regions as imagined by Dante,—the proper treatment for a ventilator in an ornamental part of the metropolis? There is a singular want of the imaginative faculty, as well as of the sense of fitness, betrayed by the very proposition. Why need a ventilating tower be an unarchitectural eyesore? Why

should it not have some structural and monumental beauty?

A solution of the difficulty is not, however, to be hoped for from angry disputants. And we must confess that we should feel far more certitude that the Metropolitan District Railway Company would meet the views of the residents near their tunnel than we entertain at this moment, if we found that they were brought under any apprehension as to their permanent power to ride roughshod over all opponents. Therefore, again, we must hint at the possibility of an injunction. Of course, no Court of Justice would attempt to set aside the operation of plain law, however recently embodied in a statute. But as equity will prohibit the fulfilment of a bargain made when one of the parties concealed important elements of the question from the other party, so we hold there is a *prima facie* case for, at all events, delay in giving effect to the clause of an Act of Parliament obtained without due notice (at all events, according to the spirit of Standing Orders) and without due comprehension in the minds of the committee or of the Legislature. We speak with all proper reserve on a matter which it may come before one of the heads of the law to decide. But we cannot but think that the mere attempt on the part of the various vestries which are now taking up the question, to put it on the ground of a ruse practised on both the neighbours and the Legislature, would tend so far to open the eyes of the directors to the possible consequences of obstinacy on their part in one way or another.

And, after all, we have our interests as railway travellers to remember. The accommodation rendered by the subterranean railways in London is of a magnitude that it is not easy to realise. Speaking of the year 1878,—as that is the last for which we have the returns of the Board of Trade, digested into useful form by the patient skill of Mr. Fleming, in the "Index to our Railway System,"—the Metropolitan District Railway conveys 10,000 passengers per mile per day throughout the year. This is for nine miles, and for 330 days in the year, giving 90,000 passengers per day. The trains, according to the same authority, run at five minutes' intervals. If the length of the passenger journey (on the average) were given by the returns, as is the case on almost all other railways, we should be able to gauge with accuracy the hourly flow of this human tide. But if we allow each passenger to travel three miles, we have 270,000 units, or passenger miles, travelled every eighteen hours. This is 15,000 units per hour. And as the running on the circle from one end to the other (although a speed of forty-five miles an hour is attained) is reduced by the frequent stoppage to something, we think, like 14 miles per hour, we come to the fact that upwards of 3,000 human beings, during every minute, on an average, from six a.m. to midnight, are filling their lungs with the vaporous contents of the tunnel, of the Metropolitan District line. Deduction, of course, must be made for the open portions of the line. On the other hand, in the hours immediately preceding and following those of ordinary business, the number of passengers in the trains at the same moment must be at least four times the average. Going up to the City from nine to ten,—and returning,—from four to five, there are probably at least 12,000 passengers underground. The lungs of this great population are liable to be seriously injured by exposure for twenty or thirty minutes twice a day, to a mephitic atmosphere. That this should be prevented we, among other persons who take an interest in sanitary matters, have long protested. Let us hope that the past effort made by the company to remove one cause of public complaint shall not, by mismanagement or otherwise, be so intimately associated with something almost equally objectionable, as to make it a loss to London whether the company succeed or fail in their scheme.

The Fisheries Exhibition.—The executive committee of the Great International Fisheries Exhibition have decided to light up the place by electricity, and Messrs. Davey, Paxman, & Co. have been by them selected to supply the necessary steam power. The engine and boiler power required is 700 horse-power indicated, and will consist of four large engines, the largest of which will be capable of indicating 350-h.p. They are pushing on with the engines and boilers, and fully expect to have everything complete by the opening-day in May.

ACRAGAS, AGRIGENTUM, GIRGENTI.

The completion of the railway connecting Girgenti with the east as well as the north of Sicily may induce a number of travellers to visit the site of the once great city of Acragas, as well as of the other Greek settlements in the island. To the student in history, as well as to the architect, the remains of these Greek cities offer many points of interest, forming one of many links in the long chain of Greek development. Perhaps there is no chapter in history more inviting than that relating to the progress of the little Dorian colony that, starting from the foot of Parnassus, gradually spread over the peninsula, subdued the Peloponnese, founded settlements in Rhodes, Crete, and other islands in the Ægean, and established itself at various points on the shores of Sicily.

The history of the Agrigentines, like that of other small States whose rapid growth was due in a large measure to adventitious circumstances, is as brief as it was remarkable. Founded B.C. 582 by an offshoot of the Dorian settlement at Gela on the same coast, Acragas became in little more than a century the largest and most important of all the Greek colonies,—a rival of Athens and Corinth in the plenitude of their prosperity, and the envy of all the States bordering on the Mediterranean. Under the despotic sway of Phalaris and Theron, Acragas attained the climax of its greatness, and, if we may accept the words of Pindar, it was at that time "the most beautiful city of mortals." Empedocles also, a contemporary philosopher, and by far the most eminent man that Acragas produced, has asserted that "the inhabitants built their houses as though they were to live for ever, and indulged in luxury as if they were to die on the morrow." There is abundant evidence of the truth of these statements, even after a lapse of nearly 2,400 years; but, strange to say, history is silent as to the causes of this rapid growth of so small a State, which Mitford has not inaptly termed "a political phenomenon." There is no doubt, however, that the enterprising Greeks, on taking possession of these fertile shores, brought with them an improved system of husbandry, and that the opening out of a new field of commerce with such trading cities as Tyre and Carthage attracted hither a large number of wealthy citizens from other Greek settlements. The affluence and princely lives of the merchants have been commented on by more than one contemporary, and when we read that 800 chariots formed part of the bridal procession of a citizen's daughter, and that, on the occasion of an Agrigentine having gained the prize at the Olympic games, he was accompanied through the city by 300 chariots drawn by white horses, we cannot be astonished at finding the remains of so many magnificent temples. The story of the citizen Gelias, who exercised a liberal hospitality to all strangers, is a matter of history. It is narrated that, on one occasion, when 500 horsemen, passing the city walls during a violent storm, demanded shelter for the night, Gelias entertained them at his house, and, bidding them farewell on the morrow, presented each of them with a change of raiment. The tragic end of this generous citizen deserves to be better known. When the Carthagenians laid siege to Acragas, B.C. 406, Gelias retired for safety, with all his slaves and his vast accumulated wealth, to the Temple of Jupiter Atabyrius on the rock of Athens, and seeing that the invaders had effected an entrance into the city lying at his feet, and escape was impossible, he set fire to the temple, and was consumed with all his treasure.

Acragas never recovered this long disastrous siege. It attained considerable prosperity in the following century, but having sided with Hannibal in his fatal expedition against the Romans, it became a prey to the new invaders, its temples were despoiled, its leading citizens slain, and 25,000 of its inhabitants carried off into slavery. This was the last chapter in the history of Acragas. Although special privileges were accorded to it by the Romans, it never recovered itself; its independence was gone, the mixed character of its inhabitants no longer gave it any claim to nationality, and Agrigentum of the Roman Empire arose on the ruins of Acragas of the Greeks. The records of its history during ten centuries of Roman occupation are very scanty, and, with the exception of one monument, there are no evidences of Roman influence in the wilderness of stones that strew the vast plain. As this absence of monumental evidence is equally marked in the remains of other Greek cities in Sicily that fell under the Roman yoke, it is reasonable to assume that the island became of less importance as the Roman Empire spread over the mainland, and that the Agrigentines, allowing their city to fall into decay, withdrew for protection to the citadel that now forms the modern town of Girgenti. We know that it fell an easy prey to the Saracens in the ninth century, and that when the Normans overran the island 150 years later they made no attempt to restore the city, but established themselves as a small colony within the citadel.

It would be scarcely possible to conceive a more glorious prospect than that which greets the traveller as he looks from the walls of modern Girgenti upon the site of ancient Acragas. Girgenti looks down on Acragas, and Acragas looks down on the sea. Masses of hewn stone piled up or thrown down in endless confusion are scattered over the vast plain, and in the far distance, backed by the blue waters of the Mediterranean, stands, in solemn grandeur, the one surviving temple of all the great monuments of this once flourishing city. The ground rises abruptly behind the plain, forming two ridges of considerable elevation, the one on the north being the ancient citadel, and the other to the north-east of it known as the rock of Athene, the sides of which were at one time so precipitous as to be accessible only at one point. The citadel was connected by a covered bridge, spanning the small river Acragas, with the city itself, and was reputed to be so strong, owing to its natural position, that two men were sufficient to stay the progress of a whole army. The rock on which the citadel is built was pierced with a labyrinth of passages, probably used for sallying purposes. Many of these are still in existence, but they present no features of interest. It is to the ruined temples and the circle of the city walls that we must turn to appreciate the grandeur of the Agrigentines. To the architect they offer special opportunities for studying that phase of the Doric order which is in advance of its earliest prototype at Corinth, showing indications of that refinement and delicacy of treatment which culminated during the century in the unrivalled Parthenon. Those who are familiar with the most perfect works of the Athenians in the time of Pericles will perceive a crudeness and monotony of design in nearly all the Greek remains throughout Sicily, and especially at Acragas. This may be accounted for by the fact that the Dorians worked very much by tradition, and, with the exception of the great Temple of Jupiter Olympius, there is no instance of much variation in the arrangement of parts and definite proportions that distinguished all their public edifices. The entasis of the shaft, and its height in relation to the diameter, vary in each locality, but the same entasis, and almost the same relative proportions, are to be found in all the temples in each locality. At Corinth, for instance, the proportion of the shaft to the diameter is less than 4½ to 1, at Acragas more than 4⅝ to 1, and at Athens 5⅜ to 1. Again, the entasis at Acragas is considerable, at Pæstum and Corinth still more so, and at the Parthenon it is so delicate and the lines of curvature are so subtle as to be scarcely perceptible. This has been beautifully elucidated by Mr. Penrose. From the proportions of the Temple of Concord here, which, like the Theseum at Athens, owes its preservation to having been converted into a Christian church in the Middle Ages, we are therefore able to ascertain the proportions of other temples that are in less perfect condition; and it was by acting on this principle that the late Professor Cockerell was able to work out a restoration of the colossal Temple of Jupiter Olympius. With the exception of the Theseum, there is no building so perfect as this Temple of Concord. It therefore affords an admirable study of Greek construction, and is in itself a most beautiful example of a hexastyle peripteral temple of pure Doric. Amongst the ruins the eye clearly discerns the one remaining shaft of the great Temple of Hercules, a line of columns that marks the once graceful temple of Juno Lucinia, and the picturesque group of four shafts with complete entablature that have been set up in recent times to show the proportions of the beautiful structure presumed to have been dedicated to Castor and Pollux.

It is, perhaps, to the colossal remains of the edifice raised to the glorification of the Olympian

Zeus that one must turn to comprehend the grandeur of the Agrigentines. Its dimensions are so well known, through the admirable drawings of the late Professor Cockerell, that I need not repeat them here. It is sufficient to state that the plan of this structure and the arrangement of the parts are easily traced in this wilderness of stone, and that the one gigantic Telamon, the sole survivor of all the heroic figures that once graced the walls of the cella, still lies prostrate on the turf, his huge placid face turned upward to the sky. The chief peculiarities of this building, variations from the ordinary type of Doric temples, are, — the attachment of the shafts to the external walls; the septastyle arrangement of the east and west porticos; the employment of figures to support the roof; and the introduction for the first time of bases to the shafts. The wonder excited by the magnitude of these remains is only equalled by admiration of the daring of the conception. Diodorus the Sicilian, nearly 400 years after the siege by the Carthagenians, says, "The grandeur and height of its porticos are stupendous. They are embellished with excellent sculpture; on the east is a representation of the Contest of the Giants, and on the west the Siege of Troy, in which each hero may be distinguished by characteristic form and dress." When the Agrigentines were preparing the roof the enemy was at their gates, and consequently this magnificent temple, which was to be the glory of Acragas and a rival of the great works that were crowning the Acropolis at Athens, was never finished. The last of the Telamones fell down A.D. 1101, but long previously the greater part of the edifice, having no constructional ties, had fallen down, much of it crushed by its own weight. Of sculpture there is hardly any trace. The scarcity of sculptured fragments may be accounted for by the walls having fallen outwards, and as the material was used for the construction of a mole and landing-place at the port of Empedocles, about three miles distant, it is reasonable to assume that the stones in the tympana, where the sculpture was, having fallen farthest from the structure, would be more detached and more easy of transport. It is to be regretted that the late King of Naples, who favoured some excavations here in 1801, did not authorise the removal to a museum of the one remaining Telamon from this "Palace of Giants." Having been built up with the masonry in twelve courses, each rather more than 2 ft. thick, the stones could have been easily removed and set up again. They would have formed an interesting and enduring relic of the largest constructional sculpture ever employed in a Greek temple.

The soft nature of the stone quarried at Acragas, a yellowish-brown sandstone, presented a difficulty to the architect wherever sharp arisses or smooth surfaces for the application of colour were required, of which there is abundant evidence. This was overcome by a coating of very thin white plaster, of extreme hardness, having all the appearance of marble.

The circuit of the city walls can be easily traced, especially on the south and south-east sides. It is difficult, however, to accept the statement of Diodorus, that they were 25 cubits high, because two of the temples which stand close to the enclosure would have been completely screened by so lofty a wall, an arrangement for which, I believe, there is no precedent. Diodorus probably meant the scarp of the rock, which would have been, in some parts, of this dimension. There are but few traces of the tombs that were once scattered over the great plain below the walls. Some of these sepulchral monuments must have been remarkable, as they were erected in memory of favourite horses, for the breed of which Acragas was renowned, of domestic animals, and even of birds. The so-called tomb of Theron the Despot is a conspicuous object from the walls. It has an attic base, with fluted columns at the angles, Corinthian capitals, and a Doric entablature. It is a work of later times, and is the only structure bearing evidence of the Roman occupation.

There is not much of interest in modern Girgenti. In the walls of the church dedicated to S. Maria dei Greci may be seen two Doric columns of the temple of Zeus Polias that once stood here, and in the cathedral, an impressive but unattractive work of the fourteenth century, there is a Græco-Roman sarcophagus, much prized by the inhabitants. There is also a remarkable collection of archives, and among them is a letter said to be written by the devil himself. The origin of the legend is probably connected in some way with the commerce of the town, which is principally in sulphur.

ALEX. GRAHAM.

THE FORTHCOMING PARIS *SALON*.

WHATEVER grounds there may be for complaint on the part of the labouring classes in Paris, the Parisian artists, at the present moment, have certainly no reason to quarrel at the want of interest in their pursuits. But artists,—that is, those who are really entitled to respect,—have never been loud in their howl, although somehow, nearly at all times just as now, an impression exists in England, in nearly all circles, that our artistic friends are either "rolling in wealth," or sadly in want of that kind of appreciative patronage which, by a pleasant fiction, it is supposed they all deserve. It must be admitted there are a great many people who are willing to pay artists very large sums for pictures that they fully expect may some day realise 50 per cent. at Christie's, and an equally large number of persons who are willing to give, in pure kindness it is to be hoped, very small sums for works of art that have very often a highly decorative character, and which are obtained at a sacrifice of only a small amount of capital. In France, at some price, sometimes very high, all pictures seem to find ready purchasers; the shopkeeper or the small man of property, as much as the prince or the millionaire, being desirous to see his whole house, but especially his living-rooms, crowded with works of art. Probably in no country in the world have the frame-makers and the gold-beaters so large a patronage; but just now the Parisian frame-makers are overwhelmed with work in getting ready the frames of the hard on ten thousand pictures that are likely to be submitted for exhibition at the forthcoming *Salon*.

A custom exists in Paris, unlike any that we have in London, of exhibiting a selection of pictures intended for the *Salon* at some club or society interested,—as all societies are interested in Paris,—in art; and at these club exhibitions can be seen during February and March a very representative set of the pictures, mostly of the smaller kind, that are expected to be points of attraction at the Palais de l'Industrie.

From what we have seen of these exhibitions we gather that there will be this year no excess on former years with regard to what we understand in London as "impressionism," but an excess perhaps in the attempt to paint with speed and celerity that appears to possess just now a peculiar charm with all young painters. We cannot for a moment suppose that an educated art-public can like such work, although a very small acquaintance with the methods of painting seems to convince the critic that overmanipulation is equally a mistake.

The pictures for the forthcoming *Salon* appear to promise, indeed, very little that is new; the old, old stories that have been told again and again are likely to be repeated, startling effects of colour and indecent exposures of ill-shaped feminine humanity, ambitious efforts to make a momentary name, and a few, a very few industrious efforts for the *Prix du Salon*. However active and sanguine the new race of artists that now crowd Paris may be of their prospects at this year's forthcoming Exhibition, the older artists, those whose fame and credit have for some years been well established, and whose names are familiar to the world at large, are not disposed to regard the expectations of their younger brethren with quite so much of their youthful complacency. Whenever the opportunity occurs,—and in the Paris Press scarcely a day passes without some thoughtful reflections relating to the fine arts,—an opinion is visibly evident of doubt whether the new school, as it may be called, can with any stability hold its own against the traditions that have existed so long. One thing is certain, this year's *Salon* will be more than ever alive with the fresh emanations of these younger men; it will exhibit fewer of the works of what may be called the older masters. They are unquestionably much disaffected, and enjoying as they do exceedingly comfortable social positions, and surrounded by affectionate friends and appreciative admirers, it is difficult for them to sympathise with showy men, greedy for fame and its rewards, and who in the opinion of their elders have done but little to deserve the position they claim to hold.

The blow that Classic art has of late years received in Paris is not by any means a novel attack. We all know how long the war against the Classicists has been waging, especially in Paris, nor is it likely that it should be very hotly contested now that the remaining warriors are so aged as those few are who still remain, and one of whom departed only the other day in Henri Lehmann. Still, in spite of the small popularity that is awarded to his style of art, at his sale a few days since, in Paris, the eagerness to possess some scrap of the very abundant surroundings that he left behind him was strikingly manifested.

There seems, in fact, from all we see and hear, a very small possibility of Parisian art this year gaining much ground, and when we think that this may be safely asserted at a time when many of their most eminent writers and thinkers on the subject are drawing attention to the advances that other countries are making, it is not a little significant and suggestive of reflection, the reflection, we think, irresistibly leading to the conclusion that this decadence, for it really may be called such, is owing to the disrespect shown by the younger artists to the established and ancient modes of study, and to the fatal error of endeavouring, unaided by study, to produce in the shortest possible time the effects of mature labour.

The representants of idealism and idyllism, of impressionism, classicism, Fortunyism, naturalism, orientation, modernism, and all the other styles are likely, from what we see, to be, if not fairly or well, at least in some way represented; but there appears to be a chance of a severe protest being made against the very objectionable character of the works of some of these so-called schools of art. It has become a sad feature in the new movement, if it deserves the dignity of being credited with action, that it has the effect of causing the more thoughtful and accomplished artists to retire, not from the contest, of which they are in no way afraid, but rather from the contact with men whose aims are so clearly associated with a gross desire for popularity, and although in England we can point to at least one artist who seeks the kind of popularity that is so offensive in Paris, in Paris at the present moment, and very likely it will be found in the coming *Salon*, the belief in popularity is the rule, and not, as it is with us, the exception.

Judging by the pictures that we have already seen, and that are likely to be exhibited at the forthcoming show in May, we find it impossible not to acknowledge the very great pleasure we have derived from the works of the new school, wherever such works have been executed by men of decided ability,—the kind of ability, that is, which asserts itself at once, and which appears, in the hands of the youngest artists, to carry with it a charm that appeals to us all. Even hasty work with such men may be charming, just as surely as the hasty work of the thoughtless, uninformed painter, the conceited and the vain artist, is simply disgusting. Of this latter kind of work the forthcoming *Salon* is likely to be prolific; of the former, the instances promise to be rare and far between; for we cannot hope, with such a feeling as now exists in Paris amongst the painters, to see at the *Salon* this year any work by the true veterans, the old guard, such men as Meissonier, Gerôme, or perhaps even Cabanel, and their places are but ill filled by the new men, even if we could allow ourselves to mention popular men whose names are well known in French society.

Again, we suspect that this year will show in Paris the foreign artist, not alone those abroad, but the large contingent which crowds every *atelier* in the Quartiers Latin or Clichy, the Ternes or the Parc Monceau, busily striving with just and well-directed ambition to make a mark in the great city of art that appears to be attracting more than ever the dreamers from all parts of the world.

As usual in the beautiful garden in the centre of the Palais de l'Industrie, we are certain to see an abundance of sculpture, and, as usual, we shall hear that in respect of sculpture, the French artists are pre-eminent, and in this view we are disposed to agree.

We have seen so far little or nothing of what French architects are preparing for the coming *Salon*, but we may expect, as usual, that this portion of the exhibition will be more than ever interesting, because we have found for some years past that a growing attention and more watchfulness of the architects' interests are noticeable at the French Exhibition; and

very attractive, therefore, is this portion of the *Salon* yearly becoming, as this department certainly would not fail to become at the Royal Academy if the architects had more space at their command.

ARCHÆOLOGICAL RESEARCH.

With the lengthening days come rumours of preparation from the numberless field clubs and archæological societies, who are preparing for the summer campaign. There will be much pleasant picnicking in picturesque spots, and there will be a deal of enthusiasm evoked in out-of-the-way nooks over some relics of the past, but there will, we are afraid, be but little added to our store of knowledge, or to the dissemination of a true appreciation of the lessons left us by our fathers. There are many who are interested in archæological lore who are looking forward somewhat anxiously to the publication of the veteran Mr. Roach Smith's "Retrospections," which is now passing through the press. This still active antiquary lives in sight of Rochester Castle, beneath the shadow of which Pickwick and his friends stopped the first night of their excursion, which was rewarded by the finding of the famous inscription, "Bill Stumps, his mark." There is a great change in the tone of public opinion since that publication, and Mr. Smith's "Retrospections" will not only show the difficulties which stood in the way of the establishment of the British Archæological Association, and the jealousies which arose in consequence, but it will show how one lifetime bridges over an age of research and discovery. The implied sneer has become an approving smile, and instead of being an object of ridicule, archæological research has become, alas! a popular pastime. More than a century and a half has passed since the observant, accurate, but often mistaken Dr. Stukeley, published his "Iter Curiosum," and we are indebted to him and the giants who followed him for much of the groundwork which will have to be utilised when the newer history of our land and our people comes to be written.

The new-born zeal for archæological research which is developing itself through the medium of the county and local societies requires to be kept in check somewhat by the older and more sedate associations, for there is great danger of priceless relics being destroyed, and still greater danger of ignorant self-sufficiency being perpetuated and scattered abroad. When we hear of the story of the Trojan Brutus gravely put forward as a veritable piece of British history by one who has done much for the preservation of the archæological remains of the Western land, and listen to a fervid description of the mutilated effigy of a Mediæval knight as one of the kings of the Saxon heptarchy, by the secretary of an important society, we ask who is to stop this admixture of tradition with fact, before both are discredited? These societies are full of ardent students and diligent observers, who, if properly directed, might collect much valuable information, which would enable the historian to correct many misconceptions, and remove from the historic fact that rust and moss with which local gossip has enveloped it, and which have been perpetuated through the medium of a possibly imperfect county history. Thus local knowledge may be added to the sum of the national history when it comes to be generalised, and will possibly clear away many a perplexing point in the studies of those who have devoted a lifetime to the records of the past. This cannot be done by gregarious parties. It must be done quietly and systematically, and the larger gatherings should be devoted to elucidating and comparing the facts thus laboriously gathered together. If this were so, and the pleasure-party left a little in the background, we should have more real work done, and many reproaches removed. In the newer light which has been shed on the prehistoric remains which stud alike upland and plain, field and woodland of our country, it is found that little can be gleaned in bright summer weather. It is when the woods are clear of leaves and undergrowth, and the open ploughed fields show their variety of tint, that the signs of by-gone habitations can be best observed. The hoar-frost will frequently reveal buried foundations by showing a ground-plan liberally on the old turf. The slanting beams of a winter's sun will frequently reveal the outlines of an entrenchment which would otherwise be invisible. These are not seen by crowds. They are only revealed to the close observer, and thus the sites of the cities of the past or the by-gone villas become known. The wildest and most unpromising district is frequently the richest in these remains, and rewards the explorer with a fresh chapter of unwritten history.

It has been thought that the lines of archæological research have been narrowed too much, and that we too often find the details of one class of building utilised for another intended for quite a different purpose; the spirit of the old architect has been lost in the servile copying of his details. He adapted his means to a given end, and, before the tide of restoration obliterated so many fine points, a humble village church was found worthy of attentive study by those who wished to become true architects. By bringing these details before a wide circle of readers and students who have neither time nor means to visit the originals we have been of service, and have preserved the memory of many an epic in stone which otherwise would have been but a phantom in the future.

The rage for old oak furniture has been the means of perpetrating cruel injuries on the remains of our household fittings and adornments. The *outré* decorations of the famous cottage of the Ladies of Llangollen, where linen-chests and rood-screens have been combined indiscriminately with bedsteads to form the oak panelling of the rooms is only an instance, on a large scale, of what is occurring every day. Old mansions are stripped of their cornices and fireplaces to form sideboards and Elizabethan cupboards, without much regard to unity of design or their adaptability for the purpose. Thus we find chairs of ecclesiastical design side by side with hybrid cabinets and questionable bedsteads. There is something now being done to remedy this. The labours of the Rev. T. F. Havergal, of Hereford, have thrown much light on chairs and settles, their uses and their history. Attempts have been made to collect the examples of simple furniture shown in our missals and illuminated manuscripts. The manuals of art-furniture which have been issued in this æsthetic age have been more remarkable for their modern carpentry and upholstery than for their taste, unity, and adaptability for the purpose for which they are designed. The peculiarities of workmanship have been ignored by the manufacturers. The examples at South Kensington have been travestied too often, whilst the many excellent examples which are yet preserved in many of our old mansions are scarcely looked at, even by archæological enthusiasts. If these examples were fairly sketched, and the various articles of domestic use described, we might find that the ingenuity of some of our inventors had been anticipated by a more simple contrivance. If our local archæologists did this they would be doing a good service in the coming season, and make their labours valuable to the country and to all lovers of what is true in art in the half-forgotten past.

THE BUILDING TRADE IN PARIS.

The daily papers of late have kept the public well acquainted with the action of a large body of the working classes in Paris. Suicidal as has been this action, it is impossible for those familiar in any way with the true bearings of the case not to feel the large element of justice that there is in many of the complaints uttered, not so much by the noisy rioters of the last few days, as by the large section of the community they profess to represent. Foreign competition has been playing great havoc of late years with French industry, and though to the eye of the visitor to Paris the activity of the building trade would seem to be apparent, complaints have arisen as to the results of the stoppage of the more important building enterprises. But foreign competition is, we repeat, the chief grievance. Sweden and Norway, say the men, send to France doors and windows ready made, and at extraordinarily cheap rates, and hence French workmen remain idle while foreign markets are active.

But, on the other side, if the workmen have causes for complaint, so have the masters, and their views in the riots of the last few days have remained unexpressed. The masters base their complaints,—first, on the want of political stability, the numerous changes of Ministry that have taken place within the last few months; secondly, the desire for financial speculation which has invaded all classes; thirdly, the high rate of wages; and fourthly, foreign competition.

Of these, the want of political stability is universally set down by all employers of labour as the most disastrous to the prosperity of the community, and English readers can thoroughly understand this point. The menaces of the revolutionaries within the past few days are scarcely of a character, we are afraid, to calm this feeling of uncertainty which so fatally affects French industry, and leads capitalists to seek abroad an investment for their funds. The chief sufferers from this state of affairs are those employed in the building and kindred trades.

Against the rash speculation of the last few years the employers of labour are equally severe in their condemnation; for the capital which should be engaged in genuine industry is thus merely enriching an ephemeral series of risky and, in most cases, entirely dishonest speculations, while an unwholesome tone pervades the society afflicted by the desire for the false gains thus obtained. There are whole neighbourhoods in Paris urgently requiring, in the interests of hygiene, to be demolished and rebuilt; but the occupation of capital in other directions arrests this profitable and practical mode of investment. Here again the building trade is one of the chief sufferers.

As for the question of wages, the masters are unanimous in complaining of their high rate. Here it would appear that the action of the Municipal Council,—which, as we have more than once in these columns explained, fixes from time to time the price of work,—has greatly complicated matters. For many years the prices of the official *Séris* were taken only as an approximative basis in the calculation of contracts, but now it would appear the prices of the *Séris* are regarded by the men as the minimum of what they are to receive; the Municipality naturally pays its men at its own rates, and the rest of the trade have now to pay the same wages. From the provinces, however, the official rates not prevailing and labour being therefore cheaper, work is sent in to town, especially carpentry, at 15 to 20 per cent. cheaper than it can be produced in Paris. As for foreign countries, they are able to compete even more advantageously; as a striking instance, it would appear that the whole work of fitting up the French annexe at the forthcoming Amsterdam Exhibition has been placed in the hands of a Belgian firm, the French Commission having to consult their purse quite as much as their patriotism.

The increase of pay, which has been one of the results of the interference of municipal action in the question of the wages of Parisian workmen, has not, so the masters assert, in any way improved the condition of the men, for, with the increase of wages, it is proved that there are fewer hours of work; and here again the sad question of intemperance plays an important part; for it is the *marchand de vin* who has been the chief gainer by the recent changes. Even in sober France the cry against the wine-shop is beginning to make itself heard.

With regard to foreign competition, it is Sweden and Norway, it would seem, who are the most formidable rivals, sending into France the greater portion of the doors and windows employed in the buildings in the new neighbourhoods of Paris. Such was the cheapness of the Scandinavian work that when it first made its appearance at the frontier custom-houses,—where it pays a duty of 10 per cent.—the officials were convinced that an attempt at imposition had been made, and the goods were valued by experts. It was then found that a two-panelled door, which could not be turned out in Paris for less than 13 francs, could be supplied by the Norwegians at about 7 francs.

The masters, however, in face of this extraordinary competition, urge that could France only enjoy complete political stability, they could still resist the cheapness of foreign work, basing their views on the fact that the mechanical arrangements for the production of the goods sent from the North being alone capable of turning out a uniform class of goods, any changes or diversities of type would immediately render such goods useless for the Parisian market. In the new neighbourhood of Paris, the fittings of most of the houses have of late been of a uniform character,—a feature unusual, it may be observed, with our neigh-

bours, and only introduced since house-building has been in the hands of a series of companies which for economy have erected large blocks of uniform buildings. When, however, a house or series of houses is erected by private initiative, individual taste enters into the matter, and machine-made goods become useless. Now, in Paris private enterprise in architectural directions is active, and is invariably interested in seeing that it is supplied with artistic work; hence, in spite of an apparent uniformity in some quarters, individuality is shown in much of the modern architecture of the French capital. Under these conditions, peculiar to the French investor in house property, the masters urge that they have no reason to fear foreign competition when its cheapness is the result of the use of machinery. The caprice, the fancy, of their employers will, the French masters argue, always ensure the success of home-made products. All, in fact, that the masters require at the present moment is the cessation of unwholesome speculation, and a greater stability in their political governors.

PRIVATE BILL LEGISLATION.

THE discussion on the 6th instant in the House of Commons on Private Bill Legislation was one of considerable interest and importance, but is unlikely to bear practical fruit. The House passed a resolution that inquiry into the matter was desirable in 1872, and at various other periods the subject has engaged the attention of the House of Commons. But things were the same in 1882 as in 1872, and we shall be surprised if the changes which may have occurred by 1892 will have altered matters much from what they are at the present time. The main proposal to have migratory commissions in various parts of England is one which, though there is a good deal to be said for it, yet after all would be a very doubtful change for the better. No doubt inquiries before committees in London are very expensive, but is there any reason to suppose that local inquiries would be cheaper? Professional witnesses and advisers would very largely be London men, and the cost of their travelling and sojourning in some local town would quite make up for any saving in the expenses of local witnesses. Moreover, it is probable that when engineers and surveyors and other professional persons were engaged at a distance from their offices they would make a higher charge for their services than they do at present. Of course, we do not assert that all professional men come from London, but what we desire to point out is that in most inquiries a large proportion, at any rate, of them do, and that the extra cost of bringing them to particular localities at different times of the year would largely balance a saving in the cost of local witnesses and managers.

One of the dangers of the present system seems to be that the number of members able to serve on committees is scarcely up to the requirements of the work. It has always appeared to us that one absurdity and cause of expense in connexion with Parliamentary inquiries is that Bills must go through committees of both Houses. It was proposed the other evening that there should be an appeal from the decisions of the migratory commissions to some Parliamentary tribunal. This would undoubtedly be a source of fresh expense, but, at any rate, it is a logical step in harmony with ordinary legal procedure. But after a Bill has passed a searching examination in the Commons, for it to go through the same process in the Lords, and *vice versâ*, seems to be not only an anomaly which is not necessarily a fault, but an anomaly of an unreasonable kind which is of no real benefit to the community. For it is not an appeal from a lower to a higher tribunal, from one composed of inferior judges to one composed of superior judges, but it is an appeal from equals to equals, and not seldom from superiors to inferiors. No better example exists than the case of the Riverside Fishmarket Bill of last session, which, after being inquired into and passed by a good committee in the Commons, was mutilated by an inferior committee in the Lords. The reasonable practice would obviously be to have joint committees of both houses. This would ensure a large saving of expense, and would increase the number of members available for committees, because what may now be termed the appeal committees would be committees of first instance. It would also be a change of considerable political importance, since it would bring members of the two Houses into closer contact, and this relationship would probably cause members of both Houses to be better acquainted when disagreement on political questions arose between them. The advantage of such a change as this is that it is essentially practical and feasible, and would cause economy without any great change of the existing procedure. We regard the possibility of largely cheapening Parliamentary litigation as very slight. It is certain that as long as wealthy corporations and undertakers are the chief parties, so long will the contests be expensive. It is notorious that railway companies give larger fees in ordinary litigation than private persons, and the same principle, or rather practice, is only carried to a still greater excess in the Committee-rooms. Certainly, then, we do not expect to see the proposal that there shall be migratory commissions carried out, and the scheme of provisional orders is one which can never give the public the same confidence as the present system, expensive and unsatisfactory as it often is. Reforms are clearly needed, but those that are feasible must be carried out on existing lines.

THE NEW OPERA, "HENRY VIII."

IF the works of our English composers cannot, as is unfortunately the case, be said to take a very conspicuous place among the great operatic creations of this century, English history and romance have supplied some most successful subjects to the foreign librettists. The new opera, "Henry VIII.," produced a few days since in Paris, at M. Garnier's grand new opera-house, may be said to form an important addition to an already lengthy list. For many months past no small interest has been excited in artistic circles by the promise of the forthcoming novelty. A new opera is an event of no small importance, and especially a composition dealing with a subject as historical as that of Henry's famous divorce of Catherine of Aragon, and his marriage with Anne Boleyn, and the many circumstances,—so weighty in the history of England,—which attended that step of the first Defender of the Faith. The libretto had, in fact, been offered to more than one eminent composer before M. de Saint-Saens accepted the onerous task. Gounod declined, we believe, on the score of his inability to be tied down to time, yet, with a true artist's absence of jealousy, he assisted in every way the production of the work of his brother musician. This production has, as may be imagined, been the result of no small amount of research. The Paris Opera-house prides itself, and with no small reason, on the "mounting" of its operas, and its superiority in this respect over all the great Continental opera-houses.

"Henry VIII." was a suggestive field for scenic effect and brilliant costumes. For months past research has been made in the various sources of reference, not alone in France, but in England. M. Lacoste, attached permanently to the Opera-house, specially visited England some months since, with a view to obtaining all the information possible respecting the costumes and details of the piece. Windsor has been ransacked, the Hampton Court gallery having supplied a large number of sketches, particularly the invaluable series of contemporary pictures which hang in the room known, if we mistake not, as Queen Anne's Audience Chamber, and representing a number of incidents of Henry's reign. Holbein, as a matter of fact, however, was able to supply amply all the necessary information, and it is a living series of many of Holbein's originals that move through the scenes of M. de Saint-Saens' opera. *Henry VIII.*, with his British red beard and hair and burly bluffness, is, in the hands of M. Lasalle, apart from his artistic rendering of the part, a striking representation of the popular and energetic sovereign who made us a Protestant nation, while *Catherine of Aragon* (Mme. Krauss), the refined *Catherine* of Shakspeare, and *Anne Boleyn*, in her French costume, fresh from the court of the Valois, with their maids of honour, and (easily recognised), the scarlet-costumed *Lord Surrey* of the Hampton Court picture, suggest that the famous originals have stepped from their frames.

Moving in scenes almost all architectural, representations of Westminster, of Richmond, and of Kimbolton Castle, the effects produced are, it cannot be denied, singularly interesting. The great scene of the Parliament held in Westminster Hall, crowded with peers, temporal and spiritual, the Archbishop of Canterbury and the Cardinal Legate, both in full canonicals, the king on his throne, and surrounded by his suite and the various officials of the house, is a scene of great impressiveness as a tableau, apart from its dramatic and musical interest connected with the incident of Catherine's public divorce and Henry's open schism with the Church of Rome,—all, of course, largely suggested by Shakspeare.

Exception might be taken to the apparent vastness of the garden scene at Richmond, with its long vistas, resembling somewhat too closely the later splendours of Versailles, and there is scarcely a word to be said in favour of the very lengthy "Highlanders' ballet" introduced into this act, for M. De Saint-Saens has not been able, like Herr Wagner, to fight against the subscribers' demand for a ballet of the old-fashioned type, though why, we ask, a Scotch ballet before Henry VIII.? Into this ballet the composer has introduced a very copious selection of old English airs, commencing with the "Miller of the Dee," and concluding with a *pas seul* danced to the air of "Haste to the Wedding," the effect of which on the first night was very singular to the English ear.

Certainly, the last scene at Kimbolton Castle, —where Catherine died,—is architecturally very fine, the monumental mantelpiece, somewhat resembling the famous mantelpiece at Bruges, probably being a copy of the original. As for the dramatic action of this portion of the opera, it, like the great Parliament scene, is largely suggested by Shakspeare, and the composer has been well inspired by his theme; for the grandiose finale of this act, and its well-merited reception, would alone have sufficed to save the opera, had even the rest of the work pleased less.

A success has been undoubtedly scored for the French school, and the Paris "Academy of Music," not too generous in the novelties it has of late presented to the public. The composer, while largely profiting by the modern movement towards greater unity between the dramatic action and the musical composition, has not so entirely broken with the old traditions as to offend the many who still express their satisfaction with the old method. If the libretto taken by itself is in parts deficient, the opera has many beautiful airs, which, as repetition renders them more familiar, will soon become favourites with the musical world. As for the interpretation, only praise can be awarded to M. Lasalle as *Henry*, to Madame Krauss as *Catherine*, and Mdlle. Richard as *Anne Boleyn*. It is sincerely to be hoped that the London public may, before long, be able to enjoy the treat of hearing the new opera, the subject of which, apart from its merit as a composition will, of course, largely recommend the work.

THE WORKS AT PARKESTON.

CIVIL AND MECHANICAL ENGINEERS' SOCIETY.

THE members of the Civil and Mechanical Engineers' Society of London visited Parkeston on the 8th inst., for the purpose of inspecting the extensive works which have been carried out there by the Great Eastern Railway Company, for the accommodation of the enormous Continental traffic with which they have now to cope. The party consisted of the president of the society, Mr. R. H. Twigg; the vice-presidents, Mr. T. Cole and Mr. H. Sandall; the hon. secretary, Mr. G. A Pryce-Cuxson, and Mr. A. T. Walmisley, Mr. H. M. Whitley, Mr. E. H. G. Brewster, Mr. H. Valpy, Mr. G. C. Child, Mr. B. Haughton, Mr. W. L. Beardmore, Mr. G. R. W. Wilcocks, and Mr. D. Laing. They were accompanied by Mr. J. S. Macintyre (of the firm of Edward Wilson & Co., Westminster), the engineer, from whose plans and under whose personal superintendence the important works have been carried out. The visitors were conducted over the works by Mr. Macintyre. The great attraction, from a professional point of view, was, of course, the extensive landing-stage or quay, an immense platform, 1,800 ft. long by 100 ft. wide. The construction of this quay was pronounced a great achievement. It is built wholly upon piles, and stands upon what was formerly the river-bed. The front is protected by a concrete wall, extending the whole length of the quay, and averaging

between 16 ft. and 17 ft. in thickness and 40 ft. in height. By means of mechanical contrivances the bed of the river was excavated until a solid foundation was obtained. As the excavation proceeded massive concrete cylinders, measuring 6 ft. in internal, and 9 ft. in external, diameter, were inserted until a double row was secured from one end of the quay to the other. The spaces between the cylinders were excavated and filled in with concrete until a solid wall of the dimensions we have mentioned was formed. This is now as firm as granite, and will withstand the action of the waves for centuries. The quay is built upon iron girders, with wooden cross-beams, and carries five or six lines of rails, for the conveyance of luggage and heavy goods from the steamers to the warehouses, or *vice versâ*. We may here mention that Parkeston is about one mile further up the Stour than the old quay at Harwich; but as vessels will have a straight run in, the time spent in turning will be saved, so that passengers will be landed quite as quickly as at present. The quay affords berths for seven steamships, with a depth of water of 27 ft. 6 in. at high tide, and 16 ft. at low tide. It will be fitted with hydraulic cranes, capstans, and other machinery of the most approved modern type. Very extensive sidings have been arranged on the gridiron principle, for sorting and marshalling trains. These sidings are, in all, about five miles in length.

The station building has been arranged somewhat on the Continental plan,—a large central booking-hall, with second-class waiting-rooms, ladies' rooms and lavatories to the left, and similar rooms to the right for first-class passengers. Each of the waiting-rooms has a refreshment buffet attached, and will be fitted with couches and other appliances for the comfort of passengers landing after a sea voyage. They are lofty rooms, well lighted and ventilated, and when completely furnished will be extremely handsome. A large hotel has also been erected in connexion with the station. The building is in the Italian style of architecture. Boyle's patent ventilators have been fitted to each room. The lavatories in the hotel and in the station are supplied with hot and cold water upon an improved system. The arrangements for heating the building have been carried out according to the recommendations of Captain Shaw, of the London Fire Brigade. The corridors of the hotel are composed of solid concrete upon iron girders.

The quay is lighted at night by electricity on the arc system; and the hotel and offices will be lighted with the Swan incandescent lamps supplied from accumulators.

The works have been three years in progress, and will cost, when completed, about half a million of money. The company have acquired a large quantity of land, and are prepared to build houses for the accommodation of their servants, so that Parkeston, which has, so to speak, sprung up out of the sea, is likely to become an important town in the course of a few years.

The engineer of the works, as we have said, was Mr. J. S. Macintyre. The Horsley Iron Company were the contractors for the iron quay; the concrete wall in front of the quay was erected by Messrs. J. Cochrane & Sons, of London. The contractor for the railway and embankments was Mr. Thomas D. Ridley, of Middlesbrough. The buildings and hotel were the work of Messrs. Bennett Bros., of Downham Market.

Parkeston was opened for passenger traffic on the 15th inst.

The party afterwards went over a steamship taking in cargo, and afterwards dined together.

Association of Municipal and Sanitary Engineers and Surveyors.—The Lancashire and Cheshire District Meeting is to be held at Rochdale on this Friday, the 16th inst., when a paper on "The Ventilation of Sewers and House-drains," by Mr. R. Read, City Surveyor, Gloucester, will be read and discussed. The works to be inspected are:—1. Manure works, under the leadership of Mr. Alderman Taylor, chairman of the Health Committee; 2, gas works, under the leadership of Mr. T. B. Ball, and a paper will be read on the "St. John's Purifying Apparatus, and the New Works for the Manufacture of Residual Products and the Distillation of Tar"; 3, the Rochdale tramways in process of laying: description by Mr. R. Vawser, C.E.; and 4, the timber-cutting works of Messrs. T. Robinson & Sons (Limited).

THE FEMALE SCHOOL OF ART.

H.R.H. PRINCESS BEATRICE performed what was stated to be her first public act by distributing the prizes to the successful students of this school on Saturday afternoon in the theatre of the University of London, Burlington-gardens, Regent-street. The Right Hon. A. J. Mundella, M.P., Vice-President of the Council, presided.

In the absence of Mr. Francis Bennoch, hon. sec., through ill-health, the Rev. Sir Æmilius Bayley read a statement detailing the work of the school. In the course of it it was said,—

"As regards former students, the committee are glad to perceive that the advantage of Schools of Art being brought into closer connexion with the various manufactures of the kingdom is becoming more generally recognised. There are already at work technical classes for wood-engraving in the Kennington Park-road, for wood-carving at the Albert Hall, besides many others as private adventures. The committee hope that every year many more such classes will be opened, so that students duly qualified may, on quitting the Schools of Art, attach themselves to such technical schools as will best enable them to acquire the necessary knowledge for the special manufacture they design to work for, instead of being left entirely to their own resources, and sometimes unable to surmount the various obstacles they have to encounter. Notwithstanding these difficulties, the committee are happy to learn that some of their former students have more commissions in porcelain painting, designing for Christmas cards, fan-painting, and other ornamental work, than they can personally accomplish, whilst others succeed so well in private teaching that they generously relinquish some portion for the benefit of their less fortunate sisters in art.

This school has been singularly fortunate, in possessing the great advantage of the kindly personal interest taken in it by her Majesty.

The Queen, by becoming its special patron twenty-three years ago, enabled it to surmount the many difficulties which then threatened its existence, and ever since that period her Majesty has graciously continued her valuable encouragement by founding a Scholarship, now happily raised to the value of 60*l.* per annum; by a special Gold Medal, annually given; by allowing a selection from the works of the successful competitors for these honours to be annually forwarded for her inspection, and her approbation has frequently been marked by her purchasing one or more of the works submitted, an honour which this year has again been conferred. Such patronage is highly appreciated by your committee, as it has ever proved to be a prime incentive to the students to achieve honour by striving to excel.

It is a notable and highly creditable fact that, with one or two exceptions, our staff of teachers has, without intermission, been connected with the school ever since its commencement, and the best proof of the efficiency of the system adopted and so ably conducted by Miss Gann and her assistants, Miss Wilson, Miss de la Belinaye, Miss Pocock, and Mrs. Overton, will be found in the ever-increasing number of prizes obtained by the students. Neither should it be forgotten that all this good and useful work is achieved by females, who are taught by females, all of whom have acquired their capacity for teaching in the school of which they are now the accomplished and successful instructors."

Mr. Mundella then addressed the assembly. He said he could have wished that her Royal Highness had done so instead of himself; for he was quite sure that one who was herself known in art, and whose family contained so many distinguished artists and persons who had done so much for the encouragement of art, would have instructed them much better in matters of art than they would be by anything he could say. He must congratulate the managers, teachers, and students of that school that the first public act of her Royal Highness was to distribute the prizes in connexion with it. That fact would be an encouragement to all the female schools of art throughout the country; and he was sure that the prizes awarded that day derived additional value from the fact that they had come from the hand of her Royal Highness. The history of that school was identified, and he thought co-incident, with the history of the Art Department with which he was associated as Vice-President of the Council. It was not till 1842 that the Government made a grant of 1,500*l.* a year for the establishment of certain schools of design controlled from Somerset House, and for some years that school received 500*l.* out of that grant. It was from the Great Exhibition of 1851 that art received its first great impulse in this century. Their industrial products at that time were such that, as he had often remarked, they might very well fill a chamber of horrors; and if they could only see them that day they would form an instructive illustration of the progress which had taken place since. The industrial art of this country owed a deep debt of gratitude to the wisdom, foresight, and culture of the late Prince Consort, on account of the impulse which they gave to it. That school stood fourth in the list of those which had been most successful in the national competitions. The three in advance of it were the Art Training School at South Kensington; the great school at Lambeth which had done so much for art as applied to pottery, and had created a new industry and a new employment in the district; and the school in the town with which he had been so long connected, which had derived incalculable benefit from it, the lace of Nottingham holding the first position among the machine-made lace of the whole world, mainly through its having maintained a good school of art. He was very glad to find that so much of the work done at the school in Queen-square belonged to industrial and decorative art; and when he saw the students come forward to receive prizes for their success in fan-painting, lace-designing, designs for wall-papers, the painting of tiles, dessert services, china, and pottery, and other things, he recognised the enormous value of that school to the students who attended it, and the great success which had attended the labours of Miss Gann and her able staff. After all, the real object of the Government grants was to encourage industrial art, not pictorial art. No doubt, success in the one led to success in the other, the most successful artists in the world having been originally industrial artists. He said this to encourage those who had turned their attention in the direction of industrial art. They must not think that industrial art was a lower or meaner grade of art than pictorial. The greatest men of the Italian Renaissance,—men whose names would live for ever,—had not been ashamed of designs for the decoration of objects of domestic comfort and enjoyment. From Orcagna down to the latest artists of the Italian Renaissance, almost everything domestic, from the painting of a plate to the designing of a fire-place, had been the work of great artists. Nor need he remind that assembly that some of the most distinguished artists of the last century, who made our manufactures famous, devoted their attention to industrial art, and that Flaxman, by applying his art to Wedgwood's beautiful manufactures, made them immortal. Industrial art was of great value, too, as opening up a larger field of employment for women. He was afraid that they were only at the beginning of that question in this country. In France,—in Paris especially,—thousands, perhaps he would not be wrong if he said tens of thousands, of women were engaged in industrial art, so vital was that branch of art as the means of enabling France to maintain her supremacy in her special industries. He held in his hand an announcement of a free school of design in Paris, similar to those which were to be found in every *arrondissement*, and he mentioned it to encourage the Goldsmiths' and other City Companies who had done so much for technical education to continue to discharge that important function. He found from the paper to which he alluded that in that new school of design for young persons everything was gratuitous; while the teaching included designs from the figure, painting in porcelain, lithography, wood-engraving, &c. Such things were taught to thousands of young people at the expense of the Municipality of Paris; and although he could hardly expect that the Municipality of London,—even the new Municipality which the Home Secretary hoped to create, would devote any portion of the municipal taxes to art training, yet he did hope that those great companies which had existed for many centuries, and which had such an important connexion with our great industries, would be stimulated when they saw what was being done not only in France, but in Germany, in Austria, and throughout the Continent, to encourage art more than they had done in their own country. In conclusion, the right hon. gentleman said that he was glad to have found that many good teachers of art had been trained in that school.

Mr. Thomas Armstrong, Director for Art at South Kensington, in addressing the students, said,—When it was arranged that Mr. Mundella should come here to-day, I went to see Miss Gann's school for the first time, and I was able to report to him that I found it quite full of stu

dents working with a good spirit; that the arrangements for the economy of space and light were excellent; and that the school was, in its way, doing very well. This school is, I believe, a feeder to the Royal Academy, and many of the students aim at being painters of pictures. With them I need not concern myself much. We in the Department have rather to do with such as turn their attention to decorative or industrial art; for the painting of pictures is accidental, and not essential to our system. There are, I believe, more than enough painters of pictures, or, at any rate, there will be more than enough in a few years, unless there should be some sudden check to the increase. Even the cleverest among you will be none the worse as artists for giving some of your time and attention to the design and execution of decorative art. The greatest of the Italian artists of the Renaissance were ready to turn their hands to any kind of decoration, and I could give you some notable instances of distinguished English artists of our day who have done the same. I have not seen enough of such schools as yours to be able to form any opinion as to the best means of stimulating the students in the direction of industrial or decorative art; indeed, I have not seen any school like Miss Gann's in England. You all know that in the ordinary schools of art open to both sexes throughout the country the morning classes are mostly made up of girls who generally learn to paint flowers or landscapes in an amateurish sort of fashion. Sometimes, however, amateurs are very much in earnest. I visited the Edinburgh school last March, and found a room full of young ladies, who had come through driving snow and rain, to work from eight to ten in the morning. At Glasgow I was told that during the winter a class of girls, apprentices, I believe, attended from seven to nine in the morning, and worked by gaslight. Now, these girls were certainly very much in earnest, and if their energy could be turned into a proper channel much good should result to everybody. I may as well mention the interesting fact that in Edinburgh there is, or was, a dealer in designs of all kinds,—a middle-man between the manufacturer and the designer. I am not aware that any such trade is carried on in London, but it exists extensively and flourishes in Paris. It seems to me of the first importance that any outlets of this kind for the work of our students should be make known as widely as possible. Miss Gann tells me that many of her students,—most of them, I think,—come to work with the very serious purpose of qualifying themselves to earn a living, and I am sure that every one, both in the Department and outside it, from the gracious lady who has so kindly come here to-day, downwards, would wish to help them in this most laudable endeavour. For myself, I may say that I have not neglected any opportunities of acquiring information on this subject, and I hope I may see my way in time to some means of bringing the producer of designs and the consumer or dealer into closer contact. I have seen some fans done in the school, and Sir Philip Owen tells me that many of you do lithography and wood-engraving, and that designs of Christmas cards are produced by you in large numbers. All this work, if done well and in the true artist-spirit, is good for you, and will, perhaps, by-and-by enable you to paint pictures if you wish it, and have the talent to paint good ones. I should like to see some short course of Architecture made compulsory in our schools. Through it you would more easily get at the first principles of decoration, for all the decorative arts depend on architecture. I do not know that any such course is insisted on in the art schools for girls I have seen in France and Germany. But this teaching of architecture to girls even as part of general education is not altogether new in England, for in looking over some old drawings done about forty years ago in an ordinary ladies school as part of the general education by one of my sisters, for the most part useless pencil landscapes from flat examples, I came upon a set of carefully-tinted drawings of the architectural orders, with descriptions in writing on the margin. At the Industrial Art School (Kunstgewerbe Schule), of Munich, an admirably managed place, on inquiring if young men who were about to become painters of pictures were admitted, we were told that they were compelled to go through an architectural course, and when this rule was not deterrent it was thought right to admit the candidate, as he became through this architectural course in some manner qualified as a decorative artist. I will now tell you briefly what we saw at the girls' schools we visited last year, when I went with Mr. Bowler to visit and report on the industrial art schools in France and Germany. One afternoon while in Paris we visited a drawing-school for girls in the Rue de Seine. This school was founded in 1802, and was for some time under the direction of Mademoiselle Rosa Bonheur. The teaching is free, and students are admitted from twelve to twenty-five. It is kept up by the State. There were 140 girls present at that time, and 338 inscribed in the books. The hours of attendance are from ten to three. All the students sat rather closely packed in one low room, lighted from the roof, which was in ridges. Although they were rather close together, and it was not easy for the teachers to move about among them, they had room enough for their work, and each had a good view of the examples she was copying. We saw them drawing from four plants and four casts, ranged alternately on the same line. The plant at the end where the beginners were working was simple in its forms, while the succeeding one was more complex and difficult to draw. So with the casts, which ranged from simple geometrical reliefs to the Psyche (Naples). We saw some still-life paintings which were pretty good, and a great number of coloured designs which were excellent. Their best had been done in a competition, and we were told that the average attendance of the girls who had done the best designs (for a cup) was four years. We were told that the good designs were easily disposed of to manufacturers, but did not learn how this was done. On another day we went to inspect a girls' drawing school in the Rue du Vieux Columbier kept by Madame Thoret, called "une école libre." It receives from the Paris Municipality a subvention of 3,000 fr. annually, as well as the rent of the rooms, the cost of gas, and of a porter. For these considerations the school is bound to take twenty-five free students three days a week; actually there were fifty-five such students. Drawing only is taught on the days due to the State. There are lectures in perspective and anatomy; 160 girls on the books, 128 present. On the days not due to the State painting is taught. In Germany we saw only one school of industrial art for girls,—that at Munich. The brief note I made of it is not very favourable; but the works exhibited by the school at the Nuremberg Exhibition were not only well executed, but in some instances showed an amount of artistic feeling which was wanting in the work of the men in the same school. In conclusion, I would ask you not to be disheartened by anything I have said, for I have felt bound, from a sense of responsibility, to take the low ground of utility and expediency. You are clever enough, and if you will only be patient and industrious while submitting to discipline, and studying fine examples, you will produce good work which will be a source of satisfaction and pride to you, and probably of profit.

Sir P. Cunliffe Owen, Director of the South Kensington Museum, said he regarded it as a great privilege to be allowed to speak on that occasion in favour of the Female School of Art, with which he had been connected for the last twenty-five years. One of the strongest claims of the school to the support and encouragement of the public was that it was doing a great deal in the way of opening up fields of employment for women, and that was a cause which was eminently worthy of sympathy and help. Some of the ladies who had been pupils of the Female school of Art had lived to become honoured teachers in that and other schools of art, and there were many young women who were now earning an honourable and comfortable livelihood through the exercise of talents which they had acquired largely through the art-training given to them in that school. And they were really only at the commencement of what could be done in the same direction if only they could receive a helping hand. There were abundant opportunities for young women who had been educated in art principles and processes to turn their powers to good account, both for themselves and for the public. As an instance of what might be done in one direction, the speaker mentioned what had been done at Lambeth, where, through the work of the students of the local school of art, a new industry had, within the last ten years, been founded by the production of artistic pottery,—known and admired all the world over as "Doulton ware." That new art-industry, employing a large number of young women, was mainly the outcome of the teaching of the former able master of the Lambeth School of Art,—Mr. Sparkes, now the principal of the Art Training School at South Kensington. In another direction he hoped that the teaching of the Female School of Art would, in a few years, result in the employment of young women in large numbers in connexion with chromo-lithography, where artistic knowledge was of great importance to the successful carrying out of even the mechanical operations connected with the process. There were now many workmen earning 4*l.* or 5*l.* a week in doing work of this kind, which young women trained in the Female School of Art would be quite competent to perform. At present we were forced to go to Germany for the production of a great deal of work of that kind. These and many other circumstances augured well for the employment of young women in the future. Only a short time ago he was in the office of a Dumbarton ship-builder, who was employing young ladies in making drawings for the decoration of the interiors of his ships. There was also plenty of scope for the employment, in our large silk-mercers' establishments, of young women who had received artistic training, and who would be thereby qualified to advise ladies how to dress to the best advantage, and with due regard to complexion, figure, &c. Sir Philip Owen concluded by moving a vote of thanks to the president, vice-president, and senate of the University for the use of the hall.

The Bishop of Rochester, in moving a vote of thanks to the Princess for distributing the prizes, said the students felt rewarded and the teachers encouraged by the presence of one who was an artist in the sense that she was a lover of art. In the attendance of her Royal Highness they recognised the continued interest of the Queen in the prosperity of the school.

The Rev. Sir Æ. Bailey seconded the motion, and expressed the belief that but for the Royal patronage they had received, the school would never have been in existence at this time.

The resolution was carried by acclamation, and the proceedings terminated.

THE CHURCH AT KEW.

"I am his Highness' dog at Kew:
Pray tell me, sir, whose dog are you?"

Some alterations are about to be made in Kew parish church. It is proposed to take down the royal mausoleum and rebuild it further eastwards, so as to allow the addition to the church of a new chancel and sacrarium. At the same time a northern transept and a southern porch will be erected. These works are estimated to cost 5,000*l.*, the greater portion of which is already subscribed, the contributors including her Majesty, the Duke of Cambridge, the Duke and Duchess of Mecklenburgh-Strelitz, and the Princess Mary of Teck. Kew, so long associated with the domestic lives of King George III. and his family, would appear to have been an early aspirant for fame. In a roll, *temp.* Henry VII., it occurs by the name of Kay-Hough. Of doubtful derivation, this may be taken to mean the park or clearing by the quay.* About 120 years ago it was made a distinct parish, and is at present united with Petersham, the living being in the gift of the Crown. The palace was a favourite residence of King George III. and Queen Charlotte, of whom the latter died here in the year 1818. The king is said to have taken an insuperable dislike to Hampton Court, where, when a youth, he had on one occasion received a blow from his grandfather.† Kew House, originally a seat of the Capels, was inhabited by Frederick, Prince of Wales (for the collar of whose dog Pope adapted the motto which is quoted above), and subsequently by his widow, Augusta of Saxe-Gotha. King George III. lived here with the brothers Willis, the Quaker doctors, during his first illness; it was pulled down at the beginning of this century. That sovereign kept a flock of merino sheep in the park, now the pleasure-grounds, and made con-

* Cnf. Haw (German *gehaw*), a place where the trees have been hewn, equivalent to field, English *feld*, a forest clearing; and the English *hay* or *haigh* (German *hagen*), a place surrounded by a hedge, a park.

† See the *Builder*, vol. xliii., p. 801 (Dec. 23, 1882),—"Hampton Court."

siderable additions to the foreign plants collected by his mother, who, in 1760, had established the Botanical Garden. Hither, too, were brought the collections of Captain Cook and Sir Joseph Banks. At the death of King George III. the garden fell into neglect, but was made a national institution in 1840, under the auspices of the father of the present director, Sir Joseph Hooker. The garden has also been enlarged from eleven to about seventy-five acres, extending into Richmond parish. Some of our elder readers will recollect that the garden wall along the road to Richmond had, for a considerable length, been decorated with white chalk drawings, well and boldly delineated, of men-of-war and other vessels,—the pastime, it is said, of an old pensioner who had played his part in our naval victories. A single spar of pine, 159 ft. above ground, from British Columbia, forms a flag-staff by the entrance to the pleasure-grounds from the gardens. From the pagoda, which stands in the former, the public were excluded when their detestable trick of cutting names on the walls became too great a nuisance and disfigurement to be tolerated. The house of Ernest, Duke of Cumberland, was on the southern side of Kew Green. The organ of the church, said to be Handel's, formerly belonged to King George III., and is that upon which he would relieve the tedium of the affliction under which he suffered. In the churchyard are the graves of Zoffany, and of him who in portrait-painting has rivalled, if indeed he did not occasionally excel, his great contemporary Reynolds, and of his friend Kirby, the celebrated Mrs. Trimmer's father. In the mausoleum lie the remains of, amongst others, the late Duke of Cambridge. The church itself was built in the second decade of the eighteenth century, and is no contemptible example of the brickwork of that day.

THE SMOKE NUISANCE; AND AN ACCOUNT OF SOME EXPERIMENTS RELATING THERETO.*

THE history of what is generally known as the "smoke nuisance," extends over more than 600 years.

The earliest mention made of the "smoke nuisance," that I have been able to find, is recorded in the annals of Dunstable, and is to the effect that Queen Eleanor, the wife of Henry III., had to leave that town and go to Tutbury Castle on account of the smoke produced by the sea coal (as the mineral was then called), being so objectionable to the royal lady. This was in 1257. Two years later we have the first recognition by public authority of coal-mining, when a charter was granted by the king to the freemen of Newcastle-upon-Tyne, permitting them to dig coal; but in 1306 the outcry against its use became so great, by reason of the objectionable smoke produced when burning it, that both Houses of Parliament presented a petition against the burning of coal to Edward I., who in consequence issued a proclamation forbidding its use, and authorised the destruction of the furnaces of all those who should afterwards persist in their evil ways. But the scarcity of fuel became in time so great that, notwithstanding the objections raised against this fuel, the people were forced to burn it. Early in the reign of Queen Elizabeth an order in council was issued forbidding the use of coal in London during the sitting of Parliament, lest the health of the members of the two houses should be injured by the smoke. From this time nothing seems to have been done publicly, excepting the passing of an Act in 1610, prohibiting the burning of "Ling Heath, Heather, Furres, Gorse, Turffe, Fernes, &c., on account of the Smoke, and danger arising therefrom," until 1819, when a Select Committee of the House of Commons was appointed "to inquire how far it may be practicable to compel persons using steam-engines and furnaces in their different works, to erect them in a manner less prejudicial to public health and public comfort; and to report their observations thereupon to the House." After examining seven persons (which number was made up of two doctors, one bricklayer, one furnace-builder's assistant, one civil engineer, and one surveyor of "defects of buildings, such as the chimneys, drains, &c."), the committee reported, that they could not be expected to form any ultimate decision as to the precise object of their inquiry, owing to want of time; but confidently hoped "that the nuisance so universally and so justly complained of, may at least be considerably diminished, if not altogether removed." The following year (1820) the same Select Committee was again appointed; they called before them altogether fifteen witnesses, and sent in a report that was shorter even than the previous one, and merely referred the House to the minutes of evidence. The next year, viz., 1821, an Act was passed for "giving greater Facility in the Prosecution and Abatement of Nuisances, arising from Furnaces used, and in the working of Steam-Engines" (1 and 2 George IV., cap. 41). This Act is generally known as Michael Angelo Taylor's Act, and by it the courts are given power to award costs to prosecutors in smoke-nuisance cases. Nothing more was done by Parliament till 1843, when another Select Committee was formed to "inquire into the means, and the expediency of preventing the nuisance of smoke arising from fires, or furnaces, and who were empowered to report their opinion, together with the minutes of evidence taken before them, to the House." This was a thorough inquiry into the question; the committee having before them the best scientific authorities of the day, and the conclusions at which they arrived still hold good at the present time. These conclusions were "that smoke, which is the result of imperfect combustion, may in all cases be much diminished, if not entirely prevented," and that imperfect combustion arises from a deficiency of atmospheric air, to mix with, and act on, the inflammable matter at a proper temperature, and under circumstances which must ensure its effective operation; that is, admission of air, properly regulated, is the great, if not the only principle of preventing smoke, which is generally applicable, and that all inventions for the prevention of smoke (except where the smoke has been separated mechanically by an artificial shower of water, produced in a flue constructed for the purpose) are only various applications in different forms of this general principle; even the flow of a jet of steam, which has been applied by some persons to prevent smoke in furnaces, being merely a modification of this general principle, as, though steam may modify combustion, air must necessarily flow in with it, otherwise the combustion in the furnace is arrested," and that if the admission of air to a furnace is properly regulated a saving of fuel is effected. The committee also stated that the use of anthracite coal, and of coke, as a means of preventing smoke were well known; and they finally recommended that a Bill should be brought into Parliament in the ensuing session to prohibit the production of smoke from furnaces. Bills were brought in in 1844, 1845, and 1846, and then abandoned on account of the strong opposition they received. A fourth committee was appointed to consider the "expediency of preventing the nuisance of smoke"; and the chief results at which they arrived,—after hearing evidence of a second rate quality,—were, that it was not desirable to extend the provisions of an Act beyond the furnaces used for the generation of steam, that in the provisions for this purpose, the offence will be best described as being "The issue of Opaque Smoke." The committee sent in their report on the 9th of May; but the same committee was revived on the 7th of July of the same year, to institute an inquiry into what would be likely to be the effect of the provisions of a Bill, that was then before the House, on the manufacturers of iron, and copper, coal works and distilleries; and they came to the conclusion that it would be inexpedient to include these under the operations of the Act. In August, also of the same year, the Earl of Lincoln gave instructions to Sir Henry Thomas De La Beche and Dr. Lyon Playfair to institute inquiries into the question of smoke prohibition; but to pay especial attention to the working of the Local Acts that were already in existence. The result of the inquiry made by these two gentlemen was a short report to the effect, that in many cases it would be impossible to prevent smoke without destroying important industries in the case of large works, and the utter impossibility to deal with the fire-grates of private houses. The only thing that might be done was to inflict a penalty on those who made smoke in heating the boilers of steam-engines, as by proper furnaces, and due attention, the creation of smoke could be avoided; but even in this case great care would have to be used, for in some instances the alterations or additions necessary to effect the desired end (such as the rebuilding of chimney-shafts, on account of insufficiency of draught, and the re-setting of boilers) might be so great,—especially in the case of small manufacturers,—as to amount to a very heavy fine, or even ruin. The outcome of the inquiry into the working of Local Acts, having for their object the prevention of smoke, was, that the Acts had proved unsuccessful, and for the following reasons:

1. "From legal difficulties in procuring a conviction under the present ambiguous wording of the smoke clauses."

2. "From inefficient supervision and want of compulsory powers to make the execution of the Acts imperative."

3. "From want of adjustment in the amount of penalties, which, in some cases, are so small as to be practicably useless; in others, so large, and accompanied with so much expense in obtaining the conviction, as also to be inefficient."

The Act of 10 and 11 Victoria, cap. 34, entitled "An Act for Consolidating in one Act certain Provisions usually contained in Acts for Paving, Draining, Cleansing, Lighting, and Improving Towns," dated 21st of June, 1847, was the next step taken, as provision was made, by some of its sections, for dealing with the matter in hand, but not successfully. In the year 1853 an Act was passed for the Metropolis, entitled "An Act to abate the Nuisance arising from the Smoke of Furnaces in the Metropolis, and from Steam Vessels above London Bridge." This Act applied to the works of all manufactures, excepting those of glass and pottery, and it was to be put in operation by the police. The General Board of Health in 1854 sent in to H.M. Secretary for the Home Department a digest of information with regard to the operation of inventions for the consumption of smoke; elicited from among those who had used such inventions for the above purposes, by inquiries of the Board. This inquiry needs no comment, as it was merely a collection of patent schemes. In 1856 a second Act was passed, "To amend the Smoke Nuisance Abatement (Metropolis) Act, 1853." This amendment consisted in extending the operations of the 1853 Act to the furnaces of public baths and washhouses, and in providing that no proceedings should be taken against other nuisances besides smoke, by one of her Majesty's Secretaries of State, unless the local authorities should fail to proceed actively and impartially in noticing and suppressing such nuisances.*

A State paper was published in 1866, containing the replies to a circular letter sent to the mayors and other local authorities of some of the large towns, asking for information on the subject of the law in force in such towns with respect to the consumption of smoke.

All town authorities have power to take action against those causing a nuisance by the production of smoke, under the Acts above mentioned; but many towns have special Acts of Parliament of their own relating to this nuisance. The first town that procured such an Act was Bradford; this was in 1802, and it enacted that "the smoke should be consumed, provided no patent was infringed."

A few towns have distinguished themselves by actively endeavouring to stir the people up, not only to a sense of the evil effects resulting from a smoke-laden atmosphere, but to bring to bear the weight of public opinion upon those owners of manufactories, who are to a great extent the chief offenders in polluting the air. Foremost among these towns are London, Leeds, Manchester, and Birmingham.

The City of London, in October of 1840, gave directions for their General Purposes Committee to make an inquiry into the means of preventiug smoke; for which purpose, the committee inserted advertisements in the papers asking for suggestions and plans, and the result was forty-one communications, after considering which, the committee reported that they believed a remedy could be found for the nuisance, and recommended that a petition should be presented to Parliament asking for relief. Last year (1882) the Corporation appointed a committee "to study the question of smoke abatement in London, and to consider the defects of present legislation, and the advis-

* A paper read before the Society of Civil and Mechanical Engineers, by Mr. E. H. G. Brewster, Member of Council.

* The following is a list of the Public Acts of Parliament relating to the smoke nuisance:—(1821) 1 and 2 George IV., cap. 41; (1843) 6 and 7 Victoria, cap. 20; (1847) 10 and 11 Victoria, cap. 34, (1855) 18 and 19 Victoria, cap. 121; (1866) 29 and 30 Victoria, cap. 90; (1867) 30 and 31 Victoria, cap. 101 (Scotland); (1875) 38 and 39 Victoria, cap. 55; (1878) 41 and 42 Victoria, cap. 52 (Ireland).

ability of taking more urgent measures for the abatement of smoke." The Local Acts for the metropolis are those of 1853 and 1856 (16 & 17 Victoria, cap. 128, and 19 & 20 Victoria, cap. 107), and the Metropolis Local Management Act, 1855 (18 & 19 Victoria, cap. 120).

The town of Leeds has taken a front rank in this question, for not only was this town the first to hold an exhibition of appliances invented for the purpose of smoke prevention, but kept up the agitation that was existing at the time of the said exhibition (1842) for many years afterwards. The moving spirit of this exhibition was the then town clerk, Mr. Edwin Edison. In 1863 the Corporation of Leeds convened a meeting of engineers and stokers; the result of which was an improvement in the combustion of fuel at many of the factories. In 1866 in their Improvement Act they obtained power to interfere with the construction of improperly constructed furnaces and chimneys, to employ policemen as inspectors, and also to appoint a proper smoke inspector. At a meeting of the Priestley Club, held in the Philosophical Hall on May 19th of last year, to discuss the question of "Smoke Abatement," we find that the interest taken by the people of Leeds in the question, was as keen as ever; and it would be worth any one's while who takes an interest in what is being done to prevent smoke, to read the report of this meeting, the proceedings of which were opened by an address by Professor Rücker. The report of the meeting will be found in the *Leeds Mercury* of May 22nd, 1882.

Among scientific and other associations and societies who have taken a more or less active part in this question, are the following:—The Society of Arts, the Royal Society, the Institution of Civil Engineers, the Institution of Mechanical Engineers, the British Association, the Priestley Club, the York Health of Towns Association, the National Health Association, the Kyrle Society, and the Smoke Abatement Committee of Manchester,—all of which are still in existence, excepting the York Towns Health Association.

The Society of Arts has taken a prominent lead among these Associations, having in January, 1855, held a Smoke Abatement Exhibition, and on the 17th of January of the same year a paper was read before the Society, and fully discussed; also, a reward of 25*l.* was offered by this Society for the best essay on the prevention of smoke, which was won by the late Mr. C. Wye Williams. The Royal Society are having extensive experiments made on the composition of London fogs. The Institution of Civil Engineers has had four papers read before it, all of which were fully discussed: the first was by Mr. Andrew Murray, "On the Construction and proper Proportions of Boilers for the Generation of Steam," June, 1844; the second, by Mr. James Simpson, jun., "On the Prevention of Smoke in Engine Furnaces," April, 1854; the third, by Mr. C. Wye Williams, "On the Management of Engine Furnaces, with a view to the Prevention of the Waste and Nuisance from Smoke," April, 1854; and the fourth was by Mr. W. Woodcock, "On the Means of avoiding Smoke from Boiler Furnaces," November, 1854. The Institution of Mechanical Engineers has likewise had a paper read before it; it was by Mr. W. B. Johnson, "On an Apparatus for the Prevention of Smoke in Steam Boilers and other Furnaces." The British Association for the Advancement of Science appointed a committee to report upon the question of the prevention of smoke; and at various meetings of the mechanical section nine papers have been read and discussed.* In 1845 the late Sir William Fairbairn read a report "On the Consumption of Fuel and the Prevention of Smoke." But I will not weary you with any more of the doings of this learned society, nor with those of other societies.

With respect to inventions, for preventing, and trying to consume, smoke, I shall say little or nothing; as, only to enumerate the patents taken out for these inventions would require an evening, and, when done, be of no use whatever. But I cannot pass by this part of my paper without mentioning the earliest of these inventions, which was that of Dr. Papin, date 1697, who proposed to force air down a pipe immediately above the fire, and by this means the smoke was to be consumed. I bring this invention before you as the principle of mixing air with the products of combustion, is that now universally admitted to be the only means of preventing smoke, excepting, of course, the using of a smokeless fuel; which was done at a recent Smoke Abatement Exhibition by an exhibitor who was showing his smoke-consuming apparatus at work.

Four exhibitions of inventions and schemes for preventing smoke have been held. The first at Leeds in 1842, the second by the Society of Arts in the Adelphi, London, in January, 1855, the third at South Kensington, opened on the 30th day of November, 1881; and the fourth was held at Manchester last year. A series of excellent lectures was delivered in connexion with the South Kensington Smoke Abatement Exhibition; but for particulars of these I must refer you to the Report of that Exhibition.

The books, pamphlets, and papers written on the subject of "smoke prevention," are almost as numerous as the patents for it, therefore, I will content myself by drawing your attention to only two of them, and they are, the book of Mr. C. Wye Williams on "The Combustion of Coal and the Prevention of Smoke Chemically and Practically Considered," and the pamphlet written by J. Evelyn, in 1661, called, "Fumifugium, or the Inconvenience of the Air and Smoke of London, dissipated. Together with some Remedies humbly proposed by J. E., esq., to his Sacred Majestie and to the Parliament now assembled." I bring the former to your notice on account of its excellence, and the second, because of its being the first work on Coal Smoke, and, therefore, historically interesting.

Having given a short history of the "smoke question," I shall now proceed to the second part of my paper, which will be an account of some experiments that were made for Sir Frederick Bramwell, with the idea of seeing what could be done in the way of abstracting the visible particles of carbon contained in the products resulting from the combustion of coal, popularly known as smoke, a term I have hitherto used, and for the sake of convenience shall continue so to do.

Before commencing the experiments, the first thing to be done was to construct an apparatus that should give complete control over the smoke, and the one I shall now describe was devised, and answered admirably. It consisted of a small portable stove, having a sheet-iron chimney, 4 in. in diameter, and 12 ft. high, surrounded with dry sand, contained in 6-in. diameter stoneware pipes. At 2 ft. from the top of this chimney a junction was made with a descending uncovered pipe (similar to the ascending one), by means of a semicircular bend. The descending pipe ended in the top of a wooden chest, which I shall call the collector. This was 2 ft. square by 2 ft. 9 in. high, and contained four movable grids. In the top of this collector small holes were pierced, and, by means of a wooden lip all round, a kind of sieve was thus formed, the object of which was to enable water to be run on to it, and so produce a shower of fine streams of water inside the collector. At the junction of the ascending pipe, and the bend, a flap valve with a weighted lever attached was placed, so that by means of a cord fastened to the lever at the end opposite to the weight, the person conducting the experiments (myself) could at will direct the smoke from the fire, either into the air direct, or pass the smoke into the collector. Just below the junction of the bend on the descending pipe, a jet of water was made to play on to a small disc, producing a spray so fine as to appear like a cloud when the door,—that had been made in the pipe for purposes of examination,—was opened. The ascending-pipe was cased in sand for the purpose of keeping it hot, while the descending-pipe was uncovered, and provided with the jet for the double purpose of keeping the pipe cool, and assisting in clearing the products of combustion.

Having got the apparatus in order, the fire was lighted, and the smoke from it allowed to pass out at the top of the ascending-pipe until the said pipe was somewhat warm, when, by means of the valve previously mentioned, the smoke was diverted into the descending-pipe, whence it passed into the collector, and out of the opening provided at the bottom. After permitting the smoke thus to flow for fifteen minutes, a thermometer was placed in the collector, where it remained for a similar period, the smoke issuing as before, and then the temperature was noted, and found to be 90 deg. I regret to say that I can find no record of the temperature of the external air, but, as the experiment was made in December, 1881, it was probably about 50 deg., the experiments having been made in the smithy of Messrs. Horn & Sons, the engineers,—the jet was not at work. The next thing done was to start the jet, and cause water to be poured on the top of the collector, through the holes of which the water ran in fine streams; but the effect on the smoke, which had all this time been pouring out, was nothing, so far as the eye could judge. The collector was then half filled with coke broken into pieces about the size of a large walnut, and the *débris* produced in the breakage. But on passing the smoke through the coke no effect was apparent. The collector was then gradually filled up at intervals with coke of the same size and kind as before, and the results noted at each increase in depth of material. No appreciable result was obtained, until the jet was started, and the coke was saturated with water by pouring it on the top of the collector, when a decided improvement took place; the smoke turning from a dirty black to a yellowish brown colour. It was found that the smoke, notwithstanding the presence of the coke, preferred to pass down the descending-pipe, and through the collector, to passing out of the top of the ascending-pipe, when the jet was at work. To ensure the smoke being evenly distributed (between the top of the coke, and the underside of the top of the collector), a space of 1½ in. in depth was left. A trial was now made to see if the spray from the jet, water, and coke, would entirely clean the smoke produced, by any quantity of coal, however small; and although the amounts of coal that were tried were gradually reduced until only one quarter of an ounce was put into a clear fire, smoke was made, and showed itself after passing through the collector. Coal-tar was next poured on the coke until it became thoroughly saturated; but the only effect on the forthcoming smoke was that it smelt much worse than before. After this the collector was emptied of its contents, which were found to have been well filled in, and thoroughly impregnated with the tar, notwithstanding that it had been previously saturated with water. The quantity of coke in the collector equalled 10¾ cubic feet.

Four trays were covered with cocoa-nut matting, and placed in the collector at equal distances apart, and jets of water were made to play across the inside, the jets issuing from holes pierced in pipes situated above the top tray, and on each side. The result of this experiment was nothing, unless the straining of a few of the coarser particles from out of the smoke be considered anything.

Having finished with this small collector, a second and much larger was constructed, which was 12 ft. high, by 3 ft. by 3 ft., having a perforated tray top, similar to the previous collector. The bottom was of a V shape, starting from 9 in. up the sides, and coming down to a point in the centre, in front of which a circular hole was pierced, to take a piece of 4-in. diameter wrought tubing that formed the collector outlet. At 9 in. from the bottom a wooden grid was placed, and three others at such distances apart as to divide the collector into four equal chambers, in the front of which doors were placed. No alterations were made in the remainder of the apparatus.

This collector was then tried with varying depths of coke, under similar conditions to the previous experiments; but as the smoke still came forth in much about the same condition that it had done when the first set of trials were made, the collector (after a lapse of time of six weeks, to allow the coke to drain and dry) was entirely filled up, and the smoke once more passed through the apparatus, the jet not being at work, and the coke kept dry. The smoke took five minutes before it made its appearance at the outlet, but in another five minutes the smoke came forth in quantities, and was of a brownish colour. The next thing done was to set up a piece of white blotting-paper before the outlet of the collector, at a distance from it of 4 in., and allow the smoke to play on to the paper for ten minutes, in order that it might be seen whether it would be at all stained; but at

* The following is a list of these:—C. W. Williams, "On the Prevention of Smoke," 1840; W. Fairbairn, "On Combustion of Coal and Prevention of Smoke," 1842; C. W. Williams, "On several Plans for abating the Nuisance from Smoke," 1842; H. Dircks, "On the Production and Prevention of Smoke from Engine-boilers and other Furnaces," 1813; J. Chanter, "On a Furnace for Preventing Smoke," 1843; J. Jukes, "Furnace for Burning Smoke," 1843; Rev. F. F. Statham, "On the Consumption of Smoke in Furnaces and Manufacturing Premises," 1853; W. Fairbairn, "On the Prevention of Smoke," 1854; D. K. Clark, "Coal Burning without Smoke."

the end of the time for which it was exposed no difference could be seen between the front and the back, although it had a very disagreeable, smoky smell. The paper was then well wetted, and again exposed to the issuing smoke for ten minutes, but with the same result as before. A similar piece of wetted paper was now fixed at 4 in. above the top of the chimney, and the smoke, cut off from the collector, and made to pass into the air. After remaining for ten minutes the paper was taken down and examined, when it was found to be discoloured, and had on it a deposit of fine soot. The object of this last experiment was to obtain some idea as to the amount of cleansing the smoke was receiving in passing through the coke. An exact estimate of this could not be obtained, for, although all the smoke was passed through the collector, there was no way of obtaining a knowledge of what had been extracted, except by weighing the collector and its contents both before an experiment and afterwards. This was practically an impossibility, for nothing but a very large, extremely accurate and specially constructed weighing-machine, would have been of any use, and the knowledge, when obtained, of little practical value. But to resume. The coke in the collection was next thoroughly wetted, the jet set to work, and water turned on to the perforated top (the holes in which had been previously stopped with clay) so as to keep a number of fine streams of water constantly running, and thus ensure the coke being kept in a saturated condition. The smoke was now passed into the collector, and notwithstanding everything that the products of combustion had passed through,—for they did pass through,—still there was smoke, much less undoubtedly, but there was still a fair quantity of it. The result was astounding, for from a small grate, the area of which was only 45 square inches, the smoke had passed through a mass of saturated coke presenting an area of 1,296 square inches, and having a depth of 11 ft., amounting in all to 99 cubic feet. The result was surprising, not only on account of the smoke still being visible, but also that the gases should have been able to make their way through the collector at all when the obstruction to their path is considered. As I have before stated, all the dust and small pieces made in breaking the coke were put into the collector with the larger pieces. When the collector was emptied the contents resembled nothing so much in consistency as well mixed concrete, ready for depositing. A test was now made of the partially-cleared smoke by placing a piece of wetted blotting-paper at a distance of 4 in. in front of the outlet, and exposing it for two hours to the smoke. This resulted in nothing, as the paper was not affected in any way, excepting that it smelt of smoke. It was thought that the dense appearance of the issuing gases might be due to some extent to the vapour mixed with them: so a length of sheet-iron tubing was added to the outlet, and a fire made underneath it in order that the vapour might, by being heated, be made invisible. This had some effect, for the smoky aspect of the products of combustion was to a slight extent decreased.

The results of the experiments that have been just recorded were so unexpected that it was imagined that there might be some fissure in the coke in the collector, where the smoke made its way through; accordingly the lowest chamber was emptied, and on examining the under side of the coke that was remaining the smoke was seen to be evenly and gently making its way through the whole of the exposed area, and no place was found where the smoke issued in greater volume than another. The smoke did not come through in jets, but gently and evenly from the whole surface, showing that the coke had been carefully filled in.

Into the lower part of the collector left empty by the extraction of the coke from the lowest chamber (which amounted to one-fourth), a tray was fitted; over which was spread a horse-hair cloth (similar to that used for covering upholstery), and on this was laid, to a depth of 3 in., coke dust, that had been passed through a sieve with one-eighth of an inch meshes. On making a trial with this arrangement it was found that the draught was stifled, and that little or nothing passed through.

Wetted blotting-paper had been exposed to the smoke at the outlet, when the collector was full, as before related, and now the same kind of experiment was tried, with the collector only three quarters full, and without the fire under the outlet; but in addition to the outlet paper another was placed above the top of the chimney. The outlet paper was exposed for 120 minutes, and the chimney paper, for three periods of four minutes each so as to obtain an average result of one-tenth of the time of the exposure of the outlet paper; the total length of time of the trial being 132 minutes. The outlet pipe was now lengthened to 6 ft.; and built round it was a furnace to enable the vapour that was mixed with the smoke to be better heated than had been the case previously. After this alteration another trial was made; but the result was still smoke, although the escaping products were heated to such an extent as to dry and scorch, the exposed paper that had been set in front of the outlet. The length of time that the papers were exposed was six minutes and sixty minutes respectively.

A second experiment was made with the collector filled up with coke, but with this difference,—in the former case only one paper was exposed, whereas in this two were used, one at the outlet, and one at the top of the chimney; the first for four periods of thirty minutes each, and the second for four periods of three minutes; the time of the latter being one-tenth of the former. The result, so far as the outlet paper was concerned, was nothing.

A second series of experiments was tried with various thicknesses of coke. With this series, paper tests were made under similar conditions to the previous ones, only the periods were different, being, in the case of the exposed papers, at the top of the chimney, four periods of one minute at ten minutes intervals; and in the case of the outlet papers, four periods of ten minutes, at intervals of one minute, each experiment lasting forty-four minutes.

No. of Experiment	Condition of Collector.	Results.
1	Full of coke.	Smoke came from outlet, but had no effect on exposed paper. Chimney paper discoloured, and had a deposit of fine soot on it.
2	¾ full of coke.	More smoke from outlet than before. Effect on outlet paper nothing.
3	½ full of coke.	More smoke. Effect on outlet nothing.
4	¼ full of coke.	Very little difference in the amount or colour of the smoke, between this experiment and the previous one. Effect on outlet paper nothing.

A third collector was constructed like unto the last, excepting that it was divided into six equal compartments by six grids, in place of four equal compartments by four grids, and was only 1 square foot in area instead of 9 square feet, and contained 12 ft. depth of coke in lieu of 11 ft. This collector replaced the one last used, and was attached to the other parts of the apparatus; it was also filled with the same broken coke. The object of the construction of this collector was to see what would be the effect of reducing its area. All being in order, smoke was passed through the apparatus, although with difficulty, as the draught was nearly choked; what smoke came through formed a dense and yellow-coloured cloud. A third series of experiments was made with this altered apparatus, under the same conditions as before, and with the same time devoted to each experiment, viz., forty-four minutes. The following table gives the results and particulars:

No. of Experiment	Condition of Collector.	Results.
1	Full of coke.	Smoke only just making its way through the collector, and when through was thick, yellow, and dirty. Outlet paper showed no appearance of having been exposed. Chimney paper discoloured, and had a deposit of fine soot on it.
2	11 ft. of coke.	Smoke came out freely, and was black, thick, and dirty, looking as if it had not passed through anything. Outlet paper not affected.
3	8 ft. of coke.	Smoke was black, thick, and dirty. Outlet paper not affected.
4	6 ft. of coke.	Smoke as before. Outlet paper speckled, but not tinted.
5	2 ft. of coke.	Smoke as before. Very little effect on outlet paper.
6	2 ft. of coke.	Smoke as before. Outlet paper only very slightly discoloured.
7	1 ft. of coke.	Smoke came out in volumes. Outlet paper not affected at all.

A different form of experiment was the next that was tried, which was to place a tray covered with horsehair cloth in the collector, the jet not being in operation. On turning the smoke from the chimney or ascending-pipe to the descending-pipe, the draught was found to be almost immediately stopped; in fact, so quickly did this take place, that I thought water must have got on to the tray; but, on inspection, it was found that the stoppage of the draught was due to a fine deposit of soot left on the tray by the smoke. To make quite certain that everything was as it should be, the tray was removed, and the smoke allowed to pass through the collector, which it did, shooting out a distance of 6 ft. in a horizontal direction, proving conclusively that nothing was wrong.

The fire in the stove was then allowed to burn until it was clear, and the horsehair tray that had been previously used (having been cleaned), was put into the collector; the products of combustion were passed through the apparatus for forty minutes. At the end of this time the tray was examined, when there was found retained by it only a little quantity of fine dust,—about as much as would half fill a teaspoon. It is needless to say that there was no smoke to be seen at the outlet.

Cotton wool was next placed on the tray to a depth of 6 in., and the smoke sent into the collector, the fire having been made up with coal slack. The smoke came from the outlet for half an hour, at the end of which time it ceased to make its way through, the cotton wool having become choked. On examination the wool was found to be discoloured to a depth of 2 in. The wool was then turned upside down, and placed on the tray in the collector; smoke was passed through, and at the expiration of two hours, when the experiment was terminated, some smoke still continued to make its way out. 1 ft. of the broken coke was again put into the collector, and on it was placed a layer of coke dust, 1½ in. in depth,—the jet was not at work, and no water was used,—then the smoke was passed through: result, smoke. The thickness of dust was increased to 3 in.; again the result was smoke. But on adding another 1½ in. of coke dust, making 4½ in. in all, the draught was stifled.

The last experiment was to fill the collector full of the broken coke, to send the smoke through it, and try what would be the effect of holding a piece of white paper in the outcoming smoke, and rub one part of the paper against the other while thus held; the paper came out of the ordeal unsullied, although the smoke was dense to look at, disagreeable to smell, and horrible to breathe.

These experiments, I think, show that do what you will with smoke when it is once made, nothing will rid it of its objectionable nature. The filtering that the smoke received in the just described trials, certainly did away with the coarser particles of carbon, but there was left behind the fog-producing and evil portion of it; in the same way that polluted water may be filtered, and freed from the suspended matter contained therein, and yet be poisonous.

In conclusion, let me say a few words about the fires of private houses. The law has at no time permitted interference with the domestic fire, but I think it is now time that it should do so; for although the amount of smoke from a private house is not great when compared with that from some factory, yet, when we have a very great number of them, the effect produced is (especially in the case of London) greater than that produced by manufactories. If any one doubts this statement let him take his station some Sunday afternoon in summer time on one of the hills around London, where he can overlook it, and there take note of the effect on the atmosphere of the domestic fire. Should he take his place about two p.m. he will, if he waits, gradually see the air become clear, and so remain for an hour and a half, when the atmosphere will again become thick. This is owing entirely to the domestic fires, for it is at this time, viz., about four p.m., that they are made up for the afternoon's tea. If the murkyness of the air was due to the few factory furnaces that are alight on a Sunday, then there would be no clear atmosphere at any time. Such being the effect in summer, when there is seldom more than one fire in a house, there is no need to wonder that London has fogs in winter; therefore it appears to me that some action ought to be taken to enforce either the use of a smokeless fuel, or the great use of a that, with a fair amount of care, would burn coal without making smoke.





PORTAL OF THE CHURCH OF SAN PEDRO, AVILA, SPAIN.



Parish Hall = S. Ouen = Jersey =

Hayward & Son - Archts Exeter =

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BATTERSEA

Whiteman & Bass *Photo-etch*, 26 High Holborn



WN HALL

MORRIS & STALLWOOD

ARCHITECTS
READING

Wyman & Sons Printers 74 Queen St



Parish Hall - S Lawrence - Jersey -

Hayward & Son - Arch.ts Exeter -

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PORTAL OF THE CHURCH OF SAN PEDRO, AVILA, SPAIN.

The exact date of the foundation of this church appears not to be known; but it must have been erected previously to the thirteenth century, for it is mentioned in public documents of the first half of that century. The building is severe but imposing, its style being Romanesque, termed by the late Mr. G. E. Street, Spanish Romanesque. Its huge mass, of jasper-like sandstone, has acquired during the course of centuries that pinkish hue which is characteristic of ancient monuments under a southern sky. The portal, of which we give a view in this week's *Builder*, is an arch of impressive effect. Above it is a richly-carved rose-window, which may compete not without advantage with the famous windows of Burgos Cathedral. The interior of the church is richly carved; especially worthy of note is the artistic cross erected in 1530 by Archbishop Fr. Francisco Ruiz. Amongst the records of the old Abulensian church is found an account of the first sitting of the Court of the Inquisition at Avila, and which condemned Niño de la Guardin to be burned.

NEW TOWN-HALL FOR BATTERSEA.

This building, which is being erected by the Battersea and New Wandsworth Public Halls Company, at the corner of Lavender-hill and St. John's-road, Battersea, close to Clapham Junction Station, has the ground-floor on the two frontages laid out for shops, while on the same floor behind there is a suite of rooms intended to accommodate a social club, and including reading, coffee, smoking, and billiard rooms, club-hall, and winter-garden, and kitchens and servants' offices in the basement beneath. The public-hall, which is 106 ft. long, 40 ft. wide, and 32 ft. high, is on the first floor, and entirely fireproof, as are also the staircases and approaches. There are various rooms attached, intended for retiring, cloak, and supper rooms, caretaker's apartments, and secretary's offices. The external walling has steel-coloured bricks for facings, red bricks for dressings, and moulded cornices, &c., of gauged brickwork, and ornamentation will be carved in rubbing bricks. The works are being carried out by Mr. W. Smith, of Vauxhall, whose contract is about 10,000*l.*, and the design, which was selected from six submitted in limited competition, is by Messrs. Morris & Stallwood, architects, Reading, who are superintending the erection of the buildings.

PARISH HALLS, JERSEY.

These two buildings, which we illustrate in our present number, are now in course of erection, from the designs of Messrs. Hayward & Son, of Exeter, and are intended for parish meetings and the numerous other purposes for which a large room is useful in a country district.

Each building contains, in addition to the main hall, a committee-room, with lavatories, &c., and, in the case of the St. Lawrence Hall, accommodation for a hall-keeper on the upper floor of the front building. The tower in both cases is intended to contain a clock.

The windows and other dressed stonework are executed in grey granite, and the walling in granite, hammer-dressed, of a reddish tint, to give variety in colour. The buildings occupy elevated sites, and are exposed to considerable drift of weather, and it was, therefore, thought advisable that the roofs should be covered with slate instead of tiles, though, on other grounds, the architects would have preferred the latter.

Due provision is made for the proper ventilation of the hall by the admission of fresh air by means of "Tobin's tubes," and the extraction of the vitiated air by means of Boyle's ventilators in the central turrets, connected with air-trunks above the ceilings.

Both rooms are warmed by two large open stoves of special design, on the slow-combustion principle, manufactured by Messrs. King & Munk, of Exeter.

The St. Ouen's Hall is being carried out by the builder, Mr. Alexandre, at a cost of 1,115*l.*, under the supervision of Mr. John Laurens, as clerk of works; and the St. Lawrence's Hall, by Mr. Viel, at a cost of 1,550*l.*, under the superintendence of Mr. George J. De la Perrelle.

HINDRANCES.*

Hindrances meet us at every turn in life,—and for the most part are blessings in disguise. All wise effort and activity, all triumphant patience and perseverance, springs from conflict with besetting difficulties. It is true that the great triumphs of mechanical and physical science have been won in spite of innumerable hindrances, but it is not less true that they have been won *because* of hindrances, and their salutary influence on the minds and characters of our greatest inventors. Indeed, we may go still further and say that it is entirely because of hindrances and the consequent strain upon our mental and physical energies that this small country occupies the proud position of leader among the nations of the earth; and that with all our drawbacks of leaden skies, and storms, and fogs, and rock-bound shores strewn with perennial wrecks, our ships carry the merchandise of the world and our ensign floats o'er every sea. In short, the very hindrances which seem most formidable, and with which our nation has struggled from its infancy, have been the means of developing our national virtues, and so giving us a pre-eminence unparalleled.

Nevertheless, hindrances are not things to be trifled with. They may be regarded as inevitable, but never as invincible, and it depends entirely upon how we meet them whether they are to turn us aside with the humiliating consciousness of defeat, or to develop latent powers through victorious conflict, and so inspire us with self-reliance and renewed faith in the omnipotence of will. And what is true of the hindrances, the interminable worries and obstacles, great and small, which we experience as individuals in domestic, social, or professional life, is not less true of those which, in a broader sense, may be said rather to affect certain interests or classes, and which must be met, not so much by individual effort as by organised co-operation. But, in dealing with these common hindrances, special difficulties confront us, and whereas it might be thought that an association, by the weight of numbers, the adhesion of common interest, and the impetus of identical motive, would carry all before it; yet, in point of fact, we find that such combined efforts are, for the most part, only partially successful, and that the force of numerical weight and identity of interest is too often counterbalanced by the supineness of some or the jealousy, stupidity, or obstinacy of others. Men of energy and true valour, who rather rejoice to grapple with difficulties which seem to be "foemen worthy of their steel," are, when associated with the timid and irresolute, too often discouraged and paralysed, and so, in corporate action, there is always a great danger of weakness and procrastination. In other words, in associations or incorporations, we lack that concentration of energy and unity of will which is possible in the individual alone. Still, with all these disadvantages, we must ever fall back upon combined effort for the accomplishment of much which co-operation alone can effect,—and in the case of our own profession all past experience teaches,—and I trust what I have still to say may tend still more to impress the lesson upon our minds,—that while each for himself should valiantly strive to surmount the hindrances which beset his path, he should not forget that there is work to be done for himself and for his profession, which can only be accomplished by organised co-operation. . . . . Without going into any detail here,— which time forbids,—let me mention only two lines of practical usefulness open to us. First, We may do much to further the movement which seems now at last to be taking shape among us for the establishment of technical schools in our larger towns. Such schools may be of immense use, not only to our students but to the men who are to carry out our designs, and it seems most fitting that our societies should take an active part in trying to secure for their localities the advantage of such institutions. In a movement of this sort we cannott do much as individuals, but united in such associations as this we may exert considerable influence, and give good advice, and I venture to say that it is our duty to do so. Then, secondly, we can do much to remove a serious hindrance to the earnest student of limited means. I mean the want of good books of reference. Good books will do the student no harm. They are not like the pony, but rather like the alpenstock, a weapon for the strong and the adventurous. Now, even in this wealthy town of Leeds, you cannot expect to do much in the way of forming an Architectural Library, but it has occurred to me to suggest one way of getting over this difficulty which I do not think has been tried at all; and that is, that we,—I mean we architectural societies,—should each in our own locality, endeavour to get a selection of the best architectural works added to our public libraries. I suppose in all our great centres now we have free libraries. Their purpose is not to supply light literature to the masses, but rather and primarily to give the poorer workers in science, art, literature, and mechanics, free access to the best standard works. They form, indeed, a necessary complement to technical schools, and it cannot be doubted that any suggestion likely to increase their usefulness in this respect would always be welcome. If we recommend a selection of the most valuable,—I mean useful,—architectural works, and from time to time the addition of new works, I think there is every reason to believe that our library committees would act upon our suggestions; and so this serious hindrance would be removed, and our students would have less cause to regret their distance from Conduit-street. But I think our duty hardly ends here. In many towns with good free libraries there are architectural students but no architectural societies. Is it too much to propose that, while it is so, we should, after mutual conference, draw up some definite suggestions for the guidance of library committees generally? In this, of course, we would expect the advice and co-operation of the Institute and the Association. . . .

Excessive Competition.—Now, to a considerable extent excessive competition (and it is only when it is excessive that it is bad) would be modified if a line of demarcation could be drawn by some such means as have just been indicated between those who are entitled to call themselves architects and those who are not. This, however, would only mitigate the evil, which, I suppose, affects every other profession as well as our own. The worst effects of excessive competition can only be met by us individually forming and adhering to a high standard of professional honour and etiquette, and by strict adherence to the golden rule. In this, the bond of a common fellowship in a great national association, would strengthen us, but otherwise, in our corporate capacity, we can do little more. We have, of course, that outcome of excessive competition to deal with,—"competitions" technically so called,—a theme I shall not touch upon, except to say that, thanks chiefly to the praiseworthy exertions of Mr. Barry, a considerable improvement in the conditions of recent competitions has been secured, and I trust in all important competitions will be retained. Competitions must be classed among our hindrances. I think this much must be conceded, even if we differ from Mr. Barry as to the expediency of double competitions. I understand that you are almost unanimously against that arrangement, and I know that many Glasgow architects are also opposed to it,—and, as the discussion at the Institute has not yet closed, I think the more fully we can get at the general sense of the profession on this important point the better. It would, I think, be easy to show that competitions are detrimental to our profession, though often beneficial to individuals; and while we should together try to mitigate their evil effects, there will always, I fear, remain only one safe course for those who are fully sensible of their danger, and that is to have nothing to do with them. I read somewhere lately of a very simple kind of trap used by a savage tribe for catching monkeys. It consists of a gourd or cocoanut shell, having a hole cut in it just large enough to admit a monkey's hand, if I may so speak. A few nuts are put into the shell, which is then fixed securely in a tree, and the trap is complete. Now these nuts are very tempting, and there seems to be no reason why the monkeys should not help themselves to them, and in point of fact they do so; and little monkeys out on their first foraging expedition probably do so with impunity, and are all the better of their nuts. But the object of the natives is not to feed young monkeys, but to feed upon old ones, and these they actually catch in large numbers, because it so happens that they have pretty accurately gauged the mental capacity of the monkey as well as the power of the nutty temptation; hence the simplicity of the

* From a paper on this subject read by Mr. J. Honeyman at meeting of Leeds Architectural Society, March 6, briefly noticed in our last.

contrivance. The monkeys catch themselves, in short, in this wise, in this foolish wise,—inserting their hands and seizing the nuts they cannot get them out again, and as they have not the sense to drop the nuts they fall into the hands of their enemies and are miserably slain. There is wisdom in this parable; moreover, it suggests this deep and difficult question, is the unhappy fate of such creatures the result of greed or stupidity? It is clear that they might withdraw their hands as easily as they inserted them if only they dropped the nuts. Why did they not do so? That is the question. The traps are fatal to grown-up monkeys, but if they did not choose to catch themselves *no such traps would be set*.

There is another kind of competition which we may fairly grumble at and do what we can to prevent. I refer to the competition of salaried town officials,—city architects, burgh surveyors and the like, who are paid from rates. In the case of all large cities the corporation has constantly need of the advice of a skilful architect, but it is never necessary that he should be employed to design new buildings,—still less that he should engage in private practice,—and there is a double injustice in his doing so; there is injustice to the ratepayers who might for such purposes have better advice, and there is injustice to ordinary practitioners who are deprived of work by one whom they are obliged to pay, and whose draughtsman they are obliged to pay, and who is, in fact, to a certain extent their servant. It must never be forgotten that such functionaries are not selected for artistic ability. It is not because they can produce a good architectural design that they gain their place, but for very different qualifications or reasons. Indeed, a man may be a most excellent town surveyor although quite unable to design a respectable tavern, and yet we find corporations in their ignorance entrusting to such a one works of great magnitude, to the manifest injury and discredit of the profession. Of course, I do not mean to say that there is anything to prevent a city architect being at once an efficient surveyor and a first-rate designer, but, in fact, we find that men of the highest artistic power do not seek such appointments. Perhaps in Leeds you may have an example to the contrary, so,—excepting Leeds,—I shall venture to say that there is probably not an important town in the kingdom in which the town surveyor can by any stretch of courtesy be called the ablest architect in the place. It is therefore evident that the practice of which I complain is injurious not merely to our business and our art, but also to the interests of the ratepayers generally. . . .

Hindrances affecting our Art.—I must, indeed, confine myself to one small branch of the subject,—I must not even refer to such obvious hindrances as the pernicious influence of fashion,—rather a tempting theme; the exigencies of the times we live in, which cannot be ignored; the commercial spirit of the age; the mechanical ingenuity; the very facilities we have for getting work speedily and economically done,—especially by the substitution of machinery for manual labour; we have heard much about these things, and I cannot help thinking that a good deal that we have heard has been the language of impractical hyperbole. But architecture more than any other is a popular art; more than any other it indicates a people's capacity for artistic insight and culture, and seals the record of art's influence on the national mind; and keeping this in view, I think you will agree with me that there is one hindrance to the progress of our art which has hardly received the notice it deserves, namely, the bad effect of every hideous building that is erected. The educative influence of a badly-designed building, in which all taste and propriety is outraged, is probably quite as great as that of a building of artistic excellence, and if our art is making progress at all, we have a right to this consolation at least, that the villanous designs are in a minority. But still, it is a minority so large and so clamorous as to prove eminently obstructive. Now, the reduction of this minority to reasonable limits, so that it shall become comparatively harmless, is a work to which architects can only contribute indirectly, and to a much less extent than might on a superficial view of the case be supposed. I utterly repudiate the idea that the architects of the country are responsible for the monstrosities which shock artistic sensibilities in almost every important town. The responsibility lies with those outside of the profession altogether, and we can do little more in the matter than direct attention to the evil and its cause, and so endeavour to overcome it by means of enlightened public opinion. The assertion that our profession is not to blame for the miserable architectural failures which are so common, is entirely at variance with commonly received and very commonly expressed opinions; but the fact is simply this, that the public do not employ the best architects to do their work, and with them rests the blame. In some towns they ask their town surveyor to do it, however incompetent he may be, merely because he is their town surveyor; experienced architects are deliberately passed over, and the public get what they deserve to get. In others, and indeed everywhere, the designer of almost every building of any importance is selected by competition, and again, the more experienced architects refusing to compete, the work is handed over too often to beginners. I do not refer here specially to competitions of the first magnitude, but to those for buildings costing say from 5,000*l.* upwards,—churches, clubs, schools, blocks of offices, libraries, art galleries, and the like,—the buildings by which the condition of our art is mostly judged. For the designing of these, the ablest artists are not selected; on the contrary, as I have just said, they are practically prevented from having anything to do with such works. It is extremely difficult to convince the public that they are the losers by this. One committee does not gain wisdom from another's experience, but gathers it,—very often sadly,—from its own. Of course, such competitions are excellent things for the younger members of the profession, and sometimes their results are altogether satisfactory; but more frequently, as might be expected, it is the reverse, and our art is thereby hindered, and undeservedly brought into ridicule. Now, observe to lay the blame of this upon our profession, to judge our art by the outcome of such a mode of selection, conducted by such selectors, is as utterly unjustifiable and absurd as it would be to judge of English painting by the "pot-boiler" of a nameless artist, while the works of a Millais or a Leighton were ignored. If you wish a good painting,—a fair specimen of the English school,—you must go to a good artist, and pay him a good price for his work. If you prefer buying something you can get for 1*l.* the superficial foot, admire it and enjoy it as much as you choose, but do not insult the artists of the country, and at the same time proclaim your own egregious folly by holding it up as a typical example of the art of the day. And so precisely it is with architecture. You may go to Mr. A. and get him to design a church for you, although he has never done such a thing before, instead of to Mr. B., who, as you are aware, has spent a lifetime in the enthusiastic pursuit of his art. That is your affair; we architects cannot prevent you doing as you choose, but we can and ought to protest against you or any one else referring to Mr. A.'s deformity as a typical example of British architecture. It is clearly not Mr. B.'s fault if the result gives the enemy occasion to blaspheme; nor can we hope to see anything done towards diminishing the output of bad work, and encouraging the growth of architectural art, until the public entirely change their attitude towards us, and learn to treat our art and our profession as they treat other arts and other professions, giving due deference to the master, and acknowledging the worth of experience. When that is done, when our vestries, and town councils, and committees learn,—as, for the most part, our gentry have learned,—that culture and experience are precious, then, and not till then, may we hope for *progress*, or acknowledge our fault if there is none.

FULHAM INFIRMARY BOARD OF GUARDIANS.

AT the last weekly meeting of the Guardians, Mr. J. Ardin, chairman, the sub-building committee reported that the contractors had furnished an estimate for the heating apparatus for the infirmary of 1,479*l.*; gas-pipes, mains, and fittings, 363*l.* 10s. The same being, in the opinion of the architect and committee, fair and reasonable, the committee recommended the estimates should be accepted. The architect's estimate for the heating apparatus was 1,500*l.*; gas-pipes, mains, and fittings, 500*l.*

The adoption of the report was agreed to.

BUILDERS' CLERKS' BENEVOLENT INSTITUTION.

ANNUAL DINNER.

THE fifth annual dinner in aid of the funds of this excellent charity took place on Tuesday evening last at the Guildhall Tavern, Gresham-street, the president, Mr. J. Howard Colls, in the chair, supported by master builders and other subscribers and friends to the Institution, to the number of about 130. The loyal and patriotic toasts having been disposed of (Mr. Dove replying on behalf of the Reserve Forces),

The Chairman, in proposing the toast of the evening, "Prosperity to the Builders' Clerks' Benevolent Institution," briefly recounted the history of the Institution. It was, he said, established in 1866, with the object of granting pensions to decayed builders' clerks and their widows, and of maintaining and educating the orphans of builders' clerks. There were at present on the funds of the Institution eleven pensioners, the males receiving 25*l.* per annum and the females 20*l.* per annum. In the year 1868, soon after the establishment of the Institution, 12*l.* 15s. was spent for the relief of applicants. Last year, 220*l.* 16s. 8d. had been so expended. Since the establishment of the Institution, 525*l.* had been expended in presentations to the Orphan Working School. To efficiently maintain the work of the Institution, it was very necessary that the number of annual subscribers should be kept up, and, indeed, largely increased, for annual subscriptions were the backbone of such a society. The Institution was, no doubt, gradually becoming better known to the builders' clerks of London, and it was to be hoped that they would come forward in greater numbers and join it, seeing that it was established for their benefit. Besides granting pensions and maintaining and educating orphans, the Institution granted temporary relief to builders' clerks in distress. One of the most prominent features of the Institution was the great economy of its management. Mr. Wheatley was a most indefatigable secretary, and the way in which he made his work a labour of love could not be too much admired. The members of the institution had much reason for self-congratulation in being so ably served by Mr. Wheatley. In conclusion, the chairman asked the company to drink the toast with a strong determination to make known the claims which the Institution had to the support of builders' clerks generally. He had always regarded a builder's clerk as being a cut above other clerks, and, therefore, he could confidently appeal to builders' clerks to do their utmost to advance the welfare of the Institution.

Mr. Ex-Sheriff Burt, in proposing the next toast, "The Architects and Surveyors," said that builders and builders' clerks were continually coming in contact with architects and surveyors, for whom they felt the highest respect. It was true that they were sometimes apt to think that architects could put up very smart and fine-looking buildings for very little money; that they sometimes fancied that the quantities were taken out rather short; and that when the extras came to be measured up the rods were not allowed to go quite so far as they, the builders, could wish. But it should be recollected that the architects and surveyors had to consider their employers, between whom and the builders they generally struck the line as fairly as possible. The architects and surveyors of London were men of repute and standing, and thoroughly entitled to the respect of the building trade.

Mr. Ellis Marsland responded to the toast.

Mr. E. C. Roe proposed "The Builders." Looking into a little work the other day,—a work which changed its subject very frequently, viz., a dictionary,—he read the following definition,—"Builder. An architect, a shipwright, a mason, &c., &c." Now, he never knew before he referred to that interesting work that a builder was an architect, but no doubt there were builders who would make very good architects; on the other hand, if some architects and surveyors were compelled to be builders for a short time, greater consideration would often be shown by them for builders. Passing by the work of the shipwright and mason, there was the "&c., &c.," which, no doubt, stood for other classes of the building fraternity,—possibly for that very interesting invention of the nineteenth century, the "cutting builder," as he was sometimes called. He was very often a gentleman who knew how to make a very little go a long

way,—one who had solved the difficult problem of making sums varying from 4d. to 1s. 9d. do duty for the current sovereign, and who could therefore undertake to do building work very cheaply. For a job for which a reputable builder (who paid, and meant to pay, his twenty shillings in the pound) would send in an estimate amounting to say 3,742*l.*, the tender of the cutting builder would only amount to something like 1,213*l.* 12s. 11½d., and of course the cutting builder got the job, generally to the subsequent loss and annoyance of owner and architect. It was for architects and merchants to be chary of confiding in such men, who were not entitled to the honourable name of builder, nor to the chance of being confounded in the public mind with men of such repute in the building trade as the Cubitts, the Plucknetts, the Riders, the Burts, the Collses, and the Doves. With the toast he begged to couple the name of Mr. F. J. Dove (Dove Brothers).

Mr. F. J. Dove briefly responded, expressing the pleasure which it afforded him and other master builders to be present and to testify to their indebtedness to their clerks, between whom and themselves there existed a bond of sympathy which was too often lacking between employers and *employés*.

Mr. E. Brooks proposed "The Past-Presidents," coupled with the names of Mr. George Plucknett, J.P., Mr. T. F. Rider, and Mr. T. Stirling, who severally responded.

The remaining toasts were "The President," "The Visitors," "The Ladies," and "The Committee and Officers." With the last-named toast was coupled the name of Mr. Wheatley, the secretary, who briefly replied.

The subscriptions and donations announced during the evening reached a total of 357*l.* 12s. 6d.—a larger sum than obtained on any preceding occasion. The donations included 21*l.* given by the Chairman, 10*l.* 10s. given by the Worshipful Company of Carpenters, and 10*l.* 10s. given by the Builders' Society of London.

INTERNATIONAL ELECTRIC EXHIBITION, VIENNA, 1883.

Looking at the announcements which have come in within the last few days, even but superficially, we can state that the International Electric Exhibition in Vienna will not at all be inferior to its predecessors, but on the contrary, will in many respects surpass them. Two countries, Denmark and Spain, have made their appearance of late, and likewise Italy has sent a great many applications. We mention of the exhibitors of the latter State only the Societa Anonisma Generale Italiana dei Telefoni, at Naples, with a rich collection of lighting apparatus and telephones; Alessandro Lucchesini and Jules Lorenzetti, at Florence, with various telegraphic apparatus; Rialti Vincenzo, at Forli, with a great many novelties in incandescent lamps. France promises to send representatives in a most imposing manner.

THE PARIS ÉCOLE DE MÉDECINE.

According to the continental press the new building of the Paris École de Médecine in the Boulevard St. Germain, has now been freed from its scaffolding. The façade has forty large-sized windows, and has a massive appearance from the introduction of pillars. The principal entrance is ornamented with two *caryatides*, representing Medicine and Surgery. The building occupies a space of about 140,000 square feet, while the old structure was only about one-fifth of that superficial extent. The building is costing about 170,000*l.*, and the acquisition of the increased site cost 80,000*l.* Allowing for other expenses, the entire cost will be about 275,000*l.*, according to the figures given. M. Ginain is the architect, it is stated.

CHISWICK CHURCH.

Following suit after its neighbours at Hammersmith and Kew, the parish church at Chiswick is about to assume an altered appearance. Here, indeed, little but the tower of the former church will remain, for on Thursday, the 8th instant, Lord Edward Cavendish, M.P., laid the foundation-stone of a new building, the chancel being erected at the cost of the Duke of Devonshire, the nave and aisles at that of Mr. Henry Smith, churchwarden, a previous benefactor.* The old church, dedicated to St. Nicholas, consisted originally of a nave and chancel built, mainly of flint and stone, in the beginning of the fifteenth century. To these William Bordall, vicar (who died in 1435), added the tower, of the same materials. The church was afterwards repaired with brick, and two brick transepts subsequently added, which were again extended into aisles in the course of last century. The tower is now surmounted by a spire bearing a figure of the patron saint of fishermen, this part of the river, as we shall notice presently, forming a valuable preserve.

Chiswick lies upon the Roman, or, rather, British, road from Chichester (Regnum), through Staines (Pontes), Brentford, Turnham Green, Stamford Brook, and Starch Green to Shepherd's Bush and Tyburn. In making Goldhawk-road, Shepherd's Bush, the causeway was discovered along its length beneath the surface. A battle is said to have been fought here, at the Back Common, between Eadmund (Ironsides) and the Danes, who were marching along this then the only route into London from the west. The road from Turnham Green towards Knightsbridge does not date from before the close of the seventeenth century. Included in the Ossulstone Hundred, Chiswick comprised two manors, of about 1,150 acres in all, which belonged to St. Paul's, London. Of these, the one was prebendal and the other, Sutton or South Town, a peculiar of the Dean. Though not named in the Domesday Book, Sutton occurs in a list of manors appertaining to St. Paul's, which was drawn up during the deanship of Wulman, a contemporary of William of Normandy. It is mentioned in the capitular survey of Alardus de Burnham, early in the thirteenth century, one of the most ancient surveys of the kind extant; whilst in the cathedral archives there is an agreement of the year 1235 relating to the fish within the manor. By this agreement, made between the Dean and Chapter and the Prior of Merton, the manors of Sutton and Chiswick are allowed to place forty weirs (*burrochas*) for barbel and lamprey only. In the Civil Wars the leases were sequestrated to the Corporation; in 1676 they passed to Thomas, Earl Falconbergh, whose great-nephew, Thomas Fowler, Viscount Falconbergh, assigned them (1727) to Richard, third Earl of Burlington, the celebrated patron of literature and the arts, and friend of Pope. By the marriage of Charlotte, Baroness Clifford, his only surviving child, with William, fourth Duke of Devonshire, the estate passed to its now owners.

The Duke of Devonshire's villa at Chiswick occupies the site of Sutton Court, which, according to Kip's print, would seem to have been built during the reign of King James I. It had been the property and residence of Robert Carr, Earl of Somerset, whose infamous countess died here, says Dugdale, in the year 1632.† It then passed into the possession severally of Philip, fourth Earl of Pembroke; of John, Lord Poulett, the royalist, whom Fairfax, then living at Putney, often visited here;‡ of the Duke of Monmouth; and of Richard, Lord Ranelagh. In 1682, Edward Seymour sold the house to Richard, second Earl of Cork and first Earl of Burlington. For the descendant of the last-named nobleman Kent built the miniature villa, from a design of Palladio, which Lord Hervey said was only too large to hang to a watch. The wings were added by Wyatt. It was here that Charles James Fox died, in 1806, and twenty-one years later George Canning, both in the same chamber, which opens out from the Italian Saloon. Kent's skill as a landscape-gardener is manifest in the pretty grounds, which are further adorned with three antique statues rescued from the rubbish of Arundel House, and a water-gate, by Inigo Jones, removed hither as a gift from Sir Hans Sloane, upon the destruction, in 1738, of old Beaufort House. Of the famous collection of pictures it is unnecessary to say more than that Lord Burlington acquired the "Madonna," by Domenichino, from a convent at Rome, in exchange for a set of marble columns for their church.

Reminiscences of Johnson, Hogarth, Murphy, Zoffany, and Garrick, form portions of the numerous *admonitus loci*. The inscriptions on the monuments in the church to Dr. Rose and John Ayton Thompson (*ætat.* 15) are by Murphy. Garrick composed the epitaphs of Hogarth and the actor Holland, son of a baker in the town. Dr. Johnson was the friend and frequent guest of Dr. Rose, who, on one occasion, when the merits of Scottish writers were in question, reminded Dr. Johnson of at least one Scotchman who he would admit had written well,—Lord Bute when he signed the order for Johnson's pension.* To Rose, too, he gave the well-known refusal to "walk in the grounds of an usurper" when invited by his host (George II. being then upon the throne) to stroll through Kew Gardens. The church contained many curious monuments, one of the oldest being that of Sir Thomas Chaloner and his wife. Chaloner, governor and chamberlain of Harry, Prince of Wales, was knighted by King Henry IV. for his redoubtable service in arms against the French. Here also were buried Lady Charlotte Finch, second wife of Charles, "the proud Duke of Somerset," who, surviving her husband several years, died in 1773 at Sutton Court; Barbara, Duchess of Cleveland, the "beautiful fury" of King Charles II.'s court; Mary, Countess of Falconbergh,† and Mrs. Rich, daughters of Oliver Cromwell; James Ralph, political and historical writer, one of whose poems, "Night," is vilified in Pope's couplet, "Dunciad," book iii.:—

> "Silence, ye wolves! while Ralph to Cynthia howls,
> And makes night hideous.—Answer him, ye owls!"

Kent, painter, architect, and gardener; and Thomas Bentley, partner of Josiah Wedgwood. The house in which Bentley lived, on the main road, carries the bas-reliefs to which he often alludes in his letters to Wedgwood. Chiswick is associated with another gardener,—Sir Joseph Paxton,—who began life upon 12s. a week in the gardens opened here in 1825 by the Royal Horticultural Society. In the churchyard are the tombs of Hogarth, with memorials to his sister Anne, to Jane his widow, and her mother, Judith, relict of Sir James Thornhill;‡ of De Loutherbourgh, R.A.; Sharp, the engraver; and of Fittler, A.R.A. The cenotaph to Ugo Foscolo (whose remains were transferred to the Santa Croce, Florence, a few years since) is the work of Marochetti. Hogarth's house, in the lane called by his name that leads from the town to the Society's gardens, has fallen into a sad state,—a view of it and his "workshop" may be found in Faulkner's "Brentford, Ealing, and Chiswick," 1845. Lord Heathfield lived at Turnham-green; Zoffany, who occupied a house at Strand-on-the-Green, was buried, with Gainsborough, in Kew Churchyard. Thackeray had good warrant for placing "Miss Pinkerton's academy for young ladies" on Chiswick-mall; though the sedate calm and repose of this interesting little suburb had been once considerably scandalised by the temporary sojourn of Rousseau, who came hither to be near Dr. Rose. Barker's Rails and Corney Reach, familiar to University and other boating men, are named the one from the Barker family who had been long settled at Grove House, and the other from Corney House, a home of the Russells from Queen Elizabeth's time. In 1623 Edward, third Earl of Bedford, repaired the churchyard wall, as the inscription runs "for keeping .... the wardrobe of Goddes saintes whose bodies lay therein buried from violateing by swine and other profanation."§ To what we lately said with respect to the Pest House and the Chiswick Press we may add that amongst the traces of the occupancy of the college-house by the masters and scholars of Westminster School, dating from the transfer of the Manor of Chiswick, under Gabriel Goodman, Prebendary of St. Paul's, to Westminster, of which he became dean in 1570,¶ there existed, for

* The contract for the erection of the building is in the hands of Messrs. Goddard & Son, of Farnham, the amount of whose contract is 12,780*l.* The cost of the works will, however, somewhat exceed this sum, owing to the numerous vaults, the extra concrete fillings, and increased depth of foundations. The architect is Mr. J. L. Pearson, R.A., and the clerk of the works Mr. J. Griffiths, of Edmonton. The new structure is designed in the Early English style. It is expected the work will be completed by October next.

† See also Weldon's "Court of James I.," p. 113.

‡ "Present Occurrences," Aug. 6-13, Sept. 10-17, 1647.

* Boswell doubts the genuineness of this: and says that Johnson replied, when told by him of Dr. Rose's retort, "If he said this, I did not hear him."

† See *Builder*, p. 225 *ante*, (Feb. 17).

‡ The tomb bears an escutcheon of Hogarth's coat o arms (az: a sun in splendour) impaling those of Thornhill (arg. a chevron gules between three black birds).

§ The inscription speaks of him as Duke of Bedford; but the family did not achieve ducal honours until 1694.

See *Builder*, p. 68, *ante* (Jan. 20),—"Dying London."

¶ Lansdowne MS. 4, art. 12.

many years, the carved names of John Dryden and him of whom Tickell speaks as Addison's "lov'd Montague."

MACHINE TOOLS.

THE INSTITUTION OF CIVIL ENGINEERS.

AT the meeting on the 6th of March, Mr Brunlees, president, in the chair, the first paper read was "On the Productive Power and Efficiency of Machine Tools, and of other Labour-saving Appliances, worked by Hydraulic Pressure," by Mr. Ralph Hart Tweddell, M.INST.C.E.

The author stated that some years ago he had occasion to design a machine, which was required to exert a great pressure in a confined space at a considerable distance from any shafting. The machine had to be portable, and to be capable of doing a large amount of work efficiently without the intervention of skilled labour. Such conditions were of common occurrence, and in this instance all were successfully fulfilled by the employment of hydraulic pressure. The paper was an amplification of the subject of the application of this power to actuating machine-tools and other labour-saving appliances in engineering works, and was divided under three heads, namely,—the introduction and development of hydraulic-pressure machine-tools; the productive power and efficiency of machine-tools generally, and the modes of increasing them; and the increased productive power and efficiency obtainable by the employment of hydraulic-pressure for working machine-tools and other labour-saving appliances. Reference was made to the unpublished experience existing on these questions.

Under the first head, an illustration was afforded by a small portable hydraulic apparatus for fixing the ends of boiler-tubes in tube-plates, the pressure of water employed varying from one to one and a half ton per square inch. Owing to the introduction of high steam-pressures, the scantlings of marine boilers had to be considerably increased, but the mechanical riveting-machines formerly in use were mostly inadequate to make steam-tight joints. In 1865 the author designed a hydraulic riveting-plant to overcome the difficulty. It consisted of pumps, an accumulator, and a riveting-machine, and in operation was seven times more economical than hand-work; moreover, its surplus power was available for hydraulic presses for "setting," or joggling, angle and tee irons. In action it was found that the material was much less strained, and that the wear and tear of the moulds and dies was greatly reduced, besides which the machines were movable. Previous attempts to perform similar work by portable machines driven by steam had not been very successful. This, it was believed, was the first hydraulic-pressure riveting-machine which could readily be applied at different points and over considerable areas, and at the same time maintain an uninterrupted connexion with the accumulator-pressure in the mains. The system had been extended to machinery of sufficient gap to span the deepest girders, the same hydraulic power which actuated the heavier machines being utilised for lifting them. The water driving these machines and their lifting apparatus was supplied under a pressure of 1,500 lb. per square inch. Amongst the first to employ them was the firm of Sir William Armstrong & Co. Several instances were then given of their application: for riveting *in situ* the lattice-girder bridge which carried Primrose-street over the Great Eastern Railway at Bishopsgate-street Station; for riveting locomotive boilers; for fastening rivets in gun-carriages and in agricultural machinery; for railway wagon-work, and for riveting ships. The substitution of hydraulic machinery for punching and shearing metals had been more gradual, but it had proved economical, and had been employed for shearing the links of chain cables, 3 in. in diameter, both sides at one time.

As to the productive power and efficiency of machine-tools generally, and the mode of increasing them, the author observed that the cost of manufacturing depended upon the productive power of the tools employed, and upon the possession of facilities for transporting the material to and from them. Ample lifting and transporting arrangements should be provided in all cases. At present a large amount of lifting was done by manual labour, in which there was room for great improvement.

On the third head, namely, the increased productive power and efficiency obtainable by the employment of hydraulic pressure for working machine-tools, the author observed, that so far as the prime mover was concerned, the power necessary in a hydraulic system to pump water into the accumulator was nearly always obtained from a steam-engine; but even at this early stage the hydraulic system, by the use of the accumulator, allowed of a considerable reduction in the size of the motor. A comparatively small prime mover running continually, stored up sufficient energy to meet any sudden demand from even the largest of the machines worked from it; while, on the other hand, the prime mover would have to be equal to this. This defect was to a small extent met by the use of fly-wheels, which were, however, objectionable from their liability to accidents, and from the strains to which the shafting was subjected. From 200 to 300 blows per minute had been obtained in hydraulic machines, and in machine-tools and cranes the accumulator acted as a perfect safety-valve. Then, for the transmission of power to points distant from the prime mover, hydraulic pressure was the most economical. By the use of hydraulic mains laid underground, all overhead shafting was dispensed with.

The next question was as to the suitability of hydraulic pressure to actuating the tools. It had already been employed for slotting and planing machines, and its application to rotary machines might even become as economical as any other. The simplicity and fewness of parts in all hydraulic machine-tools was a source of great economy. In respect to the economical application of force through each individual machine when performing such an operation as punching, the machine was moving at its lowest speed, and friction was at a minimum when most work was being done. Again, hydraulic machines consumed no power except when actually doing work, while it was not unusual in a machine-shop to see all the shafting running in order to drive a small tool at its extremity. He thought that even small firms might find it advantageous to combine in the erection of a common pumping-station, and so to obtain many of the economical benefits due to carrying out operations on a large scale.

EXHIBITIONS.

AT Boston, in Massachusetts, a so-called "Grand Foreign Exhibition" is announced to be opened on September 1st next. The building, which is already erected, has cost half a million dollars. The consuls-general of the United States in the various European countries are inviting foreign manufacturers to apply for space. The articles to be exhibited are to be exclusively of foreign production, and it is the products of art industry which it is more particularly desired to have represented. One novelty in the enterprise will be the delivery of series of lectures on various branches of art manufactures, and the opening of a public discussion at the conclusion of each address. The building will be open at night as well as day, and will be lighted by electricity.

An International Horticultural Exhibition opens at St. Petersburg on the 17th of May; an International Agricultural and Horticultural Exhibition at Lisbon about Midsummer, and an Exhibition of Manufactures, Arts, and Agriculture at Zurich on the 1st of May.

The International Colonial and Export Exhibition at Amsterdam, which the King of the Netherlands has promised to open in person on the 1st of May, will have separate sections, under the titles of Colonies, Articles of Export for Colonies, Objects of Art and Antiquities of Colonies. Under the first head there will be lectures and discussions, and the section will be sub-divided into three groups. The first will deal with the character of colonised countries, including their geography, geology, and mineralogy, their native animals and plants and their anthropology. The second group will deal with the present native populations of colonies, their statistics, domestic and social life, means of living, art, science, religions and religious customs, and their forms of Government. The third group will treat of the European settlers in colonies, and their relations towards the aboriginal races, including accounts of explorations and expeditions into unknown tracts, the various colonial systems and their results, the naval and land forces, public works, postal and telegraphic systems, commerce and shipping, agriculture and manufactures, domestic and social life of the European settlers, education, and scientific researches. Under this head alone a mass of materials will be brought together, such as has never before been attempted, and such as cannot fail to prove of the widest interest.

THE BRICKWORK OF CHIMNEYS.

IN a communication to the *Deutsche Bauzeitung*, Herr Eckhartz has expressed his opinion that the cause of crevices being formed in the brickwork of chimneys is the difference of temperature between the inner and outer surfaces. While in many cases in an ordinary factory chimney the mantle has internally a temperature of nearly 600° Fahr., the external temperature is only about 60° on an average, the difference of extension which is thus occasioned producing the cracks referred to. He dwells upon the use of iron hooping, and remarks that its object and result are not, strictly speaking, the prevention of extension, but rather the attaining in the outer brickwork of a uniform distribution of the tension, and the prevention of its concentration at certain points.

The question whether wrought-iron rings in the inside of a mantle are liable by their own extension to produce cracks, has been for some time under discussion in German technical circles. A short time ago, Dr. Tomei recorded in the journal referred to, his opinion that the binding of chimneys by means of iron inside the masonry was a measure only to be recommended in exceptional cases, and with the observance of special care in its execution. He considered that the external binding of brickwork was, however, a question which was to be regarded in a different light.

Herr Eckhartz, though not founding his remarks exactly on those of Dr. Tomei, further illustrates them by saying that if ironwork placed internally fails to prevent cracks, and even produces them, its employment in that way is not only superfluous, but injurious. If rightly constructed, he considers that for resisting the effects of the wind, no hooping is required by a chimney. In further elucidation of the theory that internal hooping is unsuitable, he remarks that the ironwork should, as a matter of course, not be exposed to a high temperature; and he maintains that all rings inside masonry must, under these circumstances, be subjected to the influence of heat. If they have not sufficient space for their extension, they exercise a pressure upon the external brickwork, and thereby produce cracks.

From the facts thus quoted, Herr Eckhartz deduces the recommendation that in order to provide against the results of the difference in temperature to which allusion has been made, double walls should be constructed. He refers to the chimneys for circular furnaces which have been designed on this principle by Herr Hoffmann. He uses double mantles, each only half a brick in thickness, which are united by vertical ribs of the same thickness. Inside the chimney is an isolated mantle, half a brick thick, which is built up to the height of 11 to 22 yards, according to temperature ruling in the chimney. This mantle is exposed to the most intense action of the heat, and from the nature of its construction is not injuriously affected by any extension which takes place.

Herr Eckhartz claims for this method of construction the subsidiary advantage of economy in fuel, and adds that his personal experience confirms him in the opinion that it is the only system by the use of which iron hooping can be completely dispensed with.

AN ENGLISH CHURCH AT BERLIN.

IN commemoration of the Silver Wedding of the German Crown Prince and Crown Princess, and under the patronage of the Princess herself, a movement has been made in Berlin for the erection of a new church for the use of the English residents in the German capital. A committee has already been appointed, and a subscription opened. It is contemplated to erect an edifice in the Gothic style, capable of seating 300 to 350 persons, and to cost about 5,000*l*. The committee has issued an appeal to the English Colony in Berlin and others to contribute to the fund. The treasurer is the English Consul-General, Herr von Bleichröder, Behrenstrasse 63, Berlin.

AN ACCOUNT OF THE ARCHITECTS' BENEVOLENT SOCIETY.

REPORT OF THE COUNCIL, 1883.

In making their Annual Report the Council of the Architects' Benevolent Society have the satisfaction of stating that during the year 1882 the relatively large sum of 527*l.* has been distributed among thirty-six applicants for relief, and that the total expenses of collection, distribution, &c., have been only 14*l.* At no other period of its existence has the Society been in a position to expend so large a sum in grants and pensions, the largest amounts thus expended in former years having been 443*l.* in 1877, 421*l.* in 1881, and 395*l.* in 1879. At no other period have the working expenses been so small, though this is partly due to the fact that the Hon. Secretary's work is done principally in the office of the Royal Institute of British Architects, and that the reports, &c., relating to the business of the Society are published in the Institute Journal of Proceedings, whereby a portion of the postage, stationery, and printing, which would otherwise have to be paid for, is provided by the Institute. The chief item of reduction is due to the general use of bank orders recently issued, by which means the annual subscriptions, instead of being collected by an officer of the Society, are paid by subscribers' bankers direct to Messrs. Herries, Farquhar, & Co., a change of procedure which has not caused any diminution in the receipts. On the contrary, the total of subscriptions received during 1880-1-2, when no collector has been employed, has reached the sum of 990*l.*, against a total during the three previous years, when a collector was employed, of 955*l.* Further, the Council are enabled to add that at the close of 1882 the Society's capital had reached 5,550*l.*, while a sum of more than 90*l.*, received in donations during that year, remained to be invested. With these facts and the experience of former years before them, the Council desire to make perfectly clear their position with regard to the Institute, which, as far as it reasonably can, now houses and, as before mentioned, assists the Society. They desire not only to place on record their own sense of indebtedness to the members generally of the Institute of Architects, but also to invite the annual meeting of the Society's contributors to express that indebtedness in a cordial vote of thanks to the corporate body of the profession.

While, however, giving due expression to the manifest improvement in the Society's affairs, and pointing with satisfaction to the extended sphere of usefulness which belongs to it in the silent exercise of its charitable functions, the Council see with deep regret the partial and incomplete manner in which the architectural profession is represented in the Society; they see with regret the inadequate support given to it by architects and surveyors of influence and even wealth, and they deprecate the marked abstention from the ranks both of donors and subscribers of many well-to-do professional men, some of whom, in answer to appeals personally made to them, have replied that another and far richer charitable body which also relieves architects has a prior claim to the small assistance they can afford. That body, the Artists' General Benevolent Institution, is an excellent one and worthy of support, but its funds are closed to the majority of architects and surveyors, their widows and orphans. That is to say, the restrictions imposed by the Artists' General Benevolent Institution, in nine cases out of ten, deprive the poorer class of the profession from all chance of obtaining relief from it. Such applicants have no resource at a time of distress but an appeal to individual practitioners, or to the Architects' Benevolent Society, in which no restrictions to the distribution of relief exist at other than that the applicants must be of good moral character. Both architects and surveyors are relieved. In the case of practitioners or their assistants they must be known to have been honourable in their practice, and to have been duly educated in an architect's or a surveyor's office, or they must have produced an improving work of art, while in the case of widows and orphans they have to give satisfactory evidence of their identity in relation to an architect or a surveyor. The Council earnestly call upon contributors and others to make these facts more generally known than they are, and to destroy the erroneous impression that this Society has undertaken a superfluous task, or one by which it is placed in opposition to another and a larger body of associated painters, sculptors, and architects. Your Council recall the words of the founders in the year 1851. In the Red Book then issued, containing the first annual report and list of contributors, there occurs a prefatory paragraph which runs thus:—"Literary men, artists, and many other classes and professions, dependent for their livelihood on profits of uncertain attainment and precarious tenure, have formed themselves into societies of this nature with the happiest results, but Architecture, the eldest of the Fine Arts, has yet to be moved to associate in this good work. She has had the good fortune to be made subservient, in many noble monuments of piety and charity, to the benevolence of others; it is time that she should give proofs, in her corporate character, of the same beneficent spirit. No society, framed on these principles and specially devoted to the interests of the architectural profession, has yet been established, and it is in order to remove this reproach that the present appeal is now made to its members. It needs only a slight acquaintance with the profession to satisfy us that such an institution is urgently required. The frequency of private applications for individual relief too certainly proves its necessity, and the sad experience, which brings too often under our notice the struggles of genius and talent with undeserved misfortune, will not permit us to defer any longer the duty of submitting your friendly co-operation." The time has again come when it is necessary, in the opinion of your Council, to make another urgent and reasonable appeal to that large majority of professional members of the Royal Institute of British Architects which ignores not only the claims but the very existence of this Society. It is too generally forgotten that small sums from many donors often afford a larger and certainly a more satisfactory total than a few comparatively munificent gifts. At the present moment the Institute numbers about 1,100 professional members, and of these only 226 contributed during the year 1882 to the funds of the Society. As a corollary to this your Council have constantly to respond to an urgent appeal, personally known to be genuine, and often the result of undeserved misfortune, by the grant of a ten-pound note, instead of the fifty pounds that they feel ought to be at hand to meet the case.

It will not be unprofitable to glance at the past. In the early days of the Society's existence the trustees were the three Academicians, Barry, Cockerell, and Hardwick. Sir Robert Smirke was a "Patron." Sydney Smirke, the first president, continued to take the chair at your annual meetings until 1874, and his death occurred in 1877, when he was succeeded by the late Thomas Henry Wyatt. Amongst the earliest members of the Council were Poynter, Pennethorne, Salvin, Henry Ashton, Sir Gilbert Scott, Sir Digby Wyatt, and Benjamin Ferrey. The damaging argument, even now sometimes used, that there is something derogatory to the profession in the existence of an Architects' Benevolent Society was neither ignored nor unappreciated by its founders, whose most earnest efforts were directed to strengthening the society, appealing as they did in 1854, not for its mere silent acquiescence in the work of the Council, but for its active co-operation "in making perfect," to use their words, "the good work which has been so auspiciously commenced." The character of that work is perhaps not known to the general body of the profession. Some statistics may therefore serve to show in a practical business-like fashion the progressive though slow advance which it has made in power and usefulness. Thus:-

Year.	Donations.	Subscriptions.	Expenses.	Pensions and Grants.	Amount of stock.	REMARKS.
	£. s. d.	£. s. d.	£. s. d.	£. s. d.	£. s. d.	
1850	308 15 0	78 13 0	80 3 0		303 0 8	First Annual Meeting, 27th Nov., 1850.
1851	107 12 0	67 5 0	18 10 0	10 0 0	...	
1852	59 16 6	184 16 0	62 14 10	55 0 0	...	
1853	59 18 0	176 6 0	51 8 11	105 0 0	...	
1854	20 9 0	165 17 0	45 17 3	157 10 0	...	
1855	81 1 0	171 2 0	55 0 7	170 0 0	...	Corr. Members of Council appointed.
1856	77 11 6	167 9 6	42 5 9	170 5 0	...	
1857	75 11 7	175 6 0	48 9 0	135 0 0	...	
1858	75 3 0	177 2 0	48 7 11	63 0 0	...	
1859	43 11 6	165 17 0	47 5 10	185 0 0	...	
1860	78 15 0	144 16 0	43 19 10	83 0 0	993 9 6	
1861	84 15 9	166 18 0	53 13 0	121 6 0	...	New Collector appointed.
1862	67 12 6	105 0 0	32 2 2	175 0 0	...	
1863	31 10 6	220 19 0	77 3 5	258 0 0	...	
1864	73 3 6	172 4 0	48 8 5	120 0 0	...	
1865	25 4 0	169 1 0	31 18 0	170 0 0	...	
1866	30 13 6	175 10 0	56 16 9	200 0 0	...	
1867	36 0 0	184 14 0	75 6 0	102 0 0	...	
1868	83 9 0	204 15 0	47 11 1	144 0 0	...	
1869	82 4 0	198 9 0	107 6 4	150 0 0	...	
1870	64 6 0	195 6 0	82 2 8	214 0 0	1,596 9 6	Appeal made to the profession.
1871	102 3 0	214 2 0	91 14 10	163 0 0	...	
1872	74 6 0	209 19 9	74 3 1	199 0 0	...	
1873	216 10 0	209 15 0	88 2 1	235 0 0	...	
1874	287 9 0	212 7 6	74 2 3	277 0 0	...	
1875	86 9 6	226 11 0	77 3 11	318 0 0	...	[*Hon. Sec.*
1876	98 1 6	220 5 0	83 5 8	287 0 0	...	Resignation of Mr. Turner sen.,
1877	394 1 0	318 17 9	134 15 6	443 0 0	...	Successful appeal to the profession.
1878	208 4 6	314 4 3	74 3 4	380 0 0	...	Mr. C. C. Nelson bequeathed £100.
1879	2,093 13 11	324 3 0	85 17 0	395 0 0	...	Mr. J. Johnson bequeathed £1,000.
1880	134 12 0	315 0 6	50 8 3	385 0 0	5,336 9 11	Mr. T. H. Wyatt bequeathed £100.
1881	96 0 7	305 7 0	39 18 5	421 0 0	...	
1882	91 8 0	370 3 0	14 1 4	527 0 0	..	

The Society began with the wholesome rule of funding all donations, and for nearly twenty years this was regularly done; but in 1869 it was decided to invest annually only a moiety of the donations, the other moiety being expended in grants to applicants, and in current expenses. A reversion to the original rule took place in 1879, and your Council trust that the custom of funding all donations, unless otherwise directed by the donors, will be rigidly adhered to in the future. At present a donor, however small his gift, has the satisfaction of knowing that it must accrue to the permanent benefit and usefulness of the Society as an instrument of charity. On the other hand, a recent alteration has proved beneficial in many respects. Originally the distribution of the income to applicants for relief took place twice a year, in January and July, but relief is now distributed throughout the year, and during 1882-83 your Council have held six meetings for the purpose.

The income account and the balance-sheet for the year 1882 are herewith submitted. They have been audited by Mr. William Hudson and Mr. Lewis Solomon, to whom the thanks of the Council are due.

A very promising feature of the support given to the Society is to be found in the donations presented to it at different times by various bodies not all connected with the profession of architecture, or in relation with architects. The Worshipful Company of Dyers, and the Worshipful Company of Merchant Taylors, together with the Architectural Union Company, and the Incorporated Church Building Society, have been donors. Among the various architectural societies, located in provincial centres, three are donors, namely, those of Birmingham, Liverpool, and Nottingham, while the last named now sends an annual subscription. The Northern Architectural Association also subscribes, and there is every reason to believe that the other non-metropolitan architectural bodies would, if asked, be glad to support the Society, seeing that its funds are open to applicants from all parts of the United Kingdom. In furtherance of this purpose it is proposed to re-establish the relations which existed some years ago between the Society and a certain number of gentlemen who, in different parts of the country, acted as Corresponding Members of Council. In 1859 these gentlemen numbered as many as twelve, and there is every reason to believe that each of the non-metropolitan Societies of Architects would, if appealed to, be happy to nominate a local representative to act on behalf of the Architects' Benevolent Society. Moreover, it is felt that an application to some of the great City Companies, and even to the Corporation of London, might be attended with not unfavourable results. The object to be kept in view is the accumulation of enough capital to secure an annual income sufficient to meet the more pressing demands made upon the Society, and those who have its welfare at heart cannot serve it better than by exerting whatever legitimate influence they possess in obtaining donations and legacies, or at least the promise of legacies. One contribution received only last month has afforded your Council much gratification, and the circumstances connected with it are both interesting and peculiar. An architect, Mr. Robert Palgrave, of Upper Hamilton-terrace, N.W., had caused a codicil to his will to be drawn, by which the sum of 1,000*l.* was bequeathed to this Society, but before the codicil could be executed he died. By his will the residue of the property was left to his two nephews, only one of whom is yet of age, and this gentleman, Mr. Samuel Palgrave Page, has just paid into the Society's account his own moiety of his uncle's intended legacy,—an honourable act which cannot fail to touch the hearts even of those who have never felt that it is more blessed to give than to receive, while it must especially gratify the contributors for whom your Council are now acting, and who will know how to welcome and appreciate the generosity of a young, high-minded man.

THE STREET MEMORIAL.

On Tuesday afternoon his Royal Highness the Prince of Wales was present at a meeting of the committee formed for erecting a suitable memorial to the late Mr. George Edmund Street, R.A., in the Royal Courts of Justice. The Right Hon. A. J. B. Beresford-Hope, the chairman of the committee, presided, and there were also present:—The Right Hon. G. J. Shaw-Lefevre, M.P.; Mr. A. B. Mitford, C.B.; Mr. H. T. Wells, R.A.; Professor Lewis, Mr. David Brandon, Mr. James Brooks, Mr. Joseph Clarke, Mr. George Godwin, Mr. John Marshall, Mr. Reginald Wilberforce, the honorary treasurer, Mr. Alfred Waterhouse, A.R.A., and the hon. secretary, Mr. Arthur Blomfield. The meeting was held at the studio of Mr. H. H. Armstead, R.A., who exhibited a model of the proposed memorial. After inspecting this and a more elaborate, and, in many respects, better design originally prepared, but impracticable with the funds as yet subscribed, the Prince of Wales proposed the following resolution, which was seconded by letter by Sir F. Leighton, P.R.A., and carried unanimously:—"That this meeting approves Mr. Armstead's design for the Street Memorial, and authorises the sub-committee to make arrangements with him for carrying it out for a sum, if possible, of not less than 2,000*l.*, subject to such modifications as may be deemed advisable in the pedestal."

A vote of thanks to his Royal Highness for his presence and valuable assistance having been proposed by Mr. Shaw-Lefevre, and carried *nem. con.*, the proceedings terminated.

The design consists of a life-sized figure of the architect, seated, and at work on a plan, which lies unrolled across his knees. The idea and treatment of this part of the memorial met with general approval, but it was felt that the treatment of the base or pedestal on which the figure rests has suffered from want of means, and that a strong effort should be made to obtain additional and increased subscriptions to enable Mr. Armstead to carry out this portion according to his original conception. To accomplish this a further sum of about 600*l.* will be required.

Manitoba.—The following is taken from the *Winnipeg Weekly Times*:—"The Dakota and Minnesota papers take considerable pride in lauding their climate, and decrying that of the Canadian North-West. But the fact remains, that while we are enjoying fine winter weather, —cold, clear, and healthful,—they are 'doubled up' in one of the most dreadful storms that ever visited them. Their railroads are blocked so badly, indeed, that they can with difficulty procure coal for the locomotives. Here, the C. P. R. is open and in excellent running order from one end of the western division to the other. Of the ninety-two locomotives on this division, only seventeen are in the repair shops. Everywhere the road is being operated satisfactorily, while our cousins to the south can neither travel by rail nor sleigh. In the matter of climate as in the matter of soil, Manitoba leads the American North-West."

HEALTHY HOUSES.

YORK ARCHITECTURAL ASSOCIATION.

AT the last meeting of this Society, held in the saloon of the Victoria Hall, Mr. J. Lawton Webster, Borough Surveyor of Malton, delivered an address on "Healthy Houses: and How to Make Them." There was a good attendance.

Mr. Webster, during the course of an interesting address, said that sweetness and light were the Alpha and Omega of a healthy home. Without sweetness, man lost his health and vigour, became weak and incapacitated for work, and eventually fell a victim to disease and death. Without light he lost his manhood, became deformed both in body and mind, and ultimately he passed from this world without having made any advancement either socially or morally. The speaker said that no punishment could be too severe for a man who would endanger the lives of his fellow creatures through negligence in drainage; and in referring to the over-crowding of dwellings, he said that few people had any conception, except those whose duties brought them within the range of this subject, as to the evils arising from overcrowding. Parents and children were packed into a room as herrings in a box, and he could tell them of one case he knew of where three or four up-grown persons, along with half a dozen children, were housed up in one small room. This was a sad state of things, and the question of better accommodation for the poor, he said, would sooner or later be taken up by the Legislature, and until then sanitarians and such associations as the York Architectural Association must labour on and on and endeavour to wipe out the stain, which was a standing disgrace to the country at large. But all would be of no avail unless the householder himself put his shoulder to the wheel and helped on this great question of the day. The ball had commenced rolling, and was daily increasing in size and importance. Architects, who had hitherto been indifferent and sceptical, were veering round to the side of sanitary progress; they combined more readily with sanitarians in the great work which they had at heart. They had at last been convinced that the fixing of a soil pipe was as important as the tracery of a window, and the laying of a drain as the symmetry of an arch. Public authorities were at last becoming alive to their great responsibilities. In large towns the zymotic death-rate was already decreasing, for according to the Privy Council returns, in twelve large towns alone there was a saving of life from 2½ to 32 per cent.; a reduction of the typhoid fever rate of from 10 to 75 per cent.; and pulmonary complaints 11 to 49 per cent. The press was making its mighty voice heard, and the sanitary wave all over the country was moving slowly but surely. The cry was,—no foul middensteads, no rivers polluted, no overcrowding of courts and dwellings, no atmospheres contaminated by smoke,—but let us breathe air pure and unpolluted, and admit the same into our sewers so that it may dilute the insidious and fatal gases; oxidising the foul matter instead of permitting it to enter into putrefaction, and thus cause disease and death.

SEWERAGE AT SLOUGH.

MR. A. J. SOUTHEY, Medical Officer of Health for the district of the Slough Urban Sanitary Authority, in his annual report, just issued, says that several inspections as to nuisances were made during the year, the details of which were given in his monthly reports to the Authority. The nuisances that occurred were principally caused by defective drains and overflowing cesspools, and were abated by the owners of the several properties by connexions being made with the new system of sewers, the cesspools being emptied, cleaned, and properly filled up with deodorising materials. Mr. Southey now believes that there are few houses in the district which are not properly drained, with efficient ventilation. The new system of drainage, which was commenced in 1878, is the most important work, in a sanitary point of view, that has been carried out in the district for years, and has been for some time in full operation. It is on what is known as the "separate system," new pipe sewers having been laid for the sewage disposal, the old pipe sewer,—laid some twelve years before,—being used for discharging the surface-water drainage. The large tanks into which the sewage flows by its own gravity are situated in the enclosed portion of a field adjoining the railway, about a quarter of a mile from the village of Chalvey. From these tanks the sewage is forced by engines through a 9-in. rising main of iron pipes to suitable land at Dorney, about a mile and a half westward of the pumping-station. The population now connected to the sewers is estimated by Mr. Southey at 5,100, and the normal flow of sewage is estimated by him at 65,000 gallons. The area of the land acquired by the Board at Dorney is 25 acres, one-half of which has been laid out for irrigation, about 8 acres being actually in use. The subsoil of the ground is gravel, and Mr. Southey states that the sewage disappears within a very short time of its application without offence or nuisance of any kind. During the early part of the past year serious complaints were made of the nuisances arising from bad smells from the manholes and ventilators of the new sewers, but these nuisances have disappeared since better ventilation has been secured by connecting the sewers with vertical pipes, which are fixed in the most suitable and convenient places to some of the houses, with Boyle's patent Archimedian screw cowls on the top. In some instances where lamp-posts are safely situated away from windows of dwellings iron ventilating-pipes, about 3 in. in diameter, are connected from the sewers, discharging at the top of some of the lamps. This system of ventilation appears, Mr. Southey says, to have completely removed the cause of former complaints, and the original ventilators,—which were street gratings over the sewers,—have been sealed.

THE ASS'S EARS OF THE PANTHEON.

THE Roman journal *La Stampa* recently announced in jubilant language that the two well-known bell-towers, which were a late addition and a great disfigurement to the Pantheon, were to be pulled down, and that the work of demolition has, in fact, already commenced. It was to these unsightly structures that Bernini applied the appropriate title which has ever since stuck to them of the "Ass's Ears" of the Pantheon. It has long been recognised that these two towers, which were only put up in order to receive a few useless jangling bells, seriously impaired the monumental character and effect of the noble edifice. The work of removal was decided upon by the Italian Minister, Signor Baccelli, whom the Roman paper gratefully describes as "the restorer of the monumental character of the Pantheon."

ROOFING-LINEN.

ACCORDING to the *Deutsche Bauzeitung*, a new covering material called "roofing-linen" has been introduced, which is about half the thickness of good *carton-pierre*, and consists of a layer of coarse linen which lies between two layers of thin roll-paper. The cohesion of the three layers is effected by an asphalte composition of special make, called "roofing-paint." It is stated that this paint should be freely applied to roofs immediately after their completion, and again about six weeks afterwards. This operation should, it would seem, be repeated every few years. The linen costs about 10d. to 11d. per square yard, and the paint 10s. to 11s. per cwt.

Although this new method appears to have points which deserve commendation, a real estimate of its value cannot be formed until the material has been exposed to the test of several years' use.

SANITARY INSPECTION AT COVENTRY.

IN his annual report on the sanitary condition of the city of Coventry Dr. Fenton, the Medical Officer of Health, states "that when the present sanitary inspector (Mr. Booker) was appointed it was found requisite to institute a new method for the more efficient inspection of the district, and to account more satisfactorily for the work done; that work of reorganisation was, with the assistance of the inspector, immediately carried out, and testimony is given by the Medical Officer to the very energetic and able manner in which the inspector has performed his duties since his appointment. Mr. Booker's report shows that a much greater advance has taken place during the past year than for many years previously. The scavenging and cleansing of the city generally, and the removal of nuisances and filth collections, which do so much to pollute the atmosphere and render city life unwholesome, have been carefully attended to. The town drainage and water supply have been largely extended to properties hitherto neglected in this respect, and much good and useful work has been performed, which in the future must bear good fruit in elevating the sanitary condition of the district, and improving the health of the inhabitants."

THE DRAINAGE OF AMSTERDAM.

HERR BAAKS lately reported to the Hanover Architects' Association that at Amsterdam the fœcal substances from the dwellings of 30,000 persons are carried away, in accordance with Liernur's method, by four provisional systems of pipes, and are brought to Zeeburg by barges in order to be made into compost. This arrangement is said to have worked so well that its more extensive application is contemplated. The financial success of the system depends, it is remarked upon the question whether poudrette can be made in the vacuum evaporating appliances at an expense of 5s. 3d. to 6s 6d. per cwt. of the prepared substance.

LIABILITY OF GAS COMPANIES FOR ACCIDENTS.

HORNBY *v.* THE LIVERPOOL UNITED GAS COMPANY (LIMITED).

THIS was a special case stated to raise the question whether a gas company were liable for an accident under the following circumstances:—On the 13th of September, 1881, the company employed workmen to break up a portion of the road in Dale-street, Liverpool, in front of the plaintiff's house, for the purpose of laying gas-pipes. The road was a paved one, and the stones lay on a bed of concrete, and it was necessary, after removing the stones, to break the concrete. In the process of the work a stone or piece of concrete flew with sufficient violence to break a plate-glass window in the plaintiff's house, at a height of over 7 ft. from the level of the road, and a distance of 14 ft. 6 in. from the spot where the men were at work. The case stated that no more force than was necessary was used, that the ordinary method of doing the work was employed, and that no such accident had ever occurred before. The company denied their liability to make good the damage done, alleging that the facts stated did not show any negligence, and that the case was not within Section 6 of the Gasworks Clauses Act, 1847, which empowers a company to open and break up the soil and pavement of streets in the execution of their works, doing as little damage as possible, and paying compensation for any damage which may be done. Mrs. Hornby was insured in the National and Provincial Plate Glass Company, who brought this action in her name. The case came before Mr. Justice Cave and Mr. Justice Day (Queen's Bench Division) on Monday, the 5th inst., and was reported in the *Times*.

Mr. Justice Cave gave judgment for the plaintiff, saying that the act of the company in breaking up the street in question was one which they had no right to do at common law, and that, therefore, if they had done it without statutory powers, and in doing it had caused damage to the plaintiff, she would have had a right of action. This being so, an Act of Parliament was passed incorporating the Gasworks Clauses Act, making it lawful for the gas company to break up streets, but that Act contained a clause enacting that the gas company should make compensation for any damage that they might do in executing the works authorised. It had been held that in such cases where damage resulted from an act done by a company which, but for their statutory powers, would give the plaintiff a cause of action, such an act was within the compensation clause. His lordship said he could find nothing in the statute to allow the gas company to break windows without giving compensation, and upon the construction of the Act gave judgment for the plaintiff. Upon the question of negligence, his lordship said upon the facts stated it appeared to him that there had been negligence, but he did not base his judgment on this ground.

Mr. Justice Day concurred.

St. George's Hall, Liverpool.—The proposal to commence the execution of the bas-reliefs here, for which designs were obtained by competition, is postponed for a time. Why?

ARCHITECTS' BENEVOLENT SOCIETY.

ANNUAL MEETING.

The thirty-third annual meeting of the Society was held on Tuesday evening last, in the rooms of the Royal Institute of British Architects, Conduit-street, Mr. John Whichcord, President of the Society, in the chair.

The adoption of the report of the Council (which we print *in extenso* on p. 363), together with the balance-sheet,* was moved by Mr. Edwin Nash, who spoke of it as being one of the most satisfactory in the history of the Society. Nevertheless, it was necessary for the friends of the Society to make increased efforts to bring its claims before the members of the profession.

Mr. E. N. Clifton having seconded the motion, Mr. H. H. Collins deprecated the employment by the Council of the Society of the services of the officers of the Charity Organisation Society in making inquiries as to the antecedents of applicants for relief.

The Chairman explained that the Council in certain cases felt compelled (having due regard to the careful and scrupulous administration of the funds of the Society) to institute some very delicate investigations, and in such cases the Charity Organisation Society had rendered substantial assistance.

The motion for the adoption of the report and balance-sheet was unanimously adopted.

On the motion of the Chairman, a cordial vote of thanks was given to the Royal Institute of British Architects, for the valuable aid given by it to the Society in the way of office accommodation, printing, &c.

Another resolution, moved by the Chairman, was passed, expressing the Society's thanks to Mr. Palgrave Page for the generous manner in which he had carried out his uncle's intentions with regard to the Society.

Mr. J. P. St. Aubyn moved a vote of thanks to the Council, officers, and auditors for their services to the Society during the past year.

Mr. Wyatt Papworth seconded the motion, which was heartily agreed to.

The Chairman, in expressing his acknowledgments, referred to the future of the Society. Gratifying as had been the increase in its funded property during the last few years, mainly through the efforts of the late Mr. Thomas Henry Wyatt, there was much reason to desire that the amount of money funded should be doubled within the next few years. The funded property now stood at 5,000*l.* odd, but by vigorous and persistent efforts he hoped to see that amount doubled within the next few years, and if, in addition, some serious effort could be made to awaken the interest of the large number (four-fifths) of the members of the Institute who did not subscribe to the funds of the Society, the time would not be very far distant when the Council would have an income of 1,000*l.* a year to devote to the work of the Society. It was intended to bring the matter before the Institute at the business meeting to be held on the 9th of April.

On the motion of Mr. Arthur Cates, seconded by Mr. J. H. Good, a vote of thanks was given to the honorary secretary for his services.

Mr. White briefly replied, acknowledging his indebtedness to the assistance he received from the Hon. Treasurer, Mr. Mair.

In accordance with By-law 43, the following five senior members of Council, having served for three years, retired, viz., Messrs. H. Currey, A. Cates, J. H. Good, H. L. Florence, and E. N. Clifton; and in their stead the following gentlemen were, on the motion of Mr. Wyatt Papworth, seconded by Mr. H. H. Collins, elected, viz., Mr. Ewan Christian, Mr. T. Graham Jackson, Professor T. Hayter Lewis, Mr. E. C. Robins, and Professor T. Roger Smith.

The president, honorary treasurer (Mr. G. J. Mair), and the honorary secretary, were unanimously re-elected, on the motion of Mr. E. N. Clifton, seconded by Mr. Edwin Nash; and Messrs. J. Goldicutt Turner and R. St. A. Roumieu were elected auditors.

* The balance-sheet, duly signed by the Treasurer (Mr. G. J. J. Mair), the Honorary Secretary (Mr. W. H. White), and the auditors (Messrs. Wm. Hudson and Lewis Solomon), accounted for disbursements amounting to 541*l.* 1s. 4d. (including 187*l.* paid to applicants for relief, and 40*l.* paid for two pensions), a balance of 6*l.* 10s. 9d. being carried forward to next account. The receipts amounted in all to 547*l.* 12s. 1d., including balance of 17*l.* 5s. 5d. brought forward from last account, 159*l.* 13s. 8d. dividends on stock, and 370*l.* 3s. for subscriptions (inclusive of 46*l.* 14s. 6d. arrears of subscriptions for 1881)

FROM SOUTH AFRICA.

IN August last year the foundation-stone of a new east wing and native ward to the Kimberley Hospital was laid by M. Cornwall, esq., J.P., Mayor of Kimberley, the architect being the late Mr. L. Ford Hanson, who unfortunately did not live to carry out the work, which was done by Mr. Tom Claridge, who succeeded to his practice.

The new wing for white patients contains wards sufficient for forty beds, with two large convalescent rooms, bath-rooms, operating-rooms, ward-scullery, &c., and the native ward is built for seventy beds, with the same accommodation.

Both buildings are built of red brick throughout, in the cottage style, and were completed and handed over on the 6th of February at a total cost, to the Kimberley Hospital Board, of 11,300*l.*

RIPLEY SCHOOLS COMPETITION.

SIR,—Surely absurdity in the matter of architectural competitions has about reached its climax, as evidenced in enclosed advertisement and conditions. Seeing the advertisement in a local newspaper, I felt somewhat curious to know what peculiarities there were in the case to render a competition desirable for two small schools in two small hamlets adjacent to a small country town, and accordingly applied for the "further particulars." In reply I received the document headed "Conditions." Further inquiry as to the meaning of the various blanks left in the conditions elicited the information that the remuneration to be paid to the successful (?) architect, if any, was a matter for future arrangement. Comment is needless for those who can understand, and would be useless to others, so I refrain; but it will be interesting to know how many and what sort of designs are sent in.

DECLINED WITH THANKS.

Conditions.

The architect shall set out the land and prepare and perfect all necessary plans, tracings, specifications, papers, and documents required in connexion with the erection of the two schools at Hartshay and Waingroves, and the heating and lighting thereof, and, without the assistance of a clerk of the works, will take the entire and strict supervision of the proposed works until they are in all respects completed and fit for use or occupation, being paid for his professional advice, services, and labour in connexion with the said works, including all travelling expenses in relation thereto, the sum of , that is to say, the sum of upon the signing of a formal contract, and the further sum of , at the rate of 2½ per cent. in proportion to the amount from time to time certified by the architect as being due to the contractor, and the balance of the sum of when the duties of the architect in connexion with the works are fully completed and ended to the satisfaction of the Board; the selected original plans, drawings, and specifications in connexion with the buildings to be the property and to be handed over to the Board on the completion of the works.

COMPETITION DESIGNS FOR IMPROVEMENTS IN THE MADEIRA-ROAD, BRIGHTON.

THE premiums have been awarded as follows:

No. 1. "Sea," 200*l.*, Mr. John Johnson, 9, Queen Victoria-street, London.

No. 2. Triangle in a Circle, 100*l.*, Mr. E. E. Scott, 46a, Regency-square, Brighton.

No. 3. "Tout Ensemble," 50*l.*, Messrs. T. Lainson & Son, 167, North-street, Brighton.

The area of the proposed improvements lies between the Chain Pier (on the west) and the concrete groyne opposite Paston-place (on the east). The author of the first premiated design suggests that for the greater portion of that distance the present promenade, grass plots, and shrubs should be repeated, "as the existing arrangements [to quote his own words] are too satisfactory to be destroyed." He proposes to give a roadway 40 ft. wide, and a 15-ft. footway, with a parapet next to a sloping bank, and openings in the palisading at intervals to break the length of line. Sheltered seats would line the north side of the lawns, with a summer-house at each end of the promenade. At the foot of the grass slope would be a terrace, 15 ft. wide, and 5 ft. above high-water mark, with another terrace below, situate 1 ft. 6 in. or 2 ft. above the high-water level; a series of broad steps, leading from one terrace to the other, and down to the beach; the steps themselves would give seating accommodation whilst the children of visitors played upon the sands at low tide. Conveniences would be provided at the concrete groyne, as well as at the west end of the promenade. The baths form,—as indeed they do in all the designs,—the prominent feature of the scheme; whereas (according to the *Brighton Herald*) the Council, in their discussion upon the proposed improvements, made the baths subordinate to the promenade. The plunge baths are proposed to be tidal for both men and women, with a water area of 200 ft. by 50 ft. for the former, and 100 ft. by 50 ft. for the latter, together with fifty-eight private bath-rooms for men and thirty for women, with waiting-rooms between each section. The baths would be of a pleasing, if not very ornate, elevation, with a flat roof for the purpose of a promenade; and a light bridge would give access to the Marine-parade opposite Atlingworth-street. Adjoining the baths would be a restaurant and shops for the sale of newspapers and light literature. The estimated cost of carrying out this scheme is put at from 40,000*l.* to 53,000*l.*, according to the portion of works carried out, the baths alone requiring 30,000*l.* of the amount.

COMPETITIONS.

Kidderminster.—In a competition, limited to eight, for alterations and enlargement of the new Meeting-house and School, the designs submitted by Messrs. Payne & Talbot, architects, of Birmingham, have been selected by the building committee. The work proposed to be carried out consists of extending the body of the chapel, to give increased number of sittings on the floor and in the galleries, providing extra vestries, and erecting a new front to the building, together with other minor improvements. The schools are to be enlarged, to give better accommodation.

SEXEY'S COUNTY SCHOOL, SOMERSET.

IN November of last year the Visitors of Hugh Sexey's Hospital at Bruton issued invitations and instructions to a limited number of architects to prepare plans in competition for their proposed school to be built near Shepton Mallet. All the architects invited submitted plans, their names being Messrs. J. Giles & Gough, Messrs. Carpenter & Ingelow, and Messrs. Paull & Bonella, of London, and Mr. G. J. Skipper, of Norwich.

The Visitors forming the Building Committee had two or three meetings to examine the designs, and on the 24th of February a general meeting of Visitors was held, when, after prolonged discussion, Mr. G. J. Skipper was selected architect, his alternative set of designs being adopted for execution. Each of the unsuccessful competitors received 20*l.* towards their expenses. About 9,000*l.* is proposed to be expended on the buildings.

BUILDING PATENT RECORD.*

APPLICATIONS FOR LETTERS PATENT.

948. F. Hammond, London. Chimney-pots, &c. Feb. 23, 1883.

1,064. W. Brierley, Halifax. Apparatus for heating air for warming buildings, &c. (Com. by R. Tungler, Goerlitz, Prussia.) Feb. 27, 1883.

1,099. G. Simpson, Edinburgh. Calcining cement, &c. March 1, 1883.

1,100. C. A. Wheeler, Swindon. Weather-bar for the exclusion of rain at the foot of doors and casements, &c. March 1, 1883.

1,106. G. Bürklein, Munich. Combination furniture. March 1, 1883.

1,131. J. B. Adams and J. Telford, Liverpool. Apparatus for balancing, securing, &c., sliding window-sashes. March 2, 1883.

1,153. A. Varah, Sheffield. Attaching door-knobs to their spindles. March 3, 1883.

1,154. R. E. Cox, London. Smokeless stoves, &c. March 3, 1883.

1,174. J. Rowley, London. Paving roads and ways with wood, stone, &c. March 5, 1883.

1,191. W. G. Hudson, Manchester. Formation of bricks for chimney and other flues. March 6, 1883.

1,213. T. Bradford, Manchester. Fittings for baths. March 7, 1883.

1,216. G. Napier, Manchester. Construction of walls, partitions, and ceilings. March 7, 1883.

1,234. J. M. Boekbinder, London. Treating

* Compiled by Hart & Co., Patent Agents, 186, Fleet-street.

plaster of Paris for use in building, &c. March 7, 1883.

1,239. S. Low, London. Down-cast and water-tight ventilator. March 7, 1883.

NOTICES TO PROCEED

have been given by the following applicants on the dates named:—

Feb. 27, 1883.

5,041. E. Green, Halifax. Sewage-trap. Oct. 28, 1882.

5,178. F. F. Atkinson, New York, U.S.A. Folding tables. Oct. 31, 1882.

220. G. Davis, Aberystwith; W. Jones, Llannon; and R. Girdwood, Edinburgh. Chimney cowls and ventilators. Jan. 15, 1883.

445. P. Born, London. Folding lattice shutter. Jan. 27, 1883.

March 2, 1883.

4,600. W. R. Lake, London. Suspension of pictures, &c. (Com. by H. R. Heyl, Philadelphia, U.S.A.) Sept. 27, 1882.

5,239. A. J. Boult, London. Furnaces, stoves, and ranges, &c. (Com. by W. P. A. Heiser, Berlin.) Nov. 2, 1882.

March 6, 1883.

5,259. A. E. Crisp, London. Window-fasteners. Nov. 4, 1882.

5,266. R. Chapman, Patricroft, and J. Hibbert, Manchester. Apparatus for closing doors and windows. Nov. 4, 1882.

637. W. White, London. Rendering existing walls damp-proof, and tiles therefor. Feb. 6, 1883.

705. W. Russell, Pendleton. Kitchen and cooking ranges and stoves. Feb. 9, 1883.

March 9, 1883.

5,250. W. D. Scott-Moncrieff and W. Dodds, London. Valve apparatus for supplying baths with water. Nov. 3, 1882.

5,283. W. Kennedy, Glasgow. Translucent plates as substitutes for glass in roof-lights, &c. Nov. 6, 1882.

5,310. J. G. White, Bowness. Cooking-ranges, &c. Nov. 7, 1882.

5,383. J. J. Tylor, London. Apparatus for the water supply of water-closets, baths, and urinals, &c. Nov. 11, 1882.

ABRIDGMENTS OF SPECIFICATIONS.

Published during the Week ending March 3, 1883.

3,198. T. N. Sully, Wellington. Walls of houses and bricks for the same. July 6, 1882. Price 6d.

The bricks have grooves made through them, so that when placed in position in the wall currents of air can pass through all the walls.

3,229. N. B. G. Crowe and W. James, Chester. Cisterns of flushing apparatus for water-closets, &c. July 7, 1882. Price 6d.

The [illegible] is filled with the water discharged by a syphon periodically. The water is admitted by a ball-valve adjusted to fill the cistern in a given time. The syphons are formed in the sides of the cistern.

3,340. A. Drummond, Edinburgh. Appliances for securing glass to astragals and sash-bars. July 14, 1882. Price 6d.

The astragal is formed with a central ridge, with a groove on each side. A strip of metal is fitted over this central ridge, and the edges are turned back, the edges of glass in position resting on the edges of the grooves.

3,344. W. S. Laycock, Sheffield. Self-acting window blind apparatus. July 14, 1882. Price 6d.

Inside the roller is a coiled spring, which is wound up by drawing the blind down, and by bar B and [illegible] wheels and catches are fitted to retain the blind in the position in which it is placed, until the weight attached to the bottom of the blind is lifted, when the coiled spring rolls it up again.

3,358. A. W. White and D. D. Evans, London. Bell-traps for drains. July 14, 1882. Price 2d.

This bell-trap can be lifted to allow a large quantity of liquid to pass over when required, but it afterwards automatically closes itself again.

3,444. E. L. Ransome, San Francisco, U.S.A. Artificial stone or concrete pavement, &c. July 20, 1882. Price 6d.

To cover over basement-cellars, &c., parallel beams of iron are used, the spaces between which are filled with the artificial stone or concrete.

Published during the week ending March 10, 1883.

3,324. C. Portway, Halstead. Gas stoves for heating, &c. July 13, 1882. Price 8d.

The gas is mixed with air before combustion, and over the flame are perforated blocks of asbestos, whence the heat passes through a special chamber of fire-brick formed round the stoves.

3,353. G. Dalton, Leeds. Brickmaking machinery. July 14, 1882. Price 6d.

Toggle levers are used to operate the pressers or stamps.

3,361. T. Hughes, Market Drayton. Metallic glazing bar and fittings, for glazing without putty or paint. July 15, 1882. Price 6d.

Metal tubes are used which have a slit cut along their entire length. Into these tubes are placed bars to be glazed and wedges and other wedge-strips of metal. The glass is placed in the slits on each side of this compound bar, and wedges are used to secure it in the same.

3,371. H. A. Williams, Lincoln. Pulleys for wind-blind rollers. July 15, 1882. Price 2d.

The pulley is mounted on a pin screwed into the bracket, and on the pin is a collar with a stud fitting into a slot on the pulley. (*Pro. Pro.*)

3,459. A. Dix and T. H. Dix, Rock Ferry. Apparatus for checking cords of blinds, &c. July 20, 1882. Price 6d.

A cam is so mounted in the bracket that when the cord is released the cam will jam it, but when the cord is pulled the cam falls free.

3,487. E. Edwards, London. Apparatus for maintaining a constant draught in chimneys, &c. (Com. by A. Marques, Bordeaux). July 21, 1882. Price 6d.

A metal pipe is fitted to the top of the chimney, which has an enlarged conical base. Inside is arranged another smaller and shorter pipe, and the air enters apertures round the base of the larger pipe and passes up the annular space between the two pipes, creating a draught up the smaller pipe through which the smoke, &c., passes.

LIVING IN "FLATS."

SIR,—Absence from town has prevented my seeing earlier your excellent article on "Flats," which appeared on February 3rd (p. 135, *ante*). I consider you have there touched on a matter which, before long, must be seriously considered, as a remedy for the continuous expansion of London, and for the immense distances which one has now to traverse to visit one's friends and relations. Having lived much on the Continent, I can speak from experience of the advantages of the Continental system of town dwellings. I know that when living on a fourth-floor flat, I have had considerably less running up and down stairs during the day than when resident in an ordinary London house, with a bed-room on the second or the third floor. Look at all the fine new buildings in Oxford-street; is there an upper house in one of them fit for residential purposes? I know a block of six or seven, each having its two or three floors, with one room and a half on each, all quite unfitted for residence of tenants capable of paying a remunerative rent; yet one good *porte cochère* and grand staircase for the whole would not have taken up as much room as all the little inconvenient staircases. Many of such "upper parts" are, moreover, not required as offices, and one sees them standing empty year after year, whilst many like myself, who do not want a whole house, would be glad to find moderate-sized flats *properly and conveniently arranged*, and near to the main thoroughfares. Another idiosyncracy is produced by an obstinate adhesion to the old sash or *guillotine* arrangement of large windows. For ordinary-sized windows nothing could be better, but for huge and heavy sheets of plate-glass or windows opening on to balconies and terraces, we should surely learn better.

H. H. S.

"AN ARCHITECT ON LAWYERS."

SIR,—The question of the superiority of legal as against skilled arbitrators in the building and engineering trades is an old one, but yet one on which much may yet be fairly said.

I believe the only argument holding any ground in favour of legal arbitrators is, that a want of strictly legal knowledge is liable to render the whole work of an arbitration abortive in consequence of some slight slip on the part of the arbitrator on a question of law. This, however, is found seldom to happen in practice, and the cases of awards being set aside on such grounds bear a very small proportion to the number of arbitrations actually held by skilled referees; they bear, indeed, only a small proportion in comparison with the decisions set aside when made by lawyers, official referees, and judges.

I quite agree with Professor Kerr that a legal arbitrator is often preferred by the party who has, or who fears he has, the weaker case, in the hope that in the mystification of the legal mind on technical points, a chance award may be snatched.

In a purely technical instance some time ago, in which I was engaged, when the case was called, and counsel had partly opened, Mr. Baron Pollock declined to try the case and suggested arbitration. Plaintiff was willing, but the defendant objected, and as the judge would not try it there was no alternative but for him to refer it to an official reference.

Here, then, we had a purely technical case referred to the judgment of a learned, and, no doubt, highly respectable barrister, but surely very much inferior in learning and position to a judge of long experience on the bench who had shrunk from the responsibility, although assisted by a jury who might have contained two or three skilled men competent to form an opinion.

At the same time, I gratefully acknowledge that in many instances where I have acted as arbitrator, I have found the services of counsel of most material assistance; and I think, unless each party be legally represented, fair play has not such a good chance of occurring, because it is not every referee who can drag the case out of reluctant witnesses and get a full and impartial view of it before his mind unless it be properly and fully brought out by the counsel on both sides.

Whatever, therefore, may be the advantages of a legal referee in legal matters, or in causes involving legal points, it is certain that in all matters involving technicality and skill, either in engineering, building, or compensation cases, the architect or engineer is the proper judge, and the one most likely, by clearly understanding every detail, to arrive at a right and just award.

J. P. SPENCER.

THE SCHOOL BOARD AND ITS ARCHITECTS.

SIR,—A lively discussion arose last Thursday on the proposal brought forward by Sir E. Currie to enlarge the offices and stores of the Board. The scheme, of which this is the first item brought under discussion, is rather a comprehensive one; and a member of the Board stated (and this remains uncontradicted) that, if carried out in its entirety, the whole cost of the School Board buildings on the Embankment will have exceeded 130,000*l.*, including cost of site. This debate (which, like all our more interesting debates, is unnoticed in the columns of the daily papers) stands adjourned until a previous question, of storage of the materials used in the schools, has been decided by a committee. My object in writing is to endeavour to gain light on a somewhat obscure point. The existing structure was put up about eight years ago under the direction of Mr. Bodley. Considering that the work of the Board has largely increased of late, he is not to be blamed for the narrowness of the accommodation provided, and very few defects in the building have been discovered. My own impression is that he ought to be invited to enlarge the buildings, and that to call in another architect for this purpose is an unusual and not very complimentary step; but on this your professional readers will form a better opinion than I can.

There is no thought of economy in the proposed employment of the standing architect to enlarge this façade, with the accompanying structures in the rear, inasmuch as it is proposed to pay him the usual architect's commission, on the assumption that this extra work is not covered by his salary. Here, again, is a point on which any non-professional person has a difficulty in deciding.

A NEW MEMBER OF THE BOARD.

GLOUCESTER CATHEDRAL.

SIR,—A [illegible] is to be held in the Chapter House of Gloucester Cathedral, on Thursday, the 22nd inst., the object of which is to form a collection of [illegible] of this city. If any of your readers have architectural or other drawings of the cathedral or portions of it, more particularly having special reference to its past history, we are requested by the executive committee to beg that they will kindly lend such for exhibition; also any objects of interest, other than drawings, having direct or indirect connexion with the cathedral or its history, will be gladly received. Every care will be taken of all exhibits, and they will be duly returned at the close of the exhibition, which will probably remain open a day or two after the *conversazione*. All loans for exhibition to be consigned to the care of the Rev. and Rev. Canon Le Fleming, Depôt of the S.P.C.K., College-court, Gloucester.

HENRY MEDLAND, } Members of the Sub-
CAPEL N. THIFF, } Committee.

Spitalfields Market Roof. — The first premium was awarded to Messrs. Oswald Gardner & Co. for their design for the Spitalfields Market roof competition, advertised in our issue of February 17th. There were eighteen competitors.

CORNER BUILDINGS AND THE LINE OF FRONT.

BARLOW, ELSDON, AND THE KENSINGTON VESTRY.

SIR,—Referring to an article in your paper upon "Corner Buildings and the Line of Front" (vol. xli., p. 724), I would direct your attention to a judgment pronounced last week by Vice-Chancellor Bacon, which fully bears out the argument which you so clearly set forth in the above article, and as it is upon a subject of such great importance both to builders and landowners, may I be allowed to suggest that you publish it in your widespread paper?

B.

*** The judgment is rather long, but the subject, as our correspondent says, is so important to a large number of our readers, that we will see what can be done with it in our next.

A DIFFERENCE.

SIR,—I observe in your journal of January 6th a notice of the new Church of S. Michael at Queenstown, which was also mentioned in your paper in November, 1880. It was then stated that the estimated cost was 7,000*l*. Now it is said to be 13,000*l*.

I also took part in the competition in which these plans were sent in, my instructions being that the cost of the proposed church was not to exceed 3,000*l*., and that it should be built on the same site as the present church by being built round that building. This, of course, involved a wide single-span roof, and the stipulated amount only admitted of a very plain brick building.

ARCHITECT.

CORNWALL WESLEYAN MIDDLE-CLASS SCHOOL ARBITRATION.

THE dispute between the directors of the Wesleyan Middle-Class School at Truro and the contractors, Messrs. John Julian & Sons, has been settled. Messrs. Julian claimed 1,892*l*. 9s. 10d., "balance of account rendered." Subsequently, however, they considerably added to that amount, on account of alleged serious delays caused by the architect neglecting to supply details, &c. For this delay the contractors charged 100*l*., raising their claim to 1,992*l*. They subsequently made an additional charge of 500*l*. for having been put to serious inconvenience pecuniarily and otherwise, and further added to their claim 18*l*., and for charges consequent on this account of 500*l*., making their total claim 2,560*l*. 14s. 10d. This claim was regarded by the directors as in advance of what they considered fair and reasonable and, they altogether refused to admit it. Consequently the matter was referred to arbitration. Messrs. Hodge, Hockin, & Marrack were solicitors for Messrs. Julian, Mr. T. R. Olver, of Falmouth, being their referee; Mr. F. Hearle Cock, of Truro, was solicitor for the directors of the school, with Mr. Trounson, of Penzance, their referee. Mr. Gordon M. Hills, of London, was chosen umpire, who has awarded 1,366*l*. to Messrs. Julian as against the claim of 2,560*l*., the arbitrator having thus struck off 1,194*l*. The directors will have to pay all the legal and other costs of the reference, amounting to 357*l*. 0s. 6d. The *Cornish Telegraph* says:—"Is it not hard that the Wesleyan Middle-Class School should be saddled with the whole of the very heavy costs of the arbitration on the claim of the contractors for extras? Julian & Sons claimed nearly 2,600*l*.,—and have been awarded just over one-half of it. Surely the fair thing would have been to have divided the costs. The arbitrator's fee alone was 200*l*."

VARIORUM.

THE current number of the *Nineteenth Century* includes several papers which will interest many of our readers.——Lady Lindsay, of Balcarres, contributes "a fragment" to *Temple Bar*,—"Miss Dairsie's Diary,"—which is perfect so far as it goes, not a sentence too much or too little. It has the usual touch of sadness observable in Lady Lindsay's previous contributions, and is very charming. It will not soon be forgotten by those who read it.——Mr. S. C. Hall wishes his friends to know that the work he has been several years preparing, "Retrospect of a Long Life, from 1815 to 1883," will be published in two volumes, on the 20th March, by Messrs. Bentley & Son, 8, New Burlington-street, W. It will consist of recollections of "things he has seen and people he has known,"—authors, artists, actors, and the 'giants in both Houses,"—during the earlier half of the century; a review of the art history and that of art manufactures, as they were in 1840, and as they are in 1883; with many other matters of general interest. The volumes will contain a memory of Mrs. S. C. Hall and her works.

Miscellanea.

The Lambeth Clearance Scheme.—Mr. D. Cubitt Nichols, appointed by the Home Secretary, opened an inquiry on Saturday, at the Lambeth Vestry, Kennington-road, into the correctness of the official representation made to the Metropolitan Board of Works by the medical officer of health for the parish of Lambeth as to the Windmill-row, New-cut, Lambeth, Scheme, 1883, and whether the area embraced in the scheme was an unhealthy area, and the scheme was sufficient for its improvement. Mr. Meadows White, Q.C., on behalf of the Metropolitan Board of Works, stated that there were serious defects in the houses proposed to be demolished. They were very damp and unwholesome, and ought to be pulled down. The locality was a very crowded one, and the death-rate was 62 per 1,000, as compared with 23 for the whole district of 15,000 inhabitants, and zymotic, pulmonary, tubercular, and other diseases were very prevalent. With regard to the scheme, they proposed to erect buildings of a superficial area of 25,380 ft., with open yards, streets, and so forth, of 16,290 ft., making in all 41,670 ft., so that there would be an additional 10,000 ft. for ventilating purposes. The estimate for the present scheme was a gross cost of 20,400*l*., with an estimate of 3,000*l*. for roads; but there would be 2,000*l*. recouped, which would make a total net cost for the scheme of 21,400*l*. Evidence was given in support of the scheme, and the inquiry was adjourned.

St. George's Hall.—A new first piece by Mr. Gilbert à Beckett, entitled "A Mountain Heiress," gives an opportunity for some more than usually good acting by Mr. Corney Grain, Miss Fanny Holland, and Mr. Alfred Reed. The music, which is bright and pretty, is helped by Miss Wardroper and Mr. North Home. Mr. Grain's musical sketch, "*En Route*," one of the best he has done, is about to give place to a novelty, "Our Mess," promised for Easter Monday. The variety which this gentleman succeeds in producing in these capital sketches is remarkable.

The Southesk Viaduct, Arbroath and Montrose Railway.—On the 1st inst., the Government Inspector, Colonel Yolland, accompanied by Mr. Galbraith, consulting engineer, London; Mr. Blyth, C.E., of the North British Railway; Mr. Arrol, contractor, and others, inspected the viaduct over the Southesk River, Montrose, on the Arbroath and Montrose Railway. The seventeen arches of the bridge were severely tested by three of the heaviest engines and tenders belonging to the Company, weighing, in the aggregate, between 230 and 235 tons.

St. Peter's Church, Preston. — A handsome polished brass eagle lectern has just been executed for the above, by Messrs. Jones & Willis, of Birmingham and London. The lectern is of the twelfth-century design. The base is square on plan, and filled in with pierced and engraved panels. The shaft is circular, with chased knop of Early English foliage. The top of the pillar takes the form of a ball with foliage underneath, from which the bird stands out.

St. Peter's Church, Streatham.—At a committee meeting held at St. Peter's Vicarage, Streatham, plans for the completion and enlargement of the above-named church were submitted by Mr. George H. Fellowes Prynne, architect. The plans were formally approved, being in accordance with the general scheme submitted previously, and resolutions were passed that the west end should be carried out as soon as possible according to the design.

Five Memorial Stones were laid on the 1st of March at the New Radnor-street Schools and Mission Hall by Dr. Wood, Mayor of Southport, Alderman McArthur, Mr. J. W. Gabriel, Mrs. Horace Marshall, and Mr. Deputy Brass (the builder). The building, which will cost 6,600*l*., stands upon the land belonging to the French Protestant Hospital, and Messrs. Roumieu & Aitchison are the architects.

Local Board Appointment.—Mr. J. W. Dallimore, of Brighton, has been elected to the vacant post of Surveyor to the Local Board of Health at Littlehampton. There were seventy-six candidates.

Proposed Works in Paris.—The Prefect of the Seine has submitted to the Paris Municipality the proposal of a loan of 220,000 fr. to be issued in the course of five years, bearing interest at five per cent., and redeemable in seventy years. Of the proposed loan 90,000,000 fr. would be devoted to sewerage improvements, 10,000,000 fr. to hospital extension, 25,000,000 fr. to school buildings, 37,000,000 fr. to roads, and so on. The proposal will probably be discussed after Easter.

Medals.—Mr. W. J. Taylor, of Red Lion-street, has just published a medal of the late Lord Londesborough, as first President of the British Archæological Association; and also one of Mr. Roach Smith, engraved some years since, but never before published. The reverse of this has a good and very effective view of the Roman walls of Dax (d'Aquis), in the south-west of France.

Chester Cathedral.—The north wall of the nave of Chester Cathedral, which was not included in the renovation, is shortly to be enriched with mosaics, the gift of Mrs. Platt, widow of the late Mr. Platt, of Stalybridge. It was at Mr. Platt's expense that the cathedral choir-roof was decorated.

New Station at Lucerne. According to a Vienna journal, it is in contemplation to erect at Lucerne a station on an imposing scale in connexion with the Gothard Railway. It is to be on the quay facing the lake, and in the vicinity of the Kurhaus, which was opened last summer.

TENDERS.

For Jews' Free School, Bell-lane, Spitalfields. Messrs. N. S. Joseph & Pearson, architects. Quantities by Mr. S. B. Wilson:—

W. Hearn	£20,125 0 0
E. Conder	17,980 0 0
T. Rider & Son	17,946 0 0
G. S. Pritchard	17,379 0 0
Killby & Gayford	17,271 0 0
Trollope & Sons	17,240 0 0
Hall, Beddall, & Co.	17,140 0 0
Mowlem, Burt, & Co.	17,126 0 0
Scrivener & Co.	17,092 0 0
Bangs & Co.	16,979 0 0
Adamson & Sons	16,769 0 0
B. E. Nightingale	16,733 0 0
G. S. S. Williams & Son	16,370 0 0
Kirk & Randall	16,292 0 0
Patrick & Son	16,280 0 0
Merritt & Ashby	16,255 0 0
W. Brass	16,221 0 0
W. Graver	15,984 0 0
J. T. Chappell	15,880 0 0
Colls & Son	15,775 0 0
Patman & Fotheringham	15,773 0 0
Ashby Bros.	15,375 0 0

For making roads and sewers on the Beddington Park Estate, Mitcham, Surrey, for the House Improvement and Supply Association (Limited). Mr. A. Bedborough, architect. Quantities supplied by Messrs. Curtis & Sons:—

	Main Estimate.
Botterill	£6,049 0 0
J. Trueman	5,280 0 0
G. Smith	5,226 17 1
W. Harris	4,594 0 0
J. Pizzey	4,500 0 0
J. Bell	4,460 0 0
W. Langridge	4,150 0 0
J. Jackson	4,040 0 0
Bottoms Bros.	3,985 0 0
W. Nicholls	3,955 0 0
Ford & Everett	3,940 0 0
Woodham & Fry	3,735 0 0
W. Williams	3,722 0 0
W. Jenner	3,560 16 0

For Granite Kerbing.

	Aberdeen.	Cornish.	Norwegian.
Botterill	£1,795 0	£1,166 0	£1,142 0
J. Trueman	1,324 0	1,216 0	1,270 0
J. Jackson	1,305 0	1,089 0	1,142 0
J. Pizzey	1,300 0	1,050 0	1,050 0
Ford & Everett	1,280 0	1,000 0	999 0
W. Harris	1,213 13	1,103 17/6	1,158 5
W. Nicholls	1,195 0	955 0	1,009 0
W. Jenner	1,181 14 6	—	—
J. Bell	1,152 0	1,100 0	1,131 0
G. Smith	1,133 9/6	946 8/6	887 13
W. Langridge	1,133 0	956 0	1,106 0
Woodham & Fry	1,124 0	1,015 0	1,069 0
Bottoms Bros.	1,069 0	1,015 0	961 0
W. Williams	954 0	895 0	989 0

For repairs and decorations to Nos. 10, 11, and 12, Harcourt-buildings, Kensington, for the National Freehold Land Society. Mr. W. Lee, architect.—
W. Shurmur (accepted).

For village residence, Forest Hill. Mr. H. D. Appleton, architect. Quantities by Mr. F. F. W. Miller:—

Boddy	£1,918 0 0
L. & R. Roberts	1,847 0 0
Howard & Dorrell	1,840 0 0
Clarke & Bracey	1,826 0 0
Smith	1,739 0 0
W. Shurmur	1,719 0 0

For alterations and new shop-front at 114, Shoreditch High-street, for Messrs. Matthew Bros.:—
Parrish & Hawker (accepted).

For house for General Cobbe, The Orchard, Bedford Park. Mr. J. Donkin, architect:—
J. J. Bryant (accepted) £1,410 0 0

For roads and sewers, for the Chelmsford Land Company (Limited), Dovercourt, Essex. Messrs. Whitmore & Reeves, surveyors, Chelmsford and London :—

	No. 1 scheme.	No. 2 scheme.
G. Impey, Leytonstone	£3,174 13 10	£950 11 4
F. J. Titcombe, Merton and Mortlake	2,950 0 0	3,250 0 0
J. A. B. Marshall, Brighton	2,885 11 6	3,629 5 0
J. Jackson, West Ham	2,700 0 0	3,100 0 0
T. Huntley, Loughboro' Junction	2,560 0 0	3,353 1 3
F. Johnson, Walthamstow	2,362 19 0	2,525 9 0
F. W. Etheridge, Deptford	2,320 0 0	800 0 0
J. B. & F. Bennett, Ipswich	2,208 0 0	2,563 0 0
G. F. Ward, Fulham	2,204 5 2	3,100 15 10
J. Bell, Wood Green	2,173 0 0	2,864 0 0
R. Nicholson, Southend-on-Sea	2,130 16 5	2,871 5 0
J. Hoare & Son, Blackfriars-road (amended)	2,122 0 0	2,999 0 0
Surveyors' estimate	2,078 13 1	2,378 10 9
T. A. Dunmore, Horsey	2,068 0 0	2,633 0 0
H. Wilson, Battersea	2,065 0 0	2,450 0 0
T. Spurgeon, Forest Gate	2,050 0 0	2,370 0 0
W. Carter, Anerley (amended)	2,043 4 8	2,599 6 4
W. Nicholls, Wood Green	2,019 17 0	2,293 3 6
T. Adams, Hackney	2,000 0 0	2,550 0 0
W. A. Harris, Stratford	1,999 0 0	2,297 0 0
W. Wood, Chelmsford	1,993 0 0	2,416 0 0
T. Moran, Harwich	1,986 11 6	2,460 17 0
Betts & Co., Clacton-on-Sea	1,956 0 0	970 0 0
N. Saunders & Sons, Dedham	1,944 0 0	2,460 0 0
J. C. Trueman, South Hackney	1,900 0 0	2,430 0 0
W. Armstrong, Chiswick	1,705 8 2	2,007 8 2
J. Cardus, Acton (accepted)	1,695 0 0	2,149 0 0
J. Hoare & Son, Blackfriars-road (tender made up incorrectly)	1,235 0 0	2,112 0 0
W. Carter, Anerley (tender made up incorrectly)	1,142 2 4	1,455 4 0

For alterations at the City Scotch Stores, for Messrs. Cooper & Trew. Messrs. Bird & Walters, architects :—

Williams & Son	£295 0 0
Spencer & Co.	230 0 0
Auley	205 0 0
Jackson & Todd (accepted)	290 0 0

For stone work to terraces, alcoves, parapets, &c., for the Matlock Bath, Pavilion, and Gardens Company (Limited). Mr. Jno. Nuttall, architect, Matlock Bridge. Quantities by Mr. F. S. Smith :—

	No. 2.	No. 3.
W. B. Askew, Matlock	£28 6 9	£120 8 3
A. Bridge, Matlock	29 9 1	120 1 10
Drabble, Matlock	24 3 0	101 9 7½
G. Boden, Matlock (accepted)	19 19 0	93 5 6

For the erection of stables to Crown Hotel, Matlock Bridge, for Mr. W. H. Hutchinson. Mr. Jno. Nuttall, architect. Quantities by Mr. F. S. Smith :—

W. Statham, Matlock (accepted)	£577 0 0

For repairs and alterations to Nos. 3 and 4, Vere-street, Clare Market, for Mr. Crouch. Mr. A. Ashbridge architect :—

Riley Bros.	£177 10 0
Bamford	163 10 0
E. Waller (accepted)	142 12 0

For the erection of villa residence at the junction of Brook and Conduit-streets, Gloucester, for Mr. B. Rhodes. Mr. Joseph G. Denton, architect :—

W. Williams, Gloucester	£490 3 0

For alterations and additions at 10, Well-court, Queen-street. Mr. F. Chambers, architect :—

W. Read	£1,030 0 0
G. Shaw	995 0 0
Wall Bros.	843 0 0
W. Shurmur	823 0 0
Andrews	455 10 4

For bonded vaults, &c., Maidstone, for Mr. Thomas Grant. Quantities supplied by Messrs. Ruck, Son, & Smith, architects :—

J. G. Naylar & Son, Rochester	£1,400 0 0
Cox Bros., Maidstone	1,384 0 0
Thomas Simmonds, Maidstone	1,359 0 0
Wallis & Clements, Maidstone	1,332 0 0
George Gray, Maidstone	1,287 0 0
Richard Avard, Maidstone (accepted)	1,283 0 0

For erecting stables and coach-house at rear of 453, Bethnal Green-road, for Mr. J. Smith. Mr. Joseph Harris, architect and surveyor :—

Parriah & Hawker (accepted).

For the erection of two houses at Torrington Park, for Mr. E. Homan. Messrs. Ernest George & Peto, architects, No. 11, Argyll-street. Quantities by Messrs. Stoner & Sons :—

Stafford	£3,883 0 0
Perkins	3,756 0 0
Manly	3,678 0 0
Simpson & Son	3,649 0 0
Wall Bros.	3,630 0 0
Eyears & Sampson	3,610 0 0
Ashby Bros.	3,537 0 0
Cooper	3,474 0 0
Ploughman	3,336 0 0
Kendal	3,240 0 0

For alterations and additions to "The Lodge," Streatham, for Mr. C. A. Payne. Messrs. Ernest George & Peto, architects. Quantities by Messrs. Stoner & Sons :—

Boyer	£1,249 0 0
Bugg	1,210 0 0
Nash	1,195 0 0
Perkins	1,194 0 0
Eyears & Sampson	1,148 0 0
Mason	1,147 0 0

For new Church Institute, Market-street, Ilkeston. Mr. Henry James Kilford, architect :—

Shaw	£1,110 0 0
Warne (accepted)	1,000 0 0

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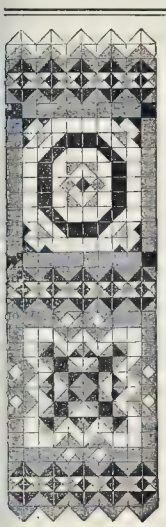
VOL. XLIV. No. 2094. SATURDAY, MARCH 24, 1883

ILLUSTRATIONS.

Principal Entrance of the Church of Santa Teresa, Avila, Spain (Double-page Engraving) 380
The Birmingham Coffee-house Company's Shops and Offices.—Mr. Wm. Doubleday, Architect 382
Competitive Design for St. Pancras Workhouse Extension (Double-page Engraving).—Submitted by Messrs. J. Saville & Son, Architects... 384
Dr. Stafford's Residence, Windlesham, Surrey.—Messrs. P. J. Byrne & J. G. Wilmot, Architects 387

CONTENTS.

The Arsenal of Philo, according to the Original Specification .. 389
"Impressionism" in Art 390
The Twin Arts 391
Lady Art-ists' Exhibitions, Paris and London 392
Mid Hommersmith Church 393
The Line of Frontage and the Demolition of Houses 394
"On Theatres" 394
Patents and the New Government Bill 397
Schloss Neu Schwanenstein 397
St. Mark's, Venice 398
The Swiss National Exhibition at Zurich 398
Principal Entrance of the Church of Santa Teresa, Avila, Spain 398
St. Pancras Workhouse Extension 398
The Birmingham Coffee-House Company's Shops 398
Residence for Dr. Stafford Windlesham 398
The Historical Development of Ornamental Art 399
Notes from Birmingham 399
Telegraphs of the Ancients: From the Fall of Troy to the Battle of Waterloo 392
Decoration of the Dome of St. Paul's 393
Partial Restoration of an Ancient Scottish Church 393
The Use of Sand as a Filling-in Substance 393
The Longest and Highest Bridges of the World 394
The Projected Imperial Palace at Strasburg 394
Election of District Surveyors 394
The Elephant and Castle Theatre and the Board of Works: Proposed Structural Alterations 394
Rebuilding of Gatti's Music-Hall, Westminster Bridge-road 394
Architectural Improvements in Fore-street 395
Gothic Architecture in Italy 395
Rope Traction on Tramways: Liverpool Engineering Society .. 395
The Electric Light Engine House on the Thames Embankment 395
An Iron Theatre 395
Visit of Engineering Students of King's College, London, to the West Ham Sewage Works 395
Berlin Hygiene Exhibition 395
The Marble of Attica 395
Competitions 396
Banks 396
Dangerous Condition of Houses in Cannon-street: The Railway Works 396
The Decoration of the House of the Soul and of its Outer Mansion 396
The Brun Tax 396
From Ireland 397
The Queen's School, Chester 397
Jesmond Wesleyan Church 397
Lin-rusta-Walton 397
Smoke Abatement Committee's Experiments 397
"An Architect on Lawyers" 397
A Doctor's House, Bedford Park 398
Variorum 398
Miscellanea 398



The Arsenal of Philo, according to the Original Specification.

ONE of the longest and best-preserved inscriptions, dating from the great age of Greece, which have been discovered at Athens has an architectural as well as historical interest, which commends it to notice in something more than a paragraph of an architectural journal. It is the specification for the construction of a building of considerable celebrity, and frequently mentioned by classical authors,—by Cicero, Vitruvius, Strabo, Appian Plutarch, and others,—an arsenal at the Athenian port of Piræus, for the storage of hanging-gear, sails, cordage, tackle, &c., of the national fleet. The document, engraved on a slab of the marble of Mount Hymettus, contains as many as ninety-seven lines, in which only eight letters are in any degree uncertain. In terms it is an agreement between Euthydomus, who apparently is the public surveyor, and the architect Philo, son of Exocestides, of the deme or parish Eleusis. These few words dispose of the supposition previously current, that the architect of the arsenal was not an Athenian at all, but the Philo of Byzantium who, about the middle of the third century B.C., wrote works on the mechanical appliances of warfare, of which some remains are extant. Vitruvius (Præf. vii. 12) states that Philo wrote an account of his arsenal, as well as on the symmetries of sacred edifices. The inscription, no doubt, embodies the details of plan, construction, and arrangement, as conceived by him. It dates from about the year 346 B.C. The work was then decided on, and it was in progress when the war with Philip of Macedon (339-8) caused an interruption. The interruption was ominous. Athens never was destined to recover the ancient naval supremacy which could still be dreamed of by enthusiastic patriots like Demosthenes when the work began, and few years were to elapse before her fleet was to be at the disposal of Alexander the Great. Philo's arsenal, however, remained a conspicuous and renowned monument of the former power and aspirations of the Athenians, until Sylla gave it to the flames, when he captured the city after a strenuous resistance, in the Mithridatic war.

It is not known in what precise spot the slab was dug up; the searchers for antiquities in Greece make a point of keeping such secrets very jealously; the knowledge of the locality might have helped to settle some topographical difficulties respecting the ancient ports and the situation of the structure. The slab is now the property of M. Meletopoulos, who has published the text, accompanied by a photograph of the original. It has also been published, with comments, by the French Academy at Athens, and more recently in the American Journal of Philology of the Johns Hopkins University. We have already had occasion to recognise and welcome the well-directed and truly scholarly zeal with which classical archæology is being pursued in the United States.

The arsenal was erected for a purely utilitarian purpose, and the specification, in consequence, does not admit us into any of those recondite principles of design with which Athenian architectural genius has been reasonably credited. Moreover, it deals in general terms which had to be supplemented by instructions direct from the architect, and by the guidance which he was to provide in the form of what is called a *paradeigma*, which may include drawings, models of parts more or less extensive, templates, and so forth. The general drift of the agreement indicates a purpose on the part of the designer to avoid all refinements that would involve complication, and to reduce dimensions to the very simplest commensurabilities. For the construction itself, perhaps what will seem most surprising is an apparent cumbrousness of timber construction, far beyond the necessities of the case or the advantage in any gain of strength.

As the Greek foot only exceeded the English by a small fraction (1·013 : 1·0), it is not necessary to reduce the dimensions to our standard. The subdivision of the foot was into four palms or sixteen (finger-breadths) dactyls.

After a partly obliterated religious formula, equivalent to "In the name of God, Amen," the document proceeds to business. The building was to be an oblong of 400 ft. in length, with a breadth of 55 ft.

On the indicated site, closely adjoining the ship houses under a common roof, the ground was to be cut down 3 ft. at the highest part, and a smoothed and level bed formed for the foundation upon solid ground. A foundation is to be formed, 4 ft. thick, with stones laid cross-wise. This can scarcely be intended to apply to the entire area uniformly. In the temple of Apollo Smintheus, in Asia Minor, the pavement of the cella was laid upon cross walls with filled-in squares intermediate.

The walls are to be constructed of Peiraic stone, which could be quarried at hand; a first or guiding course (*euthynteria*) for the walls was to be of stones 4 ft. long, 1 ft. 6 in. thick, and 3 ft. broad, but those at the angles were to have an additional length of 9 in.

On the mid line of this course were to be set the *orthostatæ*, that is, the course of stones of greater height than the ordinary courses above them, according to the Greek treatment of the lowest course of the proper elevation, of which there are abundant examples. The *orthostatæ* stones were to measure 4 ft. long, 3 ft. high, and 2 ft. 6 in. and 1 dactyl broad, giving a projection of the odd dactyl beyond the courses above, which were exactly 2 ft. 6 in. broad, only half the height, 1 ft. 6 in., but the same length, 4 ft. A difference in the length of the stones at the angles was to be made with reference to bringing a joint under the second triglyph of the frieze. No dimension or other detail is given for the triglyph.

The height of the wall from the bed-line of the *orthostatæ*, and including the triglyph, but not the cornice which was to run round the building, is to be 27 ft. If we deduct the 3 ft. of the high course, the 24 ft. remaining are exactly commensurate with the height of sixteen courses of 1 ft. 6 in, which makes it probable that the height of the triglyph was an exact multiple of the height of the wall stones.

The interior was to be divided lengthways by two rows of columns, thirty-five in each, at a distance of 15 ft. from the side walls, the column included. There was thus a clear central avenue of 20 ft. through the Arsenal, which is specified as "for the people" (the *demus*), by which it seems that we must understand whatever persons might have only occasional business on the premises, as distinguished from those who had the permanent care of the stores. It is called a thoroughfare in another paragraph, but that it was an open thoroughfare like the nave of old St. Paul's is out of the question.

At both ends of the building, and, indeed, of this central avenue, were to be two doorways, each 9 ft. wide and 15 ft. 6 in. high; one on each side of a *metopon*, a pier or a division, 2 ft. broad, against which the doors, which were to be covered with bronze exteriorly, closed. This division, with the joint breadth of the doors, makes up the 20 ft. of the central avenue. The division was to be continued 10 ft. inward as a wall, but how much higher than the door does not directly appear. Other walls on either side against which the doors would open were to be continued at right angles to the front as far as the first columns, which might thus appear to be engaged, but for inconsistency with some other notices of arrangement.

The two vestibules or lobbies formed by these three walls, and which, for anything that appears, were open to the interior, were to have an independent ceiling of Hymetic stone above the doors, which may be taken to imply that the walls were not to be carried up to the height of the columns.

The height of the doors being 15 ft. 6 in. gives a proportion somewhat exceeding 5 : 3 of breadth; the sills were to be of Hymettic stone, door-cases of Pentelic or Hymettic; the archi-

trave (*hypertonaion*) or lintel of Pentelic, 12 ft. long, equal in breadth to the walls, and of two courses in height; the cornice above the lintel to project 1 ft. 6 in. The columns are directed to be set on a stylobate, of which the stones are to be 4 ft. long, 3 ft. 3 in. broad, and 1 ft. 6 in. thick; this thickness is that of the course of *euthynteria*, with which ("level with which at top" seems to interpret the Greek) it is specified that they are to range.

The whole of the interior was to be paved with stones closely fitted and worked smooth and level on the upper surface. No thickness is given for these slabs, but it must have been much less than that of the stylobate, which is 1 ft. 6 in. This stylobate, therefore, probably formed a step from the lower level of the central avenue; but it seems probable that the pavement of the aisles was level at once with the upper surface of the stylobate, which ranged with the bed-line of the *orthostatæ* on the side walls. This, however, is but a conjecture, and the pavement of the aisles may have been at the same level as that of the central avenue,—a step from the stylobate.

The lower diameter of the column is to be 2 ft. 9 in., which allows a margin of 3 in. on either margin of the stylobate. They were to be constructed of seven drums of Hymettic stone of 4 ft. each, except the lowest, which is to be 5 ft. high. The capitals, of the style of which nothing is said, are to be of Pentelic marble, and as the total height of the column is to be 30 ft., their height would be exactly 1 ft. The absence of any notice as to a base would imply that the columns were of the Doric type, though they would be unusually slender even for the Ionic, namely, within a tenth of 11 diameters. Epistylia of timber are to be set on the columns (that is, beams in position of an architrave) 2 ft. 6 in. wide, and 2 ft. 3 in. high; and of these there were to be eighteen to each row of columns, and fastened to them; the word used does not explain in what manner.

These epistylia would extend across two columniations, and if all the eighteen were of the same length, the number of intervals so covered would be thirty-six; this implies thirty-seven supports, and in consequence we have to include as intervals equivalent to intercolumns the spaces from the end columns of each row of thirty-five, to the end walls of the building to right and left of the doorways.

Assuming this terminal interval to be an average intercolumn, we have to divide the length of the interior 400 ft. less the joint thickness of the end walls, among 36 columniations less one diameter. The calculation brings out a dimension from centre to centre of lateral column of 11·04. (Add one diameter of column to 395=397·75 and divide by 36=11·04 from centre to centre of lateral columns.)

The transverse measurement, therefore, from centre to centre of columns across the central avenue a little exceeds a double columniation. The walls were to be pierced with windows all round answering to the intercolumnar spaces (*metakionion*, intercolumn), and there were to be three windows at each end. The windows, which are to be fitted with bronze shutters, are to be 3 ft. high and 2 ft. broad. Nothing is stated as to their height from the pavement, for which, therefore, we are thrown on general inferences.

The walls at the end of the aisles measure only 10 ft. in the clear between the outer and the dividing walls, and a single window would be sufficient for each of these; the third must necessarily be central and over the doors, in fact, over the central pier. But it would be useless and, indeed, impracticable here, unless it could admit light to a space above the ceiling of Hymettic stone which covered the two vestibules. This may be interpreted as proof that the stone roof of the lobbies was not much higher than the cornice of the door, say 20 ft., and the sills of the windows on the flanks may have ranged at 20 ft. above the floor. The building was to be finished exteriorly with a pediment at each end with a proper cornice; this, at least, seems the meaning of one of those new words which this inscription adds to the Greek lexicon. A cornice is to be set over the frieze of triglyphs on the flanks of the building, but whether continued as usual horizontally across the fronts is not specified.

Tie-beams equal in scantling to the epistylia are to extend across the central thoroughfare or avenue (*diodos*) and rest on the columns; these beams are called *mesomnai*, and we thus obtain the exact meaning of a word which Homer employs in the palace of Ulysses and elsewhere, and which, even within this last year, has been disputed over by the grammarians. These two beams add a height of 4 ft. 6 in. above the column, unless so far as they might be notched into each other to a small extent, and make up 34 ft. 6 in. above the bed of the *orthostatæ* and, it is important to remark, 7 ft. 6 in. above the bed of the cornice of the flank walls.

Nothing is said of how the upper beam is to be fastened to the lower, but there is an expression used with reference to the fixing of the lower, which seems to make it dependent on the beam above it, and otherwise is hard to translate intelligibly; this expression may possibly imply that a tenon passed through both to the capital of the column. The word used for the process of fixing, taken literally, means "glueing," which is a process as inapplicable here for securing the two beams to each other as one of them to the marble capital.

A king-post (*hypothema*) is to be placed on the tie or cross beam 3 ft. high and 1 ft. 6 in. thick either way; the beam being 2 ft. 6 in. wide there would be a margin of 6 in. on either side of the post.

On these king-posts are to rest the principal rafters, called *coryphaia*,—literally headers,—a new and technical use of the word. These are to be 1 ft. 9 in. wide, a width which is in excess of the breadth of the king-post, and gives a projection of 0·125 on either side.

Nothing is said of a ridge-piece or any special and direct connexion of the line of king-posts with each other upon the axis of the building.

The height of these rafters is given as 1 ft. 4½ in. "without the slope"; meaning apparently that the dimension is to be understood as measured at right angles to the edges of the rafter, and not on the vertical line when it was in position.

These principals then rested further on the tie-beams, and were fixed to them with pins (*kerkides*); we have to infer that this was immediately over the columns, and that they passed on thence to take bearing finally on the course of stones which formed the cornice on the top of the flank wall.

Purlins were to be fixed on these transversely at 1 ft. 3 in. apart; these were to be 7½ in. thick and 11¼ in. wide, or half as wide again as thick. They are called *sphekiskoi*, a word which, as usually employed, means wood pointed like a wasp's sting; this application of it seems due to the angle which the purlin made with the rafters, but the analogy is not very obvious.

The purlins were to be crossed again in due order by the *imantes*,—"straps or braces,"—equivalent to common rafters, set at interval of four dactyls or finger-breadths,—that is, at 3 in. Their dimensions are given as 6 in. wide and 1½ in. thick.

Then follow the (*calummata*) covering laths or battens, for which no interval is specified, ¾ in. thick and 4½ in. wide, to be nailed down with iron nails. When these have been *coated* the roofing is to be completed with Corinthian tiles set close to each other. The name given to these *calummata* seems to imply that, narrow as they were, they were set close together, and this seems necessary from what follows.

What *coating* is meant is left here utterly uncertain; even the verb which is employed is unknown to the lexicons, but there can be little doubt that it is allied to one which has reference to a skin. The particular meaning of applying a coating is ascertained by another inscription which employs it to describe what would serve some purposes of a ceiling, namely, a layer of clay, or perhaps plaster, three dactyls (2¼ in.) thick. Such a layer would cover up the ¾ in. *calummata* in this instance, and interfere with the tiling; it seems that we must assume a thinner coating of whatever nature.

The fittings for the storage of tackle and hanging gear, the main purpose of the building, were confined to the lateral divisions, between the lines of columns and the flank walls. We may suppose that the broad central nave was made use of for the many various operations connected with the process of completing the rig of a vessel for service.

Each intercolumn (*metastulion*) was to be fenced off by two *orthostatæ*, stones which, however, were only to be 3 ft. high, with an interval closed by a latticed gate (a *kinklis*). Stone supports (*parastylia*) were to be set against the columns within. The height of these is not specified, but beams, 1 ft. high and 1 ft. 3 in. wide, were to be laid from them to the side walls, and inserted into these to the extent of 9 in. Joists, 9 in. wide and 6 in. high, were to be laid on these, with such intervals that seven of them provided for the entire space from wall to column. On these, again, were to be laid floor-boards, closed up and fastened, 1¼ in. thick and 3 ft. wide. In consequence of the height of this intermediate floor not being specified we obtain from it no information of the relation of the windows to the interior.

The inscription enters into further detail of shelves, or what seem to be such, racks and chests for stowage of sails and cordage, but these particulars can only be reconciled with each other and made clear by an amount of minute analysis of the text and general discussion, that must be dispensed with here.

The last clauses of the inscription direct that for the sake of coolness in the arsenal such intervals are to be left between joints of the wall-stones, as the architect shall direct. This instruction may, perhaps, account for certain openings of the kind in the walls of the Erechtheum, which have been matter of considerable controversy.

The conclusion has a very modern sound. "All these things the contractors shall execute in accordance with the agreed specification, and the pattern (*paradeigma*,—model or drawing) delivered by the architect, and within the assigned periods in which they may contract for the several works."

Valerius Maximus, who lived under Tiberius, speaks of Philo's armoury as if still existing, and to be admired both for its sumptuousness and elegance; but this is a blunder which he added in freely re-writing an anecdote that he took, as proved by coincident phrases, from Cicero, who knew better. Oratory, argues Cicero, and not architecture, is to have the chief credit for the effect which Philo produced in the assembly of Athenians, by the exposition of his design for an arsenal (De Oratore, vii., 14). Cicero is arguing for the importance to an orator of specific as well as general knowledge; his lesson comes home, if conversely, to the architect, who may have so many occasions to experience that his artistic powers will scarcely get fair play unless he is also gifted with, or has acquired, like Philo, a power of speech to explain himself.

"IMPRESSIONISM" IN ART.

IT is a curious phenomenon, illustrative of the rapidity with which artistic tastes change in the present day, and the want of any fixed convictions among one section at least of artists and the public, that we have seen within the space of about thirty years or less an oscillation of the artistic pendulum from the extreme of hardness and minute realism once called pre-Raffaellitism, to the other extreme of almost absolute and conscious neglect of detail and realism. It is true that it is in France that the latter taste has shown itself in the most pronounced manner, and there alone that, so far, the producers of this class of art have taken to themselves, or had bestowed upon them, a special classification by name. But though we have in England hardly any artists, with the exception of Mr. Whistler, who go to the length of the French impressionists (for some of the most advanced painters of this class who have English names are artistically French in education), and though we have not among us a specially denominated class or brotherhood like the original pre-Raffaellites, there are now a considerable number of English artists, chiefly landscape-painters, whose system is more or less that of impressionism, and who have a large and increasing following. A singular retrospective light is thrown upon the pre-Raffaellite movement by the fact that the French impressionists, ostensibly so-called, and the English artists who tacitly adopt more or less the same standpoint, form a clique, a select party, regarded with puzzlement and dislike by the average public, and with great self-satisfaction by themselves; occupying just the same relation in regard to the main body of artists working in ordinary grooves, and to the average public, which was formerly occupied by the pre-Raffaellites, although their artistic practice is almost precisely the reverse. This fact suggests the idea that in both cases the moving spring which called the separate artistic clique into being was not only a conviction that the ordinary principles and practice of painting

were in an unsatisfactory state (which the pre-Raffaellites honestly did think, and not without reason), but a desire to gain a certain distinction by going out of a groove, by doing things differently from any one else, and thus posing as a kind of artistic aristocracy, or body of artistic saints, let us say, set apart from the ordinary world. And this view of the matter has been often unconsciously supported by the public voice. After the first development of pre-Raffaellitism had been a little softened away, and its hard edges worn down, average exhibition-goers seemed to have an idea that whatever picture struck them as *hors la ligne* they were justified in stigmatising as "a pre-Raffaellite sort of thing," a piece of Philistine criticism which we have not unfrequently heard.

It is a somewhat important question how far impressionism involves a justifiable or a wholesome view of the function of art; of painting in particular. And in the first place, in what does it essentially consist? In its less extravagant form, it is, in fact, the system which has been pursued by one or two of our greatest landscape-painters; that of aiming at broad effect rather than multiplicity of detail. In this sense Constable was an impressionist; and, indeed, he is so obviously the original suggester of many characteristics of the modern French landscape school from which impressionism developed, that the extreme development of it even, in France, may be said perhaps to be lineally descended from him. As practised by Constable, and by Dupré and Corot, the system meant really, as it seems to us, an attempt to give more life and air to landscape-painting by omitting from the scene details which, in their genuine multiplicity, were beyond the power of the artist to reproduce realistically, and to some extent beyond the power of the eye to take in when looking at Nature herself. This is the practical side of it; the attempt to give, in a sense, intense realism, at least intense feeling, to landscape-painting by renouncing the attempt to paint an impossible multiplicity of details, and concentrating the attention on the main incidents of the composition, colour, and perspective of the landscape. In some instances we see one class of phenomena omitted or passed over in order to give greater force by emphasising another and perhaps more important class, or one which interests the painter more. Thus we have sea-painting, from one well-known painter especially, in which the artist seems to have voluntarily relinquished the attempt to convey realism of colour and surface of sea-water, in order to be free to represent its movement with more power and effect. In another case we see frequently the movement of the sea rather avoided, calm seas with sunlight sleeping over them selected as the favoured subject, because the object is realism of light and colour. Most readers will recognise the works alluded to, and almost every one will have heard criticisms on the foaming seas of the first-named artist as unnaturally cold and grey; but the expression of cruelty in a tempestuous sea is thereby intensified, and that was probably what the painter was aiming at. Corot, again, was evidently greatly in love with the delicate appearance of the maze of thin twigs and young leaves seen against the sky in spring time trees, a delicacy and multiplicity almost if not quite beyond the power of the most patient painter to reproduce with fidelity; and he has attempted to represent this by a thin misty maze of pigment, formless when looked close into, but which at the right distance conveys sufficiently, and certainly with great delicacy, the effect of the maze of minute interlacings which forms the actual fact of the tree-forms at this time of year. In this, his favourite effect, though he did not sink into a mannerist by confining himself to it, Corot shows in a marked manner the theory or principle which is at the bottom of the ultra-impressionist school, of which he was in all probability, without knowing or intending it, one of the suggesters. That theory, when carried to its utmost limits, is that the object of painting is to give the impression which the eye gets in one glance; almost, one might perhaps say, the mental rather than the physical impression; to flash the scene before the spectator as he sees it on turning his head momentarily towards a landscape.

We refer to landscape, because it is this branch of painting on which impressionist ideas have most obtruded. Turner, certainly, introduced into his landscapes what might be called impressionist figures, for they are often nothing more than that; but then his object was not to paint figures, and he wished such figures as he introduced or indicated to be subordinate to the landscape. No one has ventured to put forth "impressions" of figures,—smudges to convey the general idea of a figure just caught in passing,—as principal subjects in a painting. Mr. Whistler's large figure pictures, which may occur to some as instances, in almost all cases show clear and definite indication of the drawing of the figure, though the colouring may not recommend itself to us. But it seems to be assumed that landscape can, with advantage, be represented by splashes; an expanse of green paint, the right colour, but textureless and void of detail, to give the impression of a lawn or field, and so on. One thing must at least be admitted, that in that case the picture can only be viewed under the same conditions as it is supposed to represent the landscape,—in a momentary and half careless glance. Continue the scrutiny, and the lack of detail will force itself painfully on the eye, and the very method which was intended in the first instance to escape from materialism and to give the spirit only of the landscape, will, on closer inspection, seem only a grósser materialism than a realistic painting, having no illusive likeness to nature at all, presenting only an expanse of paint,—

"Merely that, and nothing more."

Of the two extremes of style in landscape-painting, this one seems to us more wrong and mistaken, and of less value to art, than the pre-Raffaellite extreme of hard and minute realism. Neither represents the true effect of nature; but the impressionist not only loses this, but gives us none of the detailed facts. The extreme realist over-emphasises these, and loses the aërial perspective and proportion of the scene, the atmospheric effect and what is somewhat vaguely called the poetry of nature; but he at least quickens his and our knowledge and study of the facts of nature, and that is one object, though not the chief object, of the study of landscape-painting. We know one landscape, for instance, by an artist who has now deserted his early tendencies fostered under the "P. B." period, in which sunlight on the distant sea is, indeed, of a painty and very solid nature, no light nor atmospheric gleam about it, but in which the foreground is one on which the beauty of leaves and flowers and the phenomena of their growth, may be studied almost as in nature,—a *tour de force* of brilliant and patient realism such as is in itself of the highest value from a certain point of view, though such work does not include all, or the highest, that landscape art should aim at. Still, it is of value; it represents earnest study, thoughtful, patient, untiring work, great mastery of manipulation; but what does the impressionist's smudge represent? Sleight-of-hand; a trick, little more; the effort to be an artist without incurring the labour of an artist, to conceit himself that he with a sweep of his brush can accomplish that to which others give years of patient study, and then confess that they have far more to learn than they have ever yet learned. There is something almost morally wrong in such an art as that.

No one has ever yet heard of impressionist art in sculpture, though there is no knowing to what we may come, and perhaps it may some day be started as a practical axiom that the intellectual ends of sculpture are attained by roughing-out an impression of a figure in the marble, and omitting the attempt to reduce it to absolute and accurate form. But in architecture there has been, and still is, a good deal of tendency to impressionism at the present day. This is seen in some very large buildings of the modern Gothic type, where there is a studied evasion of rule and symmetry, an aim at the production of a general crowded, irregular, picturesque effect; and a love for this kind of effect is seen too in much architectural drawing of the day, where picturesqueness takes the place of accurate delineation. The distinction here is not so marked as in the case of painting, because there is not the same relation to nature to call attention to the shortcomings of the rougher class of work; but the tendency to study form less closely and thoughtfully, both in drawing and designing, is significant of the same condition of mind in regard to art which leads to the more marked heresy of impressionism in painting. Of course, in all branches of art, "impressions," in the way of sketches for reference, are of use to the artist; not, however, the more useful because they are only impressions, but because impressions, which in many cases are all that there is time to secure, are very much more trustworthy and valuable when committed to paper than to the brain only which latter also acquires a clearer idea of them in the very process of recording them, however roughly, on paper. But to give what are merely such impressions, such sketches, on a larger scale, to the public as art, and even (as is pretended) as a particularly intellectual form of art, is only practising on the possible capacities of a part of the said public for being taken in, or for adopting a theory or system merely because it is "*caviare* to the general," and the adoption of it may be taken to imply a superior judgment on their own part to that of the majority.

THE TWIN ARTS.

IN the last and in the beginning of the present century, as, for example, may be noticed in the writings of Lord Shaftesbury and Prince Hoare, the term "plastic art" was applied to painting as well as sculpture, and what the latter author says in reference to its use in this respect may be interesting. "As to the term plastic art," he remarks, "I have adopted it because although strictly expressing modelling only, it has been rendered familiar to the public ear by modern use as applicable to both painting and sculpture; I have wished in vain to find a simple term which, denoting the art of form, rendered the vehicle of intellectual expression, might be conjointly applied to painting and sculpture."

From the above admitted incompleteness, as void of any notice of colour, this term has not survived, nor has any simple one arisen since to take the mission it aimed at in linking together, under one title, these two arts especially and distinctively by themselves; nor do we attempt to supply it by that which heads these remarks, which, however, are addressed to treat of their close connexion.

As has been before submitted in these columns, it may be but candid and logical to extend the usual triad group of Painting, Sculpture, and Architecture, so as to embrace, as a fourth, Decoration, who, although may be of lesser stature, is as truly a sister as any of the family. Whether, however, the number three or four be most acceptable, it is a familiar idea, recognised in many ways, that two of these, namely, Painting and Sculpture, have an especially near and dear relationship with each other, insomuch that they might be called twins; and we may add that, like twins, they are rarely so happy as when they are together.

Architecture and Decoration, although they draw their main inspiration from Nature, are far from being so directly imitative of her as these twin arts of Painting and Sculpture, who thus have a unity of aim and character which especially connects them as recipients and exponents of thought and beauty. Duly associated they are thus calculated to produce a far more perfect artistic effect than when banished from each other's presence.

The Houses of Parliament afford some examples of their happy combination which, had a longer life been granted to the Prince Consort, would probably have been accomplished throughout that grand national edifice according to an extensive programme shaped out under his surveillance, including a great number of subjects for painting and sculpture contained in the reports of the Fine Arts Commission, of which, on a former occasion, bearing date of February 14, 1880, we gave lists and details. In harmony with these views, for instance, the wall spaces in St. Stephen's Hall, between the fine marble statues there, might have received frescos or mosaics; as also the spaces vacant on the walls of Westminster Hall, the due divisions of which are indicated by the hammer-beams above, which might have received most appropriately similar paintings of some of the many historical events of which it has been the scene, and of which we have ample records. Some of these were enumerated in our issue of April 17 of the same year, and we are glad to refer to them, as now that the courts of law are removed, it is to be hoped that the due embellishment of this noble hall with mural historical paintings, and statues under the hammer-beams, will receive the consideration of Parliament.

The subject of such permanent homes for the

twin arts is somewhat removed from that of the reception of their productions in exhibitions, which endure but a season, and of which the arrangements are necessarily so hurried that it is impossible to give them sufficient thought to make them altogether satisfactory. Indeed, works of art evoked mainly, in the first place, with the view of their presentation in a temporary exhibition, are under wholly different conditions from those produced as part of a regular plan in which they are to form the illustration and adornment of a grand edifice, in which the twin sisters are called in to permanently assist each other. Our season exhibitions, it is true, may, to a certain extent, afford opportunities for trials of modes for the agreeable co-arrangement of paintings and sculpture, and in this way may lend much aid towards the furtherance of the larger subject, but, from their essentially heterogeneous composition, they can never afford perfect examples of the alliance and combination of the two arts. Whenever, however, by the endeavours and effects there displayed the national taste is conducted to the just conviction that the twin arts should have a common home, they do this great cause much service.

It may be that this subject has been partly kept back by the spirit in this country of division of labour, which while, on the one hand, so beneficial to the development of manufacture, has possibly on the other tended to injure the interests of art. Thus, we meet occasionally with instances of painters who have little regard for sculpture, sculptors who have small respect for painting, and architects who have no substantial love for either, although, fortunately, there are eminent exceptions. This mutual indifference was not the case in Classic or Mediæval times, and thus in those periods painting and sculpture dwelt more closely in union than they have with us in later days. Classic temple-worship even associated them most intimately together on the same object, and painted their statues, although, as has been illustrated on a former occasion, in some remarks on Gibson and the colouring of statues, Nov. 24, 1879, to which we gave our adherence, this practice was the probable outcome of priestcraft, and was not accepted in independent works of the best period even when they represented divinities.

Within our own time, however, there has been an idea that the association of statues, especially in marble, is detrimental to the effect of pictures, inasmuch as freshly-executed marble, especially as seen in season exhibitions, is so white. This objection, however, will be found chiefly to arise from inadequate arrangement, which disappears in competent hands. The whole interior scenic effect of a saloon has to be studied as a picture, and a statue only placed where its tint is required; and, moreover, it is by no means essential, or even desirable, that sculptured work should always be stationed in a strong light.

One difficulty which stands somewhat in the way of associating them intimately in our modern structures, especially in our dwelling-houses, even of the larger class, is that these have been so often constructed wholly apart from the contemplation of such combined enrichment. Walls usually, even without special arrangement, are ready recipients of pictures; but the question of places for sculpture is seldom regarded, which thus finds itself without situations, although in the first construction it would have been easy to have provided niches in the walls, and spaces here and there for works of that art, so as to have been suitable features of architectural enhancement, also forming reliefs to the eye between paintings, so that the latter may be the better contemplated in their individuality. Statues so arranged conduce to the dignity of the pictures they divide without in any way losing their own. In large structures it may be noticed how agreeably statues stand before the main supports of the interior, between which paintings occupy suitable, ample, and isolated situations. There are, however, so many ways in which these conditions are modified by the design and requirements of the structure, that it would inconveniently confine the subject to attempt to set forth in narrow limits rules inevitably open to so much variation.

It is, however, with the architect as organiser that these conditions depend at the outset, as well as in the after details of adjustment of the modes in which the twin arts may be presented most agreeably together. At the same time it is of very great value that the painters and sculptors employed should themselves take a charitable mutual interest in each other's work, unity and harmony of effect being thus the result, by which means sculpture is relieved of isolation and coldness, and painting gains in force and dignity. The comparative merits of the two arts have often been a subject of discussion, but when their sisterly friendship is the object this may well be relinquished to make way for the far more profitable question of the modes in which they may best conduce to each other's benefit.

In the records of art it may be seen that each has done the other great and frequent service, and, as an example, it has been remarked of sculpture by Prince Hoare, in his essay on the arts of design in England, that collaterally "by reason of its durability it has become in process of time, if not the only credible witness of the existence of the sister art, at least the only testimony of her past eminence. Sculpture enjoys the privilege of being the criterion by which are appreciated the reports relative to contemporary painting. If the works of such artists as Praxiteles, Apollodorus, and Agasias had been less eminently deserving of our admiration, we should have been at a loss to judge what degree of credit we ought to give to the accounts transmitted to us by authors respecting Protogenes or Timanthus, Zeuxis or Apelles."

This extract affords an instance in which a grace has been conferred on one sister by the other; but it may well be borne in mind that by her own comprehensive power painting will ever possess a far wider hold on the public mind than sculpture, although the products of the latter may, from the nature of its materials, be the more enduring; for painting presents in one view all the elements of the appearances of nature, of colour as well as form, and is capable of representing in perfection a far more extensive range of subjects. Colour, beautiful colour, with all its infinite gradations which are so attractive in nature, as a science and as a devoted handmaid, belongs to painting alone, and is at the first sight the most alluring and fascinating of all qualities in a picture. It at once, before all others, invites and lays hold of the senses like a charming strain of music before the eye has time to estimate the linear composition or the form; and thus it is that, if the complexion, so to speak, of a painting is delightful, we can forgive almost any shortcomings or even delinquencies in other respects, and such works as possess in the highest degree the charms of colour and tone, as those of Correggio and Rembrandt, retain their hold on us in spite of inaccuracies in drawing, or even occasional ugliness. On the other hand, however beautiful the forms in a picture may be, if the colours are harsh and unpleasing, it is only by an effort that we bring ourselves to do justice to the excellencies they possess in other respects, and even when we recognise them they scarcely yield to us true satisfaction.

Thus, also, it is most desirable in the sister-art that the marble used should be of good tint, even if it be requisite to be a little toned artificially; not, however, so much so as to injure its natural fleshy transparence, and that the bronze employed should be of some agreeable shade. And this point is of high importance, not only in respect of the works of sculpture themselves, but in order that they may readily harmonise with the paintings with which they may be associated, which union cannot be satisfactorily accomplished unless the sculpture as well as the pictures are of good colour. In truth, it is colour even more than form that harmonises compositions of the twin arts, although due dispositions of the latter are also essential to propriety, dignity, and grandeur.

It is to the architect that the painter and sculptor have to look to afford them these and all the opportunities within his resources for the happy combination of their twin arts, and to assist them in consultation with such general forms as the object and design of his structure may appropriately yield, and to call in the aid of their sister decoration to complete the concert of her statelier relatives. Notwithstanding the direct and immediate attractions of painting and sculpture, it may be well borne in mind that architecture is vastly the most essential to the wants of man, and also that without the further enhancement of purely decorative art the effect of the combined achievements of the rest of the family will ever lack finish and perfection.

LADY ARTISTS' EXHIBITIONS, PARIS AND LONDON.

The exhibition at present open in London, of works by lady artists, offers an instructive contrast to the exhibition of the lady artists now being held in Paris at the Palais de l'Industrie. If at the Paris exhibition there is less than at the London show to remind us of that kind of work we are generally accustomed to meet with from the skilful hands of the lady painter, there is no want of the real strength which, combined with delicacy, constitutes so great an element in the work of the true artist. It is precisely this delicacy of touch and refinement of fancy, with well-governed force and power, that we like to believe we may some day see in the work of the lady painters; and if we say we should like to see it, we do not imply that lady artists in no instance have either yet reached this point, or have succeeded in effecting the happy association of delicacy and power, but we cannot say that they as yet have altogether emancipated themselves from the teachings of masters whose methods and whose traditions have not allowed for a very probable difference in the artistic capabilities of the ladies.

At the ladies' exhibition in London there is no instance, if we except Mrs. Jopling's portrait of a lady, of an attempt to rival the male painters, such as is to be found in the Paris show, where, if it were not for the announcement that the works are entirely by ladies, one would believe that the pictures were altogether the work of the ordinary exhibitors at the annual *Salon*.

The lady artists of London have, at least, the advantage of numbers over their sisters in Paris, who have shown much more care not only in the selection of their pictures, but in the placing of those accepted. In no instance, as in London, do they consent to hang in the same room water-colours and oil pictures, and there can be no question that in the graceful arrangement of their rooms the French ladies have added a charm to their exhibition which, in the London show, is singularly deficient. One point, however, the English ladies appear to have scored in advance of their French sisters; they seem to have considered with more care the sort of pictures that the public desire to purchase,—at least, it is quite certain that it is easier to find in the English than in the French exhibitions some attractive picture that will remind the sentimentalists, at all events, of scenes of distant travel in Italy and France, or of some quiet running stream or woodside road, some incident of travel, or conventional love-scene, some pretty large-eyed damsel or baby-faced child, some evening effect feebly suggestive of Mason or Walker, or some reminiscence of Miss Kate Greenaway's happy thoughts,—pictures generally, in fact, of a kind that young housekeepers believe will adorn their pretty little quarters. The sales at the private view in Great Marlborough-street were larger on the present occasion than usual. Miss Rayner, Miss Montalba, Mrs. Marrable, Mrs. Cooper, Miss Alice Manly, Mrs. Naftel, Miss Spiers, Miss Edith Marrable, and other old favourites here whose works we did not see in the crowd of a private view, contribute freely as usual, and Mrs. E. M. Ward strengthens the collection with her name.

At neither the Paris nor the London exhibition do we observe what we should have expected, a more profound, or if not profound a more skilful arrangement or knowledge of colour, of that kind of arrangement for which it must freely be admitted Parisian dressmakers have so long been famous. We can point in no single instance to a lady painter, not even Mdlle. Lemaire or Miss Montalba, who has shown so profound a sense of exquisite colour in female costume as is to be met with in nearly every picture by Stevens or in the lovely water-colour drawings of Heilbuth; although of all means of exercising the taste for colour and arrangement that ladies display so admirably in their own houses when they group together the flowers of the garden and the conservatory, we should imagine none could be more congenial to their taste, we see in the lady painter no attempt at such arrangements on paper or canvas, beyond the conventional method of placing some lovely flowers in a cheap ginger-pot or a Venetian glass, whereas in Paris the lady flower-painters,—in this, however, copying their brother artists,—show an exuberance of fancy and a freedom and exactitude of tone in the arrangement of their flower-

pieces that our English lady flower-painters appear entirely to have overlooked; indeed, in no instance do we find a sufficient regard for the great teacher William Hunt, or anything like even the care and grace so long familiar to us in the charming works of the Misses Mutrie.

At the ladies' exhibition in London there is, as we have remarked, no effort to positively rival the male painters, whereas in Paris there are several instances of work by ladies that, in breadth of treatment and largeness of design, and in recklessness of subject, are as free from timidity as the work of the boldest French impressionist. But such pictures, even in Paris, are the exception, and the ladies there have rushed mostly into the practice of flower-painting with a freedom of design and a looseness of execution which enable them to "throw off" a flower-piece in an afternoon. But although the Parisian lady painters are, as is natural, very fond of flower and fruit painting, they seem to exercise their taste in this direction, like many other painters, as a mere agreeable and highly remunerative pastime. In Paris people live surrounded by flowers, and it must be to the painter an irresistible temptation to endeavour to perpetuate on canvas the charms that are so often about her.

The lady painters of Paris, in point of fact, show no disposition whatever to hesitate in competing in every way with their masters and brothers; and if it were not for the knowledge that we have that the ladies' exhibition contained alone their own handiwork, the visitor, we feel sure, would be perfectly unaware that he was visiting any unusual exhibition, with, however, this rather uncomfortable admission, that he will be forced to allow that the general tone of the ladies' exhibition in Paris is not quite up to the work of the other picture exhibitions.

The lady artists of to-day at least have but little sympathy with that class of workers so many of whom we have all seen from time to time patiently and painfully copying pictures in our own and foreign galleries, though if those who instruct us in matters of art just now see the great advantage to be derived from this mode of idleness, we scarcely think that the life in the *ateliers* and schools of Paris,—now so crowded with lady artists,—is a very much more hopeful field for reflection. Under certain conditions, and aided by devotion, a degree of wisdom and an experience difficult to obtain, a smart young American lady or a plodding English girl, with an ability for work and study equal to the strain of this means of developing genius, might possibly be able to withstand the difficulties which must environ the lady artist in any of the good *ateliers* now existing in every part of Paris. But as long as we are all, and especially the ladies themselves, so heavily handicapped by social trammels, we doubt very much whether the prospect is an agreeable one, and,—even if the life is romantic at the outset,—whether the more real and more uncertain future that is to follow is an enviable one. We rather think that the distractions of society,—too often, after all, only the society of "villadom,"—and in most cases the affectionate duties of the household, draw too heavily on the time and thoughts of the lady artists to allow of their bestowing all their devotion to the less important pursuit of art.

The history of the lady painters of the past, of a Mdme. Lebrun, of an Angelica Kauffmann, or a Rosalba Carriera, is so full of interest that their lives have taken a place in the story of the last century sufficiently dignified to be free altogether from sordid and trifling considerations, and although we have heard enough of the struggles of the early lives of painters in all times, no painful tales have yet been made known to the world of the difficulties with which lady artists have had to contend, nor do we think that any good is ever likely to be attained by such painful details being made known. The success in our own day of such lady artists as Rosa Bonheur, Miss Thompson, Mrs. Ward, Mdlle. Jacquemart, Mrs. Jopling, the Misses Mutrie, the Misses Montalba, Miss Havers, Madame Browne, and Madame Lemaire, in France and England, and of Mrs. Halleck Foote in America, with many others that could be named, has had the effect of creating a host of followers whose works are now more than sufficient to cover the ample walls of more than one exhibition in Paris and London. It is not ungratifying to find that many of these, as we see them this year, afford a fair promise of a higher level of merit. A new field of occupation has been opened to the ladies, but one more arduous than the greater number of them at present seem to have suspected.

OLD HAMMERSMITH CHURCH.

A BRIEF notice of old Hammersmith Church, which was lately pulled down, may appositely follow our articles of last week upon the rebuilding of the parish churches at Chiswick and Kew. Originally a hamlet of Fulham, in the Kensington division of Ossulstone Hundred, and comprising about 3,000 acres, Hammersmith is believed to derive its name from *ham*, a home or township, and *hythe*, a wharf or landing-place,—compare with Erith, Greenhithe, Rotherhithe, Queenhithe, Lambeth, and the like,—the settlement by the harbour or creek. The creek which still remains in the Mall was formerly watered at its further end by a rivulet from the old Oak Wells near Wormholt, or Wormwood, Scrubs. In the court rolls of Pallingswick Manor (a hunting-seat of King Edward III. and home of his favourite Alice Perrers, now represented by Ravenscourt Park), of the early part of King Henry VII.'s reign, the name appears as Hamersmith, as also in those of Fulham Manor down to 1820. Fulham Manor,* granted to Erkenwald, fourth bishop of London, son of King Offa, and who built Bishopsgate, is thus set out in Domesday Book:—"M in Fuleham tenet eps Londonie xl. hidas" [valued at as many pounds] . . . . . hoc M fuit et est de episcopatu." Long famous for the retreat it has afforded to adherents to our earlier faith, as well as for its nurseries and market-gardens,† Hammersmith appears very early on our history's scene. Hither came the Danes from Cirencester in the year 879, when, according to Roger of Hoveden and Henry of Huntingdon "in insulâ *Hame* hiemavebant." This island of Hame is the Willow Ait above the Suspension Bridge. During the Civil Wars it formed the theatre of many movements, counter-demonstrations, and negotiations. At the house of Sir Nicholas Crispe, his headquarters in Hammersmith, Oliver Cromwell received assurance of support from the City of London; a few years later he narrowly escaped from the plot of Synderford with his associates to attack him from an inn at the eastern end of Gould-hawk-road on his way from Hampton Court to Whitehall. The parish church of St. Paul had been erected in 1629 as a chapel of ease to the mother church of Fulham, but Hammersmith was not made a separate ecclesiastical district until two hundred years afterwards. The chapel was consecrated by Laud, in whose volume of Devotions, edit. 1667, p. 278, will be found a prayer upon the laying of its first stone on the 11th March, 1629. Chief promoters of the scheme were the Earl of Mulgrave, who was buried in the chapel, and Sir Nicholas Crispe, a Guinea merchant, celebrated for his loyalty to King Charles I. Edmond Sheffield, Earl of Mulgrave, received the Garter for his prowess against the Spaniards in 1588; his grandson, created Duke of Buckingham and Normanby by William III., was ancestor by Lady Katharine Darnley, natural daughter to James II., of the present Marquis of Normanby. Lord Mulgrave lived at Butterwick House, Queen-street, taken down, together with the magnificent cedar tree, in 1836; Sir Nicholas Crispe at Brandenburgh House, which now survives in name only. The latter was buried with his forefathers at St. Mildred's, Bread-street, but he directed that his heart should be deposited in an urn by the bust of his beloved sovereign which he set up in Hammersmith Church. It was long a custom to refresh the heart with wine on the anniversary of its entombment. To Sir Nicholas is ascribed the present method of brickmaking in this country. Amongst other memorials in the old chapel may be mentioned those of Sir Samuel Morland, mechanician and inventor, Sir George Shee, bart., the Impeys, including that of Sir Elijah, Murphy and his mother, Dr. Askew, the great bibliophile, and Thomas Worlidge, renowned for his etchings, who lived over the old wine-storehouse of the Lee's nursery garden, formerly a vineyard. A full description of the church appears in Bowack's "Antiquities of Middlesex," 1705. The bridge was built in 1825, from the designs of W. T. Clark, at a cost a little in excess of 45,000*l*. The foundation-stone of its northern tower was laid by the Duke of Sussex, who was very partial to Hammersmith, and would often retreat hither to his "smoking box,"—a back parlour of the Doves tavern by the waterside. The prospect from the Doves is said to have inspired Thomson with some lines in his "Winter," whilst in many of De Wint's pictures may be recognised the meadows and river banks of Fulham.

At Fairlawn House lived Dr. Charles Burney, brother of the authoress of "Evelina," the Greek scholar and associate of Porson and Parr. Broadmore House, Sir Elijah Impey's home (marked by its Classic columns and pediment), formed that part of old Butterwick House (so called from the ancestral seat of the Cripses in Lincolnshire), which was built by one Ferne for Mrs. Oldfield, the actress, whose initials were set on the cisterns and other lead work. Sir Samuel Morland, removing from Copt Hall (Vauxhall), spent his declining years at Walborough House, recently Cohen's School for Jews. Visited by Archbishop Sancroft and Evelyn, he gave them to examine "his wooden Kalender, which instructed him all by feeling, and other pretty and useful inventions of mills, pumps, &c., and the pump he had erected that serves water to his garden and to passengers with an inscription." This last-named is preserved. Morland used to solace his blindness, as Evelyn says, "by playing himself psalms and religious hymns on the theorbo."* In the parish register is entered the marriage of his subsequent heir, George Morland, to Anne Ward (1786). This ill-fated genius who, dying in his forty-second year at a sponging-house in Leather-lane, Holborn, lies in the cemetery of St. James's Chapel, Hampstead-road, passed much of his later life at the old Plough Inn, Harlesden-green. If we consider the many honours and decorations that were bestowed with no illiberal hand upon the wealthy during the eighteenth century, we may well ask what greater honour, what prouder title, what more brilliant star, could one of them have earned for himself or his posterity than by the award of a certain, albeit modest, independence upon such men as Chatterton, Goldsmith, George Morland, or Mozart? From the first-named, Walpole, profuse with his thousands, withheld his hand; and to this day our indignation swells at the thought of the contemptible situation that was found for Scotia's sweetest, grandest, and most patriotic poet. In the Upper Mall, at a house afterwards occupied by Dr. Radcliffe, lived the Queen Dowager of King Charles II. The house was demolished about eighty years since, but here yet stand some of the elms which were planted in her lifetime. Brandenburgh House is connected with the memories of Prince Rupert, George Bubb Doddington, the Margravine of Anspach, and Caroline, wife of George IV. Built for 25,000*l*. by Sir Nicholas Crispe, it was plundered in the Civil Wars by Fairfax, who sojourned here. Sir Nicholas's nephew sold it in 1683 to Prince Rupert for Peggy Hughes, the actress, in whose name the purchase was made. "From this time," says Count Grammont, "adieu alembics, crucibles, furnaces, and all the black furniture of the forges: a complete farewell to all mathematical instruments and chemical speculations: sweet powder and essences were now the only ingredients that occupied any share of his attention.† From the Murrays, dukes of Atholl, it came to the hands of the son of a Dorsetshire apothecary, George Bubb, better known as Bubb Doddington, on succeeding to his uncle's property, whom King George II. made Lord Melcombe. Doddington, who fills a conspicuous position in "The Chairing of the Candidate" of Hogarth's "Election" series, added to the house a splendid gallery‡ for statues and antiquities, but his thorough lack of taste or elegance of mind were evident in the tawdry gilding and finery which he profusely scattered all over the interior of a villa he chose to call "La Trappe." Here he was occasionally visited by one man of sense, Dr. Johnson. Once going out into the garden in a storm of wind and rain, Doddington observed it was a dreadful

* A corruption of Fullenham or Foulenham, *volucrum domus*, being part of the fen that once extended westwards from Westminster.

† See Bradley's "Philosophical Account of the Works of Nature" (1721) for an account of the fruit-gardens.

* Evelyn's Memoirs, *sub* October 25th, 1695.

† Mrs. Hughes was of the King's company, and one of the earliest women-actors. She began her career after the opening of Drury Lane Theatre in 1663, and was the first female representative of *Desdemona*. Her daughter Ruperta married General Howe. She lived here for ten years.

‡ The gallery was embellished by Cipriani, then living in Great Church-lane. Here he died in 1785, and Bartolozzi wrote the inscription over his grave in Chelsea Cemetery.

night. "No, sir," replied the Doctor, in a reverential tone, "it is a fine night; the Lord is abroad." Views of the house are in the the fourth volume of the "Vitruvius Britannicus." In 1792 the Margrave of Brandenburgh-Anspach bought the house of Mrs. Sturt, one of whose masquerades here is described in a letter from Sir Gilbert Elliott to his wife under date June 13, 1789, in the "Life and Letters of Sir Gilbert Elliott, first Earl of Minto," vol. i. The Margrave's widow, herself the widow of William, sixth Lord Craven, resided here for many years and built a miniature theatre in the garden. Here Queen Caroline held her Court during the trial in the House of Lords, when the whole neighbourhood was kept in a constant turmoil by the number and effusion of her sympathisers. Soon after returning thanks in Hammersmith Church for her acquittal, she died on the 7th of August, 1821. The scandalous scenes which accompanied this unhappy queen's funeral procession from Brandenburgh House through London to Harwich are graphically told in Timbs's "London and Westminster."

No traces exist of the hospital by Stamford Brook mentioned by Stow, and shown in Norden's Survey, but of the numerous Roman Catholic establishments in this quarter the oldest is the Benedictine Convent, which dates from a period anterior to the Reformation. Ostensibly a girls' school, it escaped the general destruction of religious houses by reason of, according to Faulkner, its want of endowment. It was subsequently held by the sisterhood from Munich which Queen Katherine of Braganza had founded in St. Martin's-lane, Charing Cross, under the presidency of the Lady Frances Bedingfeld. At the boarding-school attached to the convent have been educated many members of our leading Roman Catholic families,—the Drummonds, Talbots, Bedingfelds, Plunketts, Petres, &c. In the *Domestic Intelligencer*, for 13th January, 1680, will be found an account of Titus Oates's commission to search this house, which was also attacked by the "No Popery" rioters in 1780. George Gillow built the chapel in 1812; in 1869 the sisterhood vacated a convent that had sheltered Dr. Giffard, chaplain to King James II., who appointed him president of Magdalen College, Oxford; and it has now become a training college for Roman Catholic clergy. College-place stands on the site of Lucy House, the home of one whose chief claim to fame lies in his being the grandson of the Lucy of Charlecote, whom Shakspeare immortalised. In the terrace lived Murphy, Mrs. Mountain the singer, and the painter and quack, De Loutherbourgh; and in his cottage here Leigh Hunt kept his collection of poets' locks of hair. We may conclude our short sketch of a highly interesting quarter with a reference to a woodcut in Hone's "Every Day Book," 10th September, 1827, of a curious old pump, then standing before a font or vase in Webb's-lane, over against the Thatched House, of which, however, nothing with certainty can now be said.

THE LINE OF FRONTAGE AND THE DEMOLITION OF HOUSES.

We referred in our last to a very important decision which was given by Vice-Chancellor Bacon on the 28th of February last, in the case of Barlow and Elsdon *v.* The Vestry of Kensington. It is, perhaps, the most noteworthy decision on the Metropolis Management Amendment Act, 1862, which has come to our notice for a long time. It is also of still further importance in that it shows that there is a practical, though not a formal, appeal against the decision of a magistrate who orders a building to be demolished under section 75 of the above Act. For in this instance the stipendiary magistrate at Hammersmith Police-court had ordered a part of a house which fronts upon the Kensington High-road, and is a corner house, so to say, of De Vere-gardens, to be pulled down. The owner thereupon appealed to the Quarter Sessions. This Court decided that it had no jurisdiction to hear the appeal, and this decision was upheld by the Queen's Bench Division. Thereupon the houseowner, with praiseworthy perseverance, takes proceedings in the Chancery Division and asks for an injunction to restrain the Vestry of Kensington from carrying out the order of the magistrate, on the ground that it was, in fact, a wrong order, and made upon a mistaken construction of the seventy-fifth section of the Act of Parliament.

The question, after all, is a simple one; the section in question says that no building shall be erected beyond the general line of buildings in any street in which the same is situated. It further states that such line is to be decided by the Superintending Architect of the Metropolitan Board of Works, and then, that any building which projects beyond this limit, and which is thus built contrary to these provisions, may be demolished by order of the magistrate. The house about which all this litigation has taken place was built in the Kensington-road, and it was described by the Superintending Architect as being in Kensington-road, and therefore it was not, of course, to extend beyond the general line of buildings in Kensington-road, which was, to quote the words of the Act, "the street in which the same is situate." In fact, however, the corner house extended beyond the line of frontage in De Vere-gardens, and therefore the magistrate ordered so much of the building as projected beyond the line of frontage in De Vere-gardens to be pulled down. "But," said the Vice-Chancellor, "neither in the words of the statute, nor according to the facts proved, can it be truly said that the plaintiff's existing house to which the order is said to apply ever did stand in De Vere-gardens or anywhere but in Kensington-road." And then further on he proceeds:—"The Act only authorised him (the magistrate) to prevent any obstruction by a man in the line of houses on which his building was situate." And the judge also points out that the fact of a doorway being made into the side street from a house which really belongs to the main street cannot make any difference, or turn a corner house, so to say, out of one line of buildings into another. The result, therefore, of this decision is to leave the owners of corner houses full liberty to build to the edge of the pavement in side streets, and beyond the line of frontage of such streets, but to prevent them from going beyond the line of frontage in the street to which the house actually belongs. Such by this recent decision is the state of the law; but having regard, as the Vice-Chancellor said, to the very great importance of the point, we should not be surprised to see the matter carried to the Court of Appeal. But until the case is overruled it must be considered as good law, and to have made the point perfectly plain and simple.

"ON THEATRES."*

In writing a paper on theatres, I propose to give preference to practical results rather than to the many theories advanced, which, although well in their way, are but of little value to an architect who wishes to set about getting out the plans for a new theatre; and in so limited a space the information given must take the form rather of a series of suggestions: to go into full details would be impossible. For this purpose I propose to imagine a site selected, of certain dimensions, and upon this, as it were, build up my suggestions, step by step, and I will divide it into the following sections:—(1) the site; (2) arrangement, before and behind the curtain; (3) the action of the Lord Chamberlain, magistrates, and Metropolitan Board of Works, as regards the construction of theatres; (4) fire, and protection from fire before and behind the curtain. With these divisions I shall try and deal with it so as to render my meaning clear to you.

The Site.—The first difficulty which presents itself in erecting a modern theatre is the choice of a site. The great object to be attained is to find one in a public thoroughfare or off a public thoroughfare thoroughly easy of access to the public. In fact, a theatre in London would be of very little use unless the thoroughfare were a good one, and had both road and rail accommodation of the best and easiest description. It is this reason, I may say, which makes the Strand the best thoroughfare in London for theatres, and however much a theatre in some outlying part might become fashionable, and for a time pay well, outlying theatres generally do not make a good permanently paying investment, and on this, the paying quality in theatres, the whole argument and practical use of such a paper as this must be founded. National theatres, such as those from the times of the Greeks and Romans down to those subsidised by foreign Governments, are entirely in a different category to the theatres of England. Here they are built by private enterprise, entirely without public funds or help, and are looked upon only as an investment of so much money which must return a certain amount of interest. Therefore, in selecting a site, the difficulties of dealing with it in a crowded position,—and it is only in such a position a theatre can be built to pay,—are these:—The large cost of the land and the ancient lights and rights of the owners surrounding the site, and also the obtaining of proper means of ingress and egress, as, besides the front or main entrance, it is necessary to have side entrances to the stage, and, if possible, to the pit and gallery. Hence the site at the corner of a thoroughfare is best, isolated sites being practically unattainable. All these requirements must be had within a sum which will pay the investor while constructing a theatre that will attract the public. Investors, as a rule, in theatre property require to be paid a much higher rate of interest than would be deemed sufficient on any ordinary house property investment, as the risk is considered to be much greater, and the investors are fewer in number. Therefore the money question must, as I have before said, be made to govern, as it really in practice does, everything. With unlimited space and money the principal difficulties would at once vanish, and everything would be simplified. In the first instance, if the entrance is not in the main thoroughfare care must be taken, in selecting a side street, that the access provided to it be good, in which case a side street off the main thoroughfare becomes almost as good as the main thoroughfare, and, the land being cheaper, pays the investor better. Where some years ago theatres depended for part of their audience upon the passing traffic, now people, as a rule, who lived in town, live outside,—all the houses in the centre of the town being too valuable as offices, shops, and warehouses,—and so living at a distance from the theatres, people usually make up their minds where they will go before they start; the easier the theatre is of access the better its chance of success. In preparing a site for a theatre the auditorium is usually considered first, because it is taken as the remunerative portion of the house, but from a manager's point of view the accommodation behind the curtain, and the easy working of all the various departments, requires quite as much, if not more, consideration. A theatre in which the working departments are difficult to get at, may involve a very serious item of cost, and when the time of a non-success to the management comes the extra expenses are very sorely felt. Serious attention must be therefore paid to those working portions which do not meet the eye of the public, but which try the pocket of the manager, and thus, though indirectly, considerably influence the letting of theatres. The best proportions for a site are those in which the length is not quite twice the width, and any irregularity of shape there may be of the ground should as far as possible be left to the one side, such reserved portions being most useful for the various accommodations required for lavatories, refreshment-rooms, cloak-rooms, extra staircases, dressing-rooms, &c. For the purposes of my paper I will take the ground as being 100 ft. by 63 ft., with the necessary side accommodation for stage entrances, &c., and having settled with the adjoining owners as to their respective lights and other rights, and the plans having been passed, the operations of building may commence.

Before and Behind the Curtain.—In constructing a theatre there are three great points in the auditorium to be kept in mind,—easy access, good sight of the stage, and distinct acoustic properties. Behind the curtain there are two points to be kept in view, plenty of space and accommodation for working, and convenient dressing-rooms for the actors and actresses, &c. In the auditorium we will take it that the theatre is to be one of the ordinary form, which seems to be most acceptable to the British public, and at the same time is generally considered most remunerative; that is, a pit, stalls, dress-circle, upper circle, and gallery, and a theatre on this site can then be constructed to accommodate, in the—

Pit	430 persons	Four private boxes on this level, or 616 on ground floor.
Stalls	150 ,,	
Dress Circle	150 ,,	and eight private boxes.
Upper Circle	180 ,,	and eight private boxes.
Gallery	600 ,,	and four private boxes.

In all about 1,700 persons.

For a theatre of this size I think there should

* A paper by Mr. Walter Emden, read by him before the Architectural Association on the 16th inst.

not be more than 18 ft. depth in the dress circle, divided into six rows of seats at most, each row occupying 3 ft. The distance from the front of the circle to the front of the proscenium would be about 33 ft., making with partitions, &c., a total of about 52 ft. from the back of the circle to the proscenium. The corridor behind the circle being 8 ft. wide, the total distance from the outer wall to the proscenium will be about 60 ft. Thus, after deducting the walls, it leaves 35 ft. to the back wall of the stage; adding the projection of the stage beyond the proscenium, its total depth will amount to about 40 ft. The best form I have found for sound is the old horse-shoe; that is to say, a semicircle with the sides produced from it to the proscenium. If desired, some extra accommodation may be acquired to the dress-circle if a row of seats be thrown out forward as a balcony from the general lines of the circles of the house; but every extension over the pit tends to destroy the sound in it. At the sides of the circle, where it joins the proscenium front, it is usual to place private boxes, and this is not only, perhaps, the best position for them, but it is the natural one, inasmuch as it would be impossible in this portion of the theatre to place rows of seats, as only the front row would have a good view, and a large portion of the others would be unable to see at all. The angle which decides where the division between the dress-circle and private boxes should be placed should be governed by the line of vision from the back rows of the dress-circle, for the seats in the circle should not be continued further than the point at which they give a good view of the stage from side to side of the proscenium opening. The width of the proscenium should be 30 ft., the private boxes having a depth of 6 ft. This gives the principal points of the plan. I will next refer to the general points of the section. The height between the different tiers in theatres is greatly varied; but I believe that too great a height is a mistake, not only from the extra cost it incurs, but because the rake of the seats in the various circles, particularly in the top one, or gallery, becomes so extremely steep as, although not perhaps to be absolutely dangerous, still to be very unpleasant to any one possessed of any degree of nervousness. In the gallery of some theatres when you enter at the top it seems as if the slightest slip would cause you to fall head-foremost into the pit, and however comfortable a theatre is from the dress-circle point of view, it is sometimes in the gallery as if you were on a house-top. Besides which, as regards sound, too great a height helps to create large open spaces in which portions of the wave of sound created by the actors' voices is lost. Their voices having to be heard all over the house, and every superfluous foot of space absorbing a proportion of sound, the consideration of this point becomes one of importance. Place the ceiling of the pit immediately at the point under the centre of the circle 10 ft. from its floor, and from the ceiling of the pit to that of the dress-circle 13 ft., from the ceiling of the dress-circle to that of the upper circle 12 ft., and from the ceiling of the upper circle to the ceiling from which the dome springs above the gallery 13 ft. In the various circles the pitch is calculated roughly thus: each person seated behind the other should be able to see over the head of the person seated in front of him, and all should see from this over the top of the circle front to the footlights in front of the stage, and, if possible, see the orchestra as well. It is usual to make steps in the stalls, circles, and gallery, for each row of seats, but in the pit there is a regular rake of the flooring. The height of the stage from the floor of the pit is usually about 4 ft. 6 in., and as the stage should rise from the footlights at the rate of ½ in. in the foot, every one on the floor of the pit obtains a good view with a much less rake than is required for the circles above the stage level. The height of the proscenium from the stage should be more than the width of the opening, which I have taken at 30 ft., say about 35 ft. in height, and from the top of the proscenium opening to the ceiling from which the dome springs should be about 8 ft. This last height should always be as low as possible. The dome should be in the form of a flat ellipse; it is best for sound, and avoids as much as possible any too great height above the proscenium, for where there is too great a height I have always found that distinct sound is very largely destroyed and absorbed, and consequently rendered imperfect. The large amount of air contained in the great height of ceiling acts like blotting-paper on water and absorbs the sound, or rather draws it off, there being more power of attraction to the sound wave where the air is in the greatest body. Thus far I have dealt with what, from such experience as I have had, I consider to be the dimensions of the auditorium of a theatre on a site of the size named, and the suggestions here made will meet the requirements of most sites, as they can be proportionately extended or reduced, although, of course, all the dimensions given would not increase in the same ratio in all cases. I believe a thoroughly good result can be obtained from them for both of the two principal essentials required, viz., sight and sound. I do not say for an instant they are the exact or only dimensions on which an auditorium should be built; but I find that theatres of or about these dimensions have produced the desired effect. No doubt there are many valuable theories, and there are many alterations that might add much to the grace and beauty of a building of this kind; but I do not think it possible to discuss them thoroughly in a limited space, and there are many of them which could not be governed by what must govern this paper, and in most cases any theatre, and that is building a theatre to pay. They cannot be simply architectural buildings in the true sense of the words, and the most an architect can do is to produce as well-proportioned and tasteful a building as a limited site and limited capital will admit of. With regard to the question of exits and entrances to the auditorium, I propose to deal with them when I come to the question of protection from fire; but I would suggest that in all cases when arranging the position of the auditorium, the greatest regard should be had to easy and direct egress and ingress from every portion of the house into the street. The question of men and women's accommodation for every portion of the house should not be forgotten, as, although not perhaps directly affecting the letting of the theatre, comfort in a house adds directly to its popularity with an audience, and so indirectly adds to the profits of the theatre. In all cases the question of seating and good accommodation for the public should be made a primary one, as although a few seats may be lost, there is no doubt the pleasures of theatre-goers are greatly increased if attention is paid to these points. The stage should project into the auditorium some few feet, so that when singing or speaking the actor may be more into the body of the house, and his voice thus better heard, and not so immediately affected by the great space in the height behind the scenes. With regard to the stage, the width of the site being 63 ft. and the opening of the proscenium 30 ft., there would be on either side, exclusive of walls, a space of about 15 ft., or equal to about half of the proscenium opening, and in a site where the side space is less, it will be found that the difficulty of working the scenery is proportionately increased, and the two proscenium wings which are commonly called "tormentors," inasmuch as they shut out portions of the view of the stage from the audience, having to be pushed forward; so that although the actual opening may be more, the practical gain is nothing, but rather a loss to the house and to the management through the difficulty of working. A stage and the working parts of a theatre badly constructed for accommodation may involve the cost of very many extra hands to the management, and so add an item of cost to the working expenses, which makes a considerable addition to the rent, and is an outlay which shows no return. Of course, depth of stage is very desirable for scenic effect, but it must also be remembered that in theatres of this size the class of performance is seldom such as to require any very large number of people on the stage. The two sides of the stage are known as the "prompt" and "O. P.," the "prompt" side being on the right of the audience, and "O. P." on the left. The "prompt" side derives its name from the fact that it is on this side the prompter has his seat, but in opera-houses and theatres in which operettas are played there is a prompter's box in the centre of the stage, immediately in front of the orchestra, so as to be near the artists. The cellar is in the centre under the stage, and extends over nearly the whole width of the proscenium opening, and over nearly the whole depth of the stage behind the proscenium, so that although the space from the stage to the mezzanine floor is only about 9 ft., the extra depth of cellar should be sufficient to admit of a considerable portion of the scenery, &c., being lowered into it. All round the cellar on the mezzanine floor, under the stage, a clear space is required for working the machinery of the stage, such as traps, slides, &c. There should also be next the proscenium, at each side, staircases down under the stage; these staircases are placed in the spaces created by building the proscenium wall at an angle from the side walls also at this position come any necessary doors of communication from the stage to the auditorium, all such doors being of iron. The accommodation behind the curtain should be housekeeper's room, hall-porter's room, management rooms, wardrobe-room, dressing-room, ballet and supers' rooms, band-room, store-room for properties, carpenter's shop, which, it should be observed, must not now, as in former times, be placed in the roof of a theatre; artist's room, and, in a theatre of this size, a bridge for him to paint the scenery from; scene-dock, for stowing scenery in; and lavatories, &c. There is a practice in some cases, for economy in area, in the site, and of money, of placing dressing rooms in the "flies"; this is not only ill-advised because it reduces the working space but it places the dressing-rooms at too great a height and distance from the stage, and the communication from the stage to the "flies" is usually anything but comfortable and easy, and the heat and vitiated air in the flies from the gas battens and floats, &c., which are used render such dressing-rooms almost unbearable, and certainly most unhealthy, to say nothing of the danger in case of a fire. If possible, the dressing-rooms should be constructed in a building separate from the stage, communicating with it by a single opening only. It would also be an advantage if the various dressing-rooms could be arranged on the prompt side of the stage, with direct and easy communication to the stage and street, and having external lights. This can usually be done, as a house is generally taken in a by-street for the stage entrance, and the rooms over can be used for the above purpose, as well as for the management offices, housekeeper's room, and wardrobe-room. The height of the "flies" should be about 28 ft. from the stage for a proscenium of the size mentioned, and it should be arranged as far as possible that these flies, from which all the "borders" and cloths are hung, and the upper portions of the scenery are worked, be kept as clear of obstruction as possible. There should also be easy communication from the stage on both sides of the proscenium opening to the "flies," they being constantly used during a performance. Under them come the grooves, the wings and flats are worked in. The depth below the "flies" of these grooves is regulated by the rake of the stage and height of the scenery. The property-room in a theatre should be upon the stage level; at all events, there should be a room in which a certain amount of properties can be stored for the immediate use of the piece being performed, otherwise a great deal of extra cost in labour is incurred. The supers.' room is mostly under the stage at the sides of the proscenium walls, and should be on the prompt side. This and the ballet or female supers.' room should, if they have no communication with the outside, have ventilating shafts, as large numbers usually dress there. The ballet-room should be on the opposite side of the stage to the supers.' room; both should have water laid on, and distinct accommodation close to them. Under the stage there should be the musicians' room for them to retire from the orchestra when necessary. This is very desirable in order to keep them together for the time when they may be required for the orchestra, and for them to store their instruments and music in. The green-room is, of course, on the stage level, and as close to the prompter as possible, being usually under the dressing-rooms, at all events near them. The scene dock is simply a space available from the stage wherein to store scenery. It must, according to the new regulations, be so constructed as to be cut off from the stage, as also must all other workshops. There must also be provided a long narrow door or opening through the outer wall of the theatre, enclosing the stage, into the street, through which to bring in or take out scenery. The housekeeper's and hall-porter's rooms should naturally be in the house at the entrance to the stage from the street. The painting bridge in a small theatre is built parallel with the back wall right at the back of

the stage, and is supported by a girder running between the two "flies." Against the back wall is a frame on which the scene to be painted is fixed, and which can be raised or lowered, so that the artist on the bridge can get at any portion of the scene on which he is engaged. There should be a small room in the "flies" cut off from them for the private use of the artist in which his colours, sketches, &c., may be kept in safety. With regard to ventilation, the public, as a rule, have such varied opinions on the subject that it is extremely difficult to satisfy them. One man will think a place hot, that another thinks cold; and for the most part people in a theatre expect the atmosphere to be no hotter than it is outside, and often require it to be cooler, forgetting that the natural heat from the bodies of a large number of persons together inside a building must, of itself, keep up a considerable extra heat. It is almost impossible to lay down a fixed rule for the ventilation of buildings of this kind, in which there are so many openings and circles to twist and turn the currents of air. The heat from the people's bodies, and breathing, added to the ill effects on the atmosphere by the burning of large quantities of gas, make it impossible under the present circumstances, where gas is used, to accomplish ventilation with any degree of perfection, although much can be done.

To ventilate a theatre one must draw off the vitiated air, giving access to the fresh in its place. A simple and effective means of ventilation is by small shafts made at the back of each circle, about 4 ft. apart, in the ceiling, leading into the roof. Round the sunlight, and at various portions of the domed ceiling, perforations can be made into the same roof space. The heated air, always ascending, passes up the shafts and perforations into the roof, it being the highest point. The heat from the sunlight greatly facilitates the draught to draw it off into the roof from the shafts and perforations, while one large ventilator out of the roof, which ventilator should be above the sunlight, will complete this part for drawing the heated and vitiated air out of the building. To introduce cool air is now the necessity, otherwise the heated air will, having nothing to fill its place, not have sufficient incentive to go out. Direct communication with the outer air should be made by means of openings and air bricks in the outer walls, at some height above the heads of the public, on each tier. In the dress and upper circles, where there is a corridor outside the circle, small box shafts, tapering as they are carried across to the outer wall, can be arranged. You cannot accomplish the cooling of a building by the chance opening of doors and windows, but a fairly good system of ventilation can be spoiled by such cross currents, and great rushes of air, as is caused by the indiscriminate opening of any aperture in the inconsiderate thinking that an opening must ventilate because a draught is felt. The proscenium walls which part the auditorium from the stage prevent much of the heat created by the gas in and about the stage from passing into the auditorium; but, as a rule, there is very little if any ventilation provided over the stage, and, after a time, the heated air having filled the space over the stage and having no exit, finds its way into the auditorium; therefore, to prevent this, there should be ventilation through the roof over the stage, besides that over the auditorium, and also some small direct openings for the admission of fresh air. Thus, although it is impossible to construct an invariable system of ventilation for all theatres in the various circumstances under which they are built, by very simple means much can be done to improve it.

I will now refer to the action of the Lord Chamberlain, magistrates, and Metropolitan Board of Works, as regards the construction of theatres. In building a theatre within a certain district, before it can be opened the plans, &c., have to be submitted and the theatre inspected by an officer appointed by the Lord Chamberlain, by whom theatres are licensed. Outside this district they are under the supervision of the magistrates. As a protection to the public that theatres are well constructed, no doubt the Lord Chamberlain's supervision was extremely useful, and the fact that the loss of life in theatres under the jurisdiction of the Lord Chamberlain has been so extremely small ought to be considered a proof of the benefits of this supervision. For this reason I cannot but consider much of the great movement now made about theatres in England as the result of a general scare; still, when as now, a very large number of theatres are built in extremely contracted and varied positions it is no doubt very necessary that there should be some more regular authority and one thoroughly conversant with building matters, in whose hands the supervision and guiding of the construction of such public buildings should be placed. That this supervision has so far been placed in the hands of the Metropolitan Board of Works is no doubt calculated to improve the safety of the public in theatres, and although it may create a considerable feeling of opposition and unpleasantness at first, particularly where theatres have been opened for long periods without accident, and the managers are called upon to make considerable structural alterations, still, there is no doubt that when this feeling wears off it will be generally acknowledged that benefits have been derived therefrom. I do not wish to suggest that a speculator, for the purpose of making money, would build a theatre in any position, and anyhow, but the supervision gives a surety to the public that there cannot be any possible risk of a theatre being built except with every possible facility for ingress and egress, and every other necessary precaution being taken. Of course, a theatre being a complicated building, it is extremely difficult for a body like the Board of Works or its officers to be at once so thoroughly acquainted with theatres as always to be perfectly correct in every opinion they express, or requirement they desire, but as the principals in the office should be men of considerable experience in building matters, they ought not to take long before that difficulty is improved away. I can say from experience with the officials that they are in all cases quite open to reason, and if a question is properly stated, or a difference of opinion is properly laid before them, they will soon be found to take a correct view of the same, and rather facilitate than oppose the architect in his duties. No doubt, in the Building Act itself there will arise many differences of opinion, and if the Board err, no doubt they will err on the side of over-precaution, but, at all events, it is better that a little more money be expended and a little more trouble given, than that there should be any uncertainty as to the safety of the public for want of proper precautions. It would certainly seem desirable that, if the Board of Works are to have the supervision of theatres, there is no necessity for the supervision of the Lord Chamberlain's office, particularly where it is for one and the same object; it seems somewhat absurd that, after depositing the plans of a theatre with the Board of Works, and after passing through the stages of alterations until they express themselves satisfied and ready to grant their certificate, it should still be necessary to deposit plans with the Lord Chamberlain, for him to do the self-same thing, which he does by his approval, and granting the licence for stage plays, &c. It may be said that if the Board of Works grant their certificate the Lord Chamberlain would not refuse his approval, but that is only another argument for not multiplying uselessly the difficulties and costs in building a theatre, which are already quite many enough. The Lord Chamberlain's censorship of plays is extremely desirable, and should if anything be extended, but still it would be very much better if the whole question of the construction of theatres rested with the Board of Works, or some such efficient authority. The magistrates, —the other body in power,—are likely to be misled, and having usually no practical knowledge of the subject, are liable to take up impracticable theories, and then be very difficult to move from them. It seems to me that it would work more justly if, in all public buildings under their authority, which have been approved as safe, and properly erected, by the Board of Works, a permanent licence were granted, subject to supervision or closing if they became disorderly houses; otherwise the licence once given should remain in force, the managers always maintaining any necessary regulations made from time to time for their safe and orderly working by the authority in whose hands such matters were placed. No taking out of yearly licences should be necessary. Many magistrates object to certain very respectable classes of places of amusement on some particular principle. Again, any one, with or without reason, can lay a formal objection on some question of exit, or other matter, which, after proper examination, turns out to be a myth, but it still gives no end of useless trouble on licensing day; in fact, the yearly licensing system of places of amusement is absurd, and in my opinion there is not a single argument in favour of maintaining such a system.

Prevention from Fire.—In dealing with this portion of the subject, the means of exit and entrance must be more directly referred to. It is now a requirement of the rules of the Board of Works, that there shall be at least two exits from every part of the house; that the floors of passages, staircases, lobbies, corridors, and landings shall be of fireproof or fire-resisting materials, and every staircase for the use of the audience shall be separate and enclosed by brick walls. There shall be no winding steps, and every opening in the proscenium walls,—that is, between the stage and the auditorium,—shall be closed by an iron door, and the openings are generally limited to one of a specified size. All theatres now in London are naturally not built of materials calculated to resist fire, although staircases, corridors, &c., may have been made to fulfil the requirements of the Board of Works, but in the event of a fire the passages, corridors, &c., would, I believe, in every instance take the whole of the audience without overcrowding, but the danger in case of fire principally arises from the fact that a panic ensues, and the people are apt to rush to one entrance, particularly the usual one to the building, and block it before they get into the corridors. As far as possible, one of the best arrangements for the protection of the public is that the different entrances to each part of the house should be on either side of such part, or as far apart as possible. If two entrances are close together the crush towards them would be but little relieved by the fact that there were two exits at one point instead of one, but by the entrances prominently situated being apart, the panic to a great extent ceases. The struggle and cries add to the excitement and panic, but when the way out is comparatively clear, the panic soon ceases, and the danger in a theatre, as I have said, is the panic. If the crowd be orderly, less than ten minutes with the ordinary entrances at work will clear any London theatre. It is customary on either side of the gallery to have doors which can easily be broken open, which doors lead into the staircases from the private boxes and upper circles to the corridors at the street-level, and it is also necessary now to have an extra separate staircase from the gallery direct to the street.

The pit arrangement is of a similar nature: it has doors which can be easily broken open at each side, and also an extra separate and direct exit to the street. The upper circle, dress-circle, and stalls have each staircases on each side leading to the corridor on the street-level; often the dress-circle is on the street-level. Of course, if the nature of the site will admit on any level of extra exit-doors direct on to the street they should be made. There is also usually a Royal entrance, which forms an extra exit in case of fire from these parts. No staircase can be less than 4 ft. 6 in. wide; and that staircase can be used only to accommodate 400 persons. Staircases have to be increased by 6 in. for every 100 extra persons up to the maximum of 9 ft.; but I consider that no staircase from the pit or gallery should be less than 6 ft. in width, and, as far as possible, the staircases should be built in short flights with half-landings as the bottom of each flight. The proscenium-wall must now pass right through the roof dividing the building into two distinct parts. It is necessary for the scene-dock, property-rooms, carpenters' shops, and store-rooms to be closed off from the rest of the house by brick and fireproof construction. The most constant source of fires arises from the use of gas. There are such a number of joints left ready for connexion to floats and battons for lighting up the scenery, that there is always of necessity a considerable escape, and the material used for scenery is of such a highly inflammable nature that but for workmen being continually at hand many more fires would occur. It would be extremely difficult, perhaps impossible, to construct a stage and work its machinery, which would be absolutely fireproof, with the present known materials, though much might be done to make it safer. The immediate neighbourhood of fire-hydrants, together with the fact that there are now no workshops allowed in the upper parts of a theatre, at least over the auditorium, all tend to reduce the chance of a fire on the stage. Taking it for granted that the regulations of the

Board of Works are complied with, the real risk in theatres of fires is to the insurance offices. I do not believe, except the chance of suffering a few bruises in the worst of the rush, any one would be seriously injured, though there is always the chance of an accident in the safest of buildings, which nothing can guard against, where fear governs a large number of persons. Over each extra exit there should be an oil-lamp, so placed that if the gas went out the exits could be seen at once. As the public are educated into the facts, and see promptly the means of extra exit,—for all exits should be prominent and easily distinguished,—they will divide into separate streams, when the greatest danger is done away with. The following are some few suggestions for the protection from or prevention of the spread of fire. In a new theatre it would be easy, without any considerable extra cost, to erect a building, as far as the auditorium is concerned, in a practically fireproof manner, although no doubt the use of wood in the auditorium very greatly assists the sound, and the loss might be very much felt in a large theatre; in one of this size it would not be of such vital importance. The means to be proposed must naturally partake more of the nature of prevention than absolute protection, as it would no doubt be impossible to build a theatre in all respects fireproof, although in the auditorium there would be practically nothing but the seats and curtains to take fire. In building warehouses where concrete and iron are used, no doubt there is a very considerable objection to the use of iron, as when it gets over-heated it twists and possibly pulls down the whole of a floor which might otherwise have stood if it had been constructed of timber. But in warehouses there are large quantities of goods stored which serve as fuel to the fire, and are the cause of the heat which twists the girders. Remove this fuel, and the fire has not the means of life, having nothing to feed itself with. Therefore, where there are no stores to keep up a fire, a construction of iron and concrete would stand thoroughly well, and would not be subject to the same objections as in a building of the warehouse class. First, therefore, construct the whole of the circles of iron and concrete. This can be done in a very simple manner by rolled iron joists and concrete arches at a very little extra cost, and in new theatres might be made a regulation of the Board of Works. With regard to any woodwork which it may be necessary to employ for fixing the box fronts, or to attach the lathing to for the under ceilings, the whole of it can, as well as the plaster and decorations to it, be coated in asbestos paint. The main structure of the roof can also be executed in iron, while the ceiling itself could be made in panels of a decorative class without any material in it likely to take fire. There is no insuperable reason that the whole of the circles should not be enclosed by brick-work walls, as the corridors and staircases have now, under the present regulations, to be entirely of stone or concrete.

These suggestions cover the auditorium. There is no doubt that an iron curtain is the ostensible means of cutting off the stage from the auditorium, but a curtain of this description is extremely cumbersome and liable to get out of order, so that other means would be much more desirable if they are possible. In France an iron wire gauze curtain is used, but a curtain of asbestos cloth would certainly be effective, at least for a time. With the auditorium of fireproof construction, the whole question resolves itself into one of keeping the flames on the stage back, and staying a great deal of the draught so fatal in spreading fires, and thus giving the audience and *employés* sufficient time to get out of the building. In the construction of the stage a large portion of it could be very easily constructed of iron. There is no unalterable reason why all the sides of the stage should not be constructed of iron and concrete, while the centre or working portion of the stage could be covered with asbestos paint, so as at all events to be able to resist fire for some considerable time; and such being the case, the question is either one of available exits or good appliances to extinguish fires. Referring to the greatest danger on the stage,—the use of gas,—if electric lighting were to become generally used upon the stage and auditorium the risk in theatres would be greatly reduced, and with such precautions as have here been named a fire of any consequence would be of very rare occurrence. Of course, in theatres there must be large quantities of rope and canvas, &c., as well as wood in the machinery and scenery which it would be impossible to render absolutely fireproof, and therefore for this reason prevention from spreading, rather than thorough protection from fire, must be obtained, which I would suggest can be done by some such means as are here pointed out, and to complete such couse of prevention it only remains to remove the greatest cause of fires,—gas,—and substitute for it another means of lighting, which, so far as the inventions of the present day go, must be electricity.

PATENTS AND THE NEW GOVERNMENT BILL.

The Patent Bill brought in by Mr. Chamberlain, the Solicitor-General, and Mr. John Holms (M.P. for Hackney and a Lord of the Treasury), is designed to amend and consolidate in a single measure the provisions of the numerous laws relating to patents, trade-marks, and designs; and at the same time to simplify procedure, to lessen its cost, and to increase the degree of protection afforded. The laws regulating the grant of patents date from 1852, the principal Acts affecting the registration of useful and ornamental designs from about ten years previously, whilst the Trade Marks Act was passed in the year 1875. Yet, looking to the many amending and cognate Acts that have been passed from time to time in connexion with these, it will be seen how comprehensive is the operation of the new Bill. Reserving our criticism, we will mention some of the principal executive and administrative changes which it embodies.

In the first place, the titular staff of Commissioners of Patents, Clerk and Assistant Clerk to the Commissioners, and Registrar of Trade-marks and Designs, is to be swept away, all proceedings relating to the grant of patents or the registration of designs and trade-marks to be relegated to an officer, styled the Comptroller, acting under the superintendence of the Board of Trade. The Patent Museum (an institution which is capable of great development, and should be better known) is to be transferred to the Science and Art Department at South Kensington, with power to acquire models of inventions on payment. In the second place, the initial fee on application for a patent is reduced from 25*l.* to 4*l.*, whilst the limit of time for paying the next amount (50*l.*) is extended from three to four years. The payment of 100*l.* before the expiration of the seventh year of the patent, and the duration of patents themselves for fourteen years, continue as heretofore. The promoters of the Bill are at great pains to demonstrate that under the existing practice an intending patentee or his agent is compelled to apply in person at the Patent Office seven times at the very least, to make four separate payments, and to use four documents for the application. These rests are so far lessened that he would now have to call but twice at the office, to use three documents, and to make but two payments. Moreover, he might transact all his business by post, thus avoiding both personal attendance or the outlay of agency charges. A corresponding simplification is indicated to follow in the clerical labour within the office. In the third place, each application for a patent is to be submitted to an examiner,—from whom lies an appeal to one of the law officers of the Crown,—who is to ascertain and report to the Comptroller whether (*a*) the invention is subject matter for a patent; and (*b*) the nature of the invention has been fairly described, and the application, specification, and drawings (where any) have been prepared in the prescribed manner. Somewhat like to one in that which we may refer to as the Society of Arts Bill, this clause will probably evoke much discussion. The words "subject matter of a patent" are of wide import; they could be construed as extending to questions of title or vested interests, in regard to which, however, there is no other, if here expressed, mention in the Government Bill. The Board of Trade further are enabled, on certain conditions arising, to enforce the granting of licences on such terms as to the amount of royalties, security for payment, or otherwise, as they may under the particular circumstances deem just. Other new provisions include the enlargement of time for discharge of fees due or their renewal, the publication of an illustrated journal of patented inventions, the substitution of a Patent Office seal for the wafer seal which lately replaced the Great Seal, and the erection, should they be found necessary, of new offices for the Comptroller, his examiners, and remaining staff.

The classification of designs as being either "useful" or "ornamental," it is proposed to discontinue. "Any novel design, in the proper sense of the word," will be taken, though such as embrace a mechanical action would be treated as subject matter for a patent. Additional facilities are furnished for the registering of designs, their provisional registration being abolished, and the authorities omit, as considered unnecessary, the existing power to register works of sculpture. Power is taken to establish at Manchester an office for the deposit of specimens of designs for cotton prints and the like. The various current terms of copyright in registered designs it is contemplated to level to one uniform period of four years. The tedious and sometimes vexatious course of registering trade-marks will be greatly relieved, whereas the amended definition of what a trade mark lawfully consists of admits many marks, special and distinctive words, brands, and letters, which are yet excluded from the register. The process of registering Sheffield corporate marks as assigned by the Cutlers' Company in Hallamshire from a time reaching as far back as the reign of King James I., is assimilated by this Bill with the method that will obtain in London. Penalties, by fine, will be incurred by persons who shall falsely represent, by whatsoever means, the articles they sell to be patented.

No small stir may be expected to ensue and considerable ingenuity to be exercised to evade it should that clause pass which enacts that a fine (not exceeding 20*l.*) shall be levied on summary conviction upon anybody who, without due authority, assumes or uses in connexion with his trade or business the Royal Arms or any arms so nearly resembling them as to be calculated to deceive!

SCHLOSS NEU-SCHWANENSTEIN.

It was towards the close of the autumn of last year that this new castle or palace of the Hermit-King, Louis of Bavaria, was completed. In harmony with the retiring disposition of its royal master, it stands in lonely grandeur in a wild and remote mountain district. Standing on the lofty rocky height called the Tegelberg, this new retreat of the Bavarian monarch faces the proud castle of Hohenschwangau, built by the late King Max. King Louis for the first time took up his quarters in the new palace, which is one of the largest and grandest royal residences on the Continent, on November 10th last, and it was here that he received from Venice the intelligence of the death of his favourite musician, Richard Wagner. The architecture is of the pure Italian style. The edifice is six stories high. It has numerous balconies and corner-towers, and is very rich in ornamentation. The building material employed in the construction is granite. From the centre rises a tower, 110 ft. high, with two beautiful verandahs, and here King Louis is fond of sitting and enjoying the grand outlook over the lofty table-land of Bavaria. The roof of the castle is covered with copper, intersected with gilt plates. The courtyard is of great extent, and every part is beautifully finished, the masonry-work being executed with exceptional excellence. The portal is majestic, fully in keeping with the whole style of the building. The front of the right wing of the palace is adorned with two frescos, each 12 mètres in height. They are works of great value, and their brilliant colouring is very effective. The subject of one of them is St. George, who is represented as a knight on horseback, fighting with the dragon. The other is a picture of the Virgin Mary, with infant, as the protectress of Bavaria. The summit of the right wing is adorned with a bronze statue of a herald, attired in ancient armour. He holds the Bavarian standard in his hand, and is gazing heavenwards. The corresponding point in the left wing shows the bronze figure of the watchful lion of Bavaria. The entire edifice is adorned with numberless double columns and statues, and in general appearance it most nearly resembles a Genoese palace. The apartments of the interior in their lavish luxury outstrip the boldest flights of the imagination. Amongst their decorations are masterly frescos, the subjects of some of which are taken from

Wagner's "Nibelungen," and "Parsifal"; others represent the chief warlike events of the years 1870 and 1871, particularly the actions in which the Bavarian contingent took a leading part; another section is devoted to the history of the kings of Bavaria, from 1806 to 1867. The ceilings are extraordinarily rich in decoration. The floors are partly mosaic, partly inlaid work, harmoniously carried out.

The king's favourite apartments are on the sixth floor, and in these he passes most of his time. There he has his library and sitting-room, his bedroom and the reception-room in which his ministers make their daily reports to his majesty. The king's sitting or work room is embellished with the portraits of his parents and of the men he most admires, including Herren Richard Wagner, August Heigl, Von Tann, and Lutz. There is also a picture from Wagner's "Rheingold," and a plan of the Liederhof. It was while sitting in this room that the king received the news of Wagner's sudden decease. The rooms on the fourth and fifth stories are dedicated partly to the king's extensive library, and partly to his collections of coins, arms, and other objects illustrative of history. The first story is a grand, richly-gilded hall, into which the stairs debouch. The entire palace is lighted with the electric light, the Jablockoff system being used in the court-yard, while in the interior the Edison and Swan systems are employed. The stables of the palace are also adorned with frescoes, being imaginary pictures of the world before the flood. Standing near the stately and charmingly situated pile of Hohenschwangau, the Bavarian sovereign's new residence may be seen from a distance far and wide, and at once captivates the spectator. Hohenschwangau and Neu-schwanenstein, the former built by King Louis's father, the latter by the present king, are among the many eloquent illustrations of the very uncommon taste of the Bavarian sovereigns in matters of architecture and the fine arts.

ST. MARK'S, VENICE.

THIS pamphlet* is an elaborate defence drawn up by the Venetian architect, Saccardo, at the request of the Conservators of the Basilica of St. Mark, of the works of "restoration" carried on about that building. It is chiefly directed against the authors of a pamphlet, "The Future of our Public Buildings," published in Venice last year (noticed in the *Builder*, vol. xliii., p. 390), but is really intended to refute the allegations of the English St. Mark's Committee, and copies of the pamphlet have been sent to the principal members of that Committee and of the Society for the Protection of Ancient Buildings.

The Conservators state that they have abandoned the system of letting out the work to contract, and have engaged a clerk of works to superintend the building operations. They further state that the works have been done in strict conformity with the regulations issued by the Government.

A copy of the reply of the Prefect of Venice to the memorial presented by a committee of artists in the course of last year is printed on pp. 13, 14, and 15 of the pamphlet.

THE SWISS NATIONAL EXHIBITION AT ZURICH.

ACCORDING to a statement circulated in the foreign technical press there will be a joint display made at the above exhibition (opening May 1st) of all that appertains to plastic industry. A large pavilion will contain the exhibits and will in itself be an integral part of the display, as various portions of the construction have been contributed by different exhibitors as specimens of their manufactures. The pavilion is about 65 ft. long by 49 ft. wide, thus covering a superficial area of about 3,200 square feet. In height it varies from about 12 ft. 6 in. to 15 ft. 6 in. The execution of the work has been entrusted to Messrs. Chiodera & Tschudy, architects resident in Zurich.

The principal façade consists of red, white and coloured facing bricks, and is decorated with building ornaments. The entrance, constructed by Messrs. Bodmer & Biber, of Zurich, consists of three semicircular arches with an effective frontispiece. Facing the river Limmat is a portal with two towers, built by Herr von Planta. The towers contain stairs leading to a platform which surrounds the building. From this elevated promenade it will be possible to examine the various descriptions of tiles used in the roofing of the pavilion. These will include, it is said, ordinary roofing-tiles, glazed tiles, gable-tiles, crownings, &c., which are in most cases special objects of exhibition. An excellent view of the exhibition and its surroundings will also be obtainable from the platform.

It is also contemplated to use this platform for showing the less ornamental productions of brick and cement manufacturers. The Swiss makers of these articles express their confidence that a fair comparison will show that the native industry of this kind is quite able to supply the wants of Switzerland without recourse being had to the importation of foreign articles.

In the vestibule of the open court, situated in the centre of the building, will be a number of building ornaments, as well as pipes, works in marble, flooring tiles, &c. In the adjoining park there are to be many objects of interest to the building trade, such as cement constructions, pillars, bridges, fountains, syphons, mosaic pavement, ornamental statues, &c. The interior of the building is to be devoted to a comprehensive exhibition of Swiss pottery, the idea being to group together all the various exhibits in any way connected with the application of various earths, &c., to industrial uses.

* La Basilica di S. Marco in Venezia nel suo passato e nel suo avvenire. Venice. 1881.

PRINCIPAL ENTRANCE OF THE CHURCH OF SANTA TERESA AVILA, SPAIN.

THIS remarkable temple-fortress forms an integral part of the *enceinte* of the city; all its colossal features show that the Cathedral of Avila was as much a castle in the troubled times of the Middle Ages as a Christian church. It was erected in the reign of the King-conqueror Don Alfonso VI. The first architect was Alvar Garcia, a native of Estella. He commenced the work in 1091, and the church was consecrated ten years later. The church has three entrances: the north-western door, of the original building; the northern entrance, of grand dimensions, with reliefs and statuary of great merit; and the south-eastern portal (represented in the engraving issued with this week's *Builder*), executed in a fine white stone, which forms an agreeable contrast to the sombre colour of the granite which forms the mass of the building.

ST. PANCRAS WORKHOUSE EXTENSION.

IN our review of the competitive designs submitted for this important work a short time ago, we described, so far as the limits of our space allowed us, the general character of the several schemes. We have since published the selected design by Mr. H. Bridgman, and we give in our present number a perspective view which formed one of Messrs. J. Saville & Son's set of drawings, and was executed by Mr. Harold Oakley. We do not propose, further than is necessary to explain the more prominent features of the group of buildings represented in our illustration, to enter into particulars as to the general arrangement of the plan. The one-storied wedge-shaped block in the fore part of the view was intended for the reception of probationary paupers, and was planned in the form shown, and kept low, in order to utilise, as far as possible, the vacant space in front of the main building, without damaging the light and prospect which that building has hitherto enjoyed. The main building, as it now stands, is three stories in height, the lowest of which is almost entirely below the level of the ground. The authors of the design under notice proposed to remove the earth in front so as to give the building the advantage of its full height, and, at the same time, to improve the lighting and ventilation of the basement story. An extra story was also proposed to be added, and the original structure made to harmonise with the architectural character of the new erections, by finishing the central and flank projections with gables at the top, and turning segment arches over the old flat-headed windows. With the exception of the water tower in the centre of the site, and the dining-rooms and kitchen buildings in the rear, the buildings were intended to be nearly all new. The schools form two separate buildings situated at either end of the main buildings The chapel is centrally placed just behind the main building, to which it is joined by two short corridors. The large four-storied blocks running parallel to the front building, and next the two side boundaries of the site, contain the greater part of the new wards, and are connected on the ground-floor by a continuous corridor. The two rearmost of these blocks are appropriated for the male and female infirmaries, which are thus removed as far as possible from the rest of the workhouse buildings. The laundry and the numerous offices belonging to it abut the back extremity of the site, and the large chimney-shaft of the engine-house stands in the centre of a tower containing the principal staircase of the laundry building, and was designed to carry the water-tanks for the laundry supply. The plan provides accommodation for 2,250 inmates, and the cost of carrying it out was estimated at 90,000*l.*

THE BIRMINGHAM COFFEE-HOUSE COMPANY'S SHOPS.

WE give a view of the Birmingham Coffee-house Company's Shops and Offices, now erecting in Corporation-street, Birmingham, Mr. William Doubleday, architect. The design was selected in a limited competition of seven firms of this town. Mr. Moffat is the builder, and the contract is under 8,000*l.* The material is Coraham Down stone; the columns and piers on the ground-floor being of Aberdeen granite. Messrs. J. M. Carr & Co. are the stonemasons. The internal work will be designed by Mr. J. P. Osborne.

The company has already twenty houses in operation, and pays a dividend of 10 per cent., besides giving bonuses to their *employés*, 338*l.* last year, distributed in proportion to their wages. The chairman of the directors is the present Mayor, Mr. William White. The amount received from sales last year was over 36,000*l.* The motive of the promoters of the company was philanthropic, but worked out on strictly commercial lines; and its success should encourage similar efforts to forword the well-being of the working-class of our large towns, without unduly "patronising" them, a mistake which has been fatal to many well-meant movements in this direction.

RESIDENCE FOR DR. STAFFORD, WINDLESHAM.

THE villa residence which we illustrate is being erected from the designs of Messrs. Byrne & Wilmot, of 303, Strand, and Windsor, who are also carrying out in the same neighbourhood two other residences of the same class and style, for Mr. J. Pither. The site of Dr. Stafford's house is situated on the Surrey hills, between Sunningdale Station, South-Western Railway, and Bagshot, a locality which is becoming a favourite health resort for those requiring pure air, beautiful scenery, and pleasant social surroundings.

The house is being built of kiln-burnt red bricks, black pointed, with tiled roof, and weather-tiled upper stories, from the Bracknell Brick and Tile Company.

The attics will be of half-timber work and rough-cast. A sparing use of Brown's terra-cotta panels and tile strings will be introduced in the entrance front.

The porch, verandah, bath, and hearths are to be laid with Minton Hollins's glazed ornamental tiles; Arrowsmith's parquet flooring being used in the hall, which is to be lighted by a large stained-glass window. The stairs, cornices, and panelling in the dining-room and study ceilings will be carried out in pitch pine, which will be varnished, as well as all other internal woodwork; ample provision is made for hard and soft water in the tower over the entrance-porch.

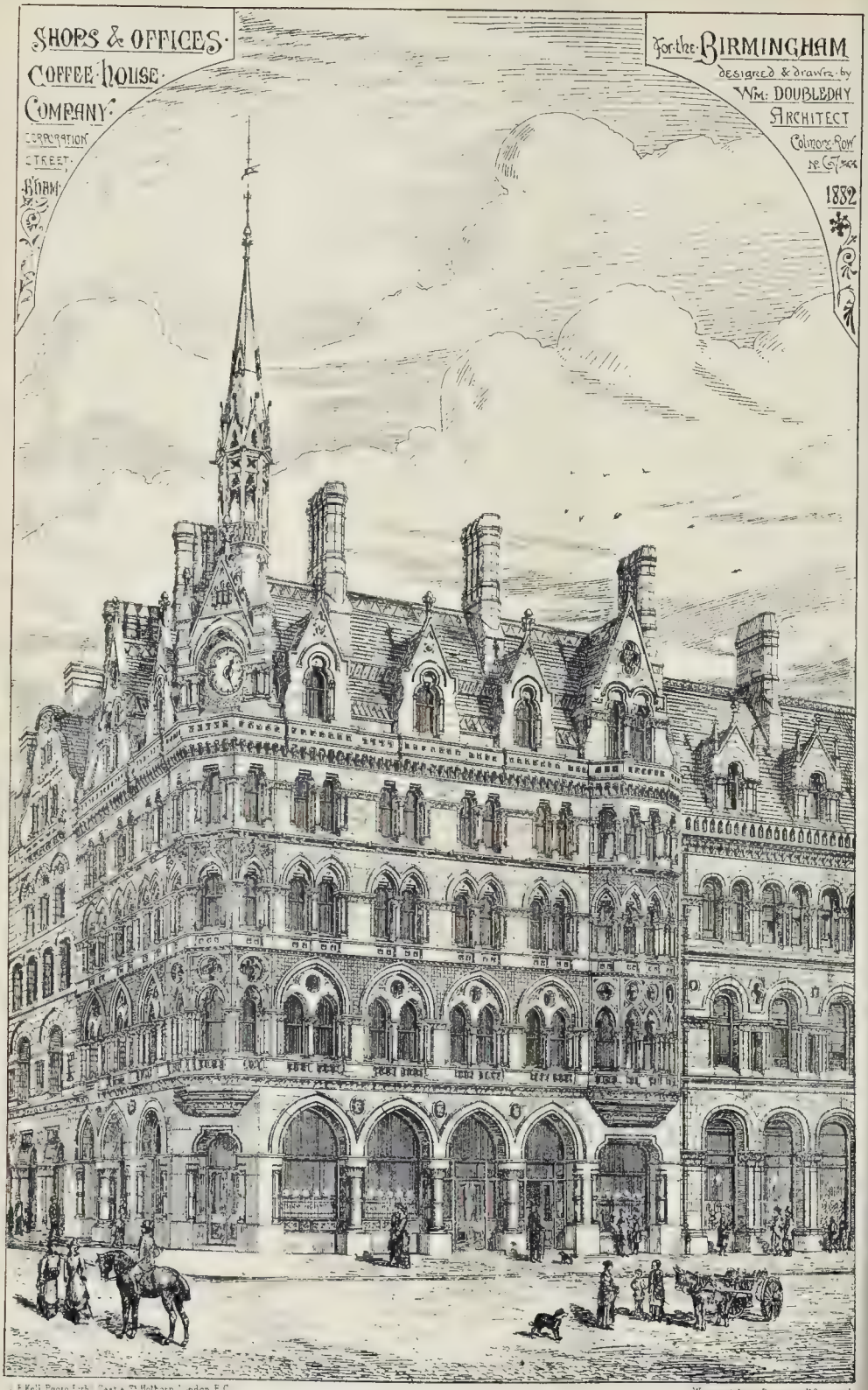
The contract for the house, exclusive of stoves, chimneypieces, and tile hearths, was taken by Mr. J. Higgs, of Dorset-square, London, for the sum of 1,977*l.* The lodge and additional stabling, which are exclusive of the above, will be carried out according to a schedule of prices, based on the contract for the house.

A large New Clock has just been erected in Roby Church, near Liverpool, showing time on two 5 ft. 6 in. copper dials, and striking hours upon a 15-cwt. bell. Messrs. John Smith & Sons, Midland Clock Works, Derby, carried out the work.





PRINCIPAL ENTRANCE OF THE CHURCH OF SANTA TERESA, AVILA, SPAIN

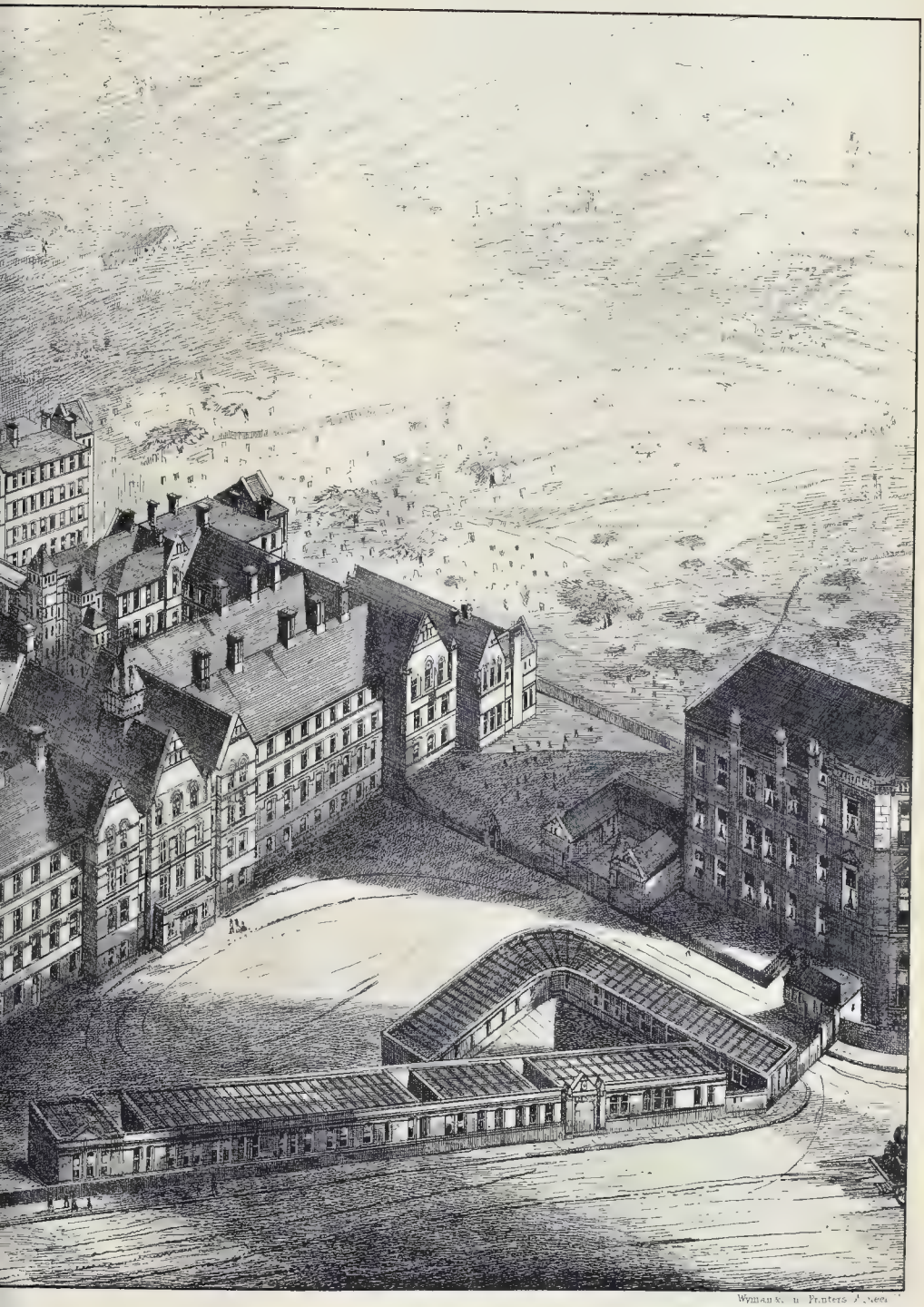


J. F. Kell Photo-Lith. Castle St. Holborn, London, E.C.

Wyman & Sons Printers & Queen



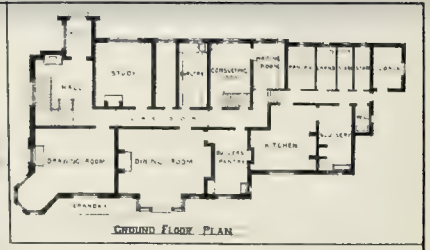
COMPETITIVE DESIGN FOR SAINT PANCRAS WORKHOU



Wyman & Co. Printers, Boston.

N. Submitted by Messrs. J. Saville & Son, Architects.

Residence for Dr Stafford
Windlesham Surrey
P J Byrne ARIBA } Architects
J G. Wilmot
303 STRAND AND WINDSOR



GROUND FLOOR PLAN



THE HISTORICAL DEVELOPMENT OF ORNAMENTAL ART.*

The second of a series of lectures on this subject was delivered to a numerous audience in the Hall of the Painter-Stainers' Company by Dr. Zerffi, F.R.S.L., on Friday evening, the 2nd inst. Among those present on the platform were the Master, Mr. W. F. London; the Upper Warden, Mr. J. D. Crace; Messrs. W. Nicholson, Mence-Smith, H. Heal, W. Lutwyche; and Past-Master J. G. Crace, by whom the lecturer was briefly introduced.

Dr. Zerffi began by again craving indulgence for the limited time in which he had to go over the broad field of art and its history, and said he would only endeavour to give broad outlines showing the distinctions of art at different periods, and the causes that produced these distinctions. Roman art, at its climax, under the last of the emperors, produced magnificent buildings and ornamentation that called forth the wonder and admiration of the world. But Roman ornament was too diffuse, it had no repose: if you tone it down, or do half as much as they did, you will be nearer right. It was exaggeration, reflected in all their art products: the Colisseum, the Pantheon, the Arch of Titus, and that extraordinary Trajan column, 120 ft. high, with a ribbon running round it, having no fewer than 1,470 human figures on it, many of which could never be seen. This was not art, but boasting; not the art of people who loved art for its own sake, it was the art of *parvenus* that wanted art because other people had it. For such some grand monumental work might be possible, but the fine taste is altogether neglected. Christ appeared, and with the spread of his Gospel began the great revolution which overthrew the sway of Roman art. His gospel taught the early Christians in the catacombs they were somebodies; man, sunk into his own self, considered more his own subjectivity. Art for the time became secondary, the symbol the primary consideration; and the little cross scratched on the tomb became hallowed and made grand by its symbolic meaning, not beautiful but sacred. Later on we shall see in the development of this symbolism the spirit that produced the grand Gothic temples where every carved animal and flower had its symbolic meaning. It is most important that we should be taught the meaning of all symbols, because in symbols you can express whatever you like. Coming to the fourth century, the Christians began to have admirable churches, either by adapting Greek temples, or by buildings where the main features were still Classic, flat roofs, and Corinthian columns, until in the Byzantine art we come to have temples showing by their grandeur that Christianity had become the State religion. The Church of St. Sophia dazzled the beholder by the brilliancy of its gilding, numerous single figures (groups being forbidden in the Eastern church) being painted on its gilt roofs, and one in each of the triangular divisions of the cupola; immensely imposing, but the whole a mistake. You enter without knowing whether it is the middle or the end you are entering at; circles, half circles, squares, all muddled up, and each part makes small and detached impressions; one niche, and then another niche, each creating admiration, but without any grand plan. We will not learn that this is a great mistake; everything is divided with us; we fail to have a noble and general plan.

In the Romanesque we have a great improvement, as at Ravenna; one dome and one arch, the idealisation of the catholicism of Christianity. Taste and knowledge increased, and with this increase the buildings improved, becoming simpler and grander, and we find them beginning to be symmetrically grouped.

Concurrently was the counter-action of Mahommedanism developing itself in the East. Similar to our war against the so-called idolatry of the Romanists, the Mahommedans could not think human beings could be surrounded with all these pictures and images without worshipping them. The first injunction of the Koran is, "You are not allowed to make the image of any living thing that ever God created." Where this was the law there was an end to all drawing of human beings. Down to our own times no portrait was ever painted among them but by Europeans, and until very lately even photo's were forbidden. The punishment for breaking this injunction of the Koran was a terrible one. Any one who will make any image of anything God has created will carry the monster so made on his back through all eternity. Imagine our artists carrying all their works on their backs,—Whistler with his arrangements in yellow and white, his nocturnes, and so-called symphonies! Under such restrictions no art could be thought possible, but men will not live in whitewashed houses, nor worship in whitewashed temples. The Koran did not forbid the use of geometrical forms nor colour, and, shut out from the representation of anything in nature, they so concentrated their attention to the combination of geometrical forms and harmonious colouring, producing such grand results that we owe to them our best examples and teaching in the use of applied colour. Colour is that which enlivens the whole of our surroundings, and gives to the morning and the evening sky their greatest charm. Not the colour of the modern ladies, with their dull neutral tints, and one single central sunflower; no Mahommedan ever put the sunflower up as a mark of taste. They used colour geometrically. They found colour divisible into certain proportions of blue, red, and yellow, and dividing the surface to be decorated into so many parts, and using the primary colours in an inverse ratio to which they found them, they made each predominate as so many parts of the surface. Their ornamentation, like their colouring, is geometrical. No real Turkish carpet has in it anything actually copied from nature. It is like and yet unlike, a flower and not a flower, and all coloured on a mathematical basis. You must always remember this basis of proportion to understand the wonderful power of bringing harmony into all their work. Not that we must slavishly copy their work for our use. Perhaps in a wealthy gentleman's smoking-room we may reproduce their decoration and style,—it is fitting there. In our structures we want the spirit of our modern times. The more we go on copying, the more anachronisms we are guilty of. We want to do justice to our foggy climate. With their beautiful atmosphere and bright sky, they had need of repose and shade. We with our dull sky outward make our rooms dull where they should be bright. They delight in dark colours, because their bright climate dazzles them, and they require this counter-action in their interiors. We want the counter-action of light bright colouring. They make little windows where the sun shines in on the fountain, always a feature in their interiors, and you cannot imagine how beautiful some of these little fountains are, or the delight to be experienced sitting in the shade and seeing the sun shining on the tiny riplets of the basin. They generally sing while weaving, changing the time as they weave in different patterns; no wonder they produce woven harmonies. The lecturer glanced at the fact that modern thought was slackening the rigour of the interpretation of the Koran,—as witnessed at St. Sophia,—where they had begun to remove the whitewash that covered up the so-called idolatrous Christian art-work; and at the connexion between the Celtic geometrical art-work and that of the Mahommedan, from which the former was all derived (except the head of the imp or saint which the Celt added); and how much all glass ornamentation owed to the same source. While we in the north-west of Europe had been plunged for centuries in theological controversies, the Arabs had been progressing in art and science. They had no religious discussion. They had but one God, Allah, and Mahomet was his prophet. We owe much to the Arabs. We write our ledgers in the Arabic character; geography we owe to them, and the real genuine principle of ornament. The Alhambra, with its beautiful stalactite roof, perhaps produced a feeling of peaceful pleasure unsurpassed. You can only have such buildings in hot countries. We want flat roofs, as light and as bright as possible. We, in the north-west of Europe, inured and hardened by the climate, have done great things in whatever we have pursued, and when we clearly understand what our art wants are we may hope we shall produce art work worthy of a famous people.

With the growth of Christianity, through a mixture of Christian and Byzantine, we come to Gothic art. Without knowing and well understanding the way of thinking that produced the art, we can never realise what that art is. The Gothic church was to be a temple in which all creation was to be represented. In the Greek temple we had the representation of the God present, the shrine, the place where he was; but in the Gothic church you had the invisible God. God was everywhere; and you could only represent his universality by everything that was his work. In the cathedral at Chartres there were 2,500 busts and statuary: everywhere symbols; the arrow representing swiftness; the eagle, intellect; the monkey, mischief; the butterfly, immortality; the dog, fidelity; the dove, love; the bull, strength; the pomegranate or pine cone the mystery of the creation; all carved everywhere; every flower, every rose and lily taught us symbolically some kind of truth. The origin of the plans for the grand Gothic temples is shrouded in mystery. Their origin was in the cloisters. Legend ascribes many of them to Diabolus himself. The cathedral at Cologne,—that magnificent structure, which, when you enter, be your religious ideas what they may, cannot fail to draw your heart out and lift it up to the Creator; legend tells us that the unknown architect of this building, striving to make a plan excelling all others, is said to have thought he would give his soul if he could only have the wanted plan. Diabolus immediately appeared and staggered the architect so much that he asked for twenty-four hours to consider; which, being granted, he consulted his father confessor, who gave him a piece of a saint's bone, and instructed him that when Diabolus presented himself he was to seize the plan, and the holy relic would protect him from reprisal. So Diabolus was cheated out of the plan; but as a punishment he vowed the architect's name would never be known, and the building would never be finished. The architect's name is unknown, and now only is the building finished, thanks to the broad-spirited generosity of a Protestant emperor.

Referring to a diagram showing certain of the corbels from Poictiers, and what they meant, their remarkable freethought,—here was a bishop whose conduct had not been right, hung up for ages to tell his own shortcomings; a second to show his gluttony. No ornamentist can be a man who knows nothing; this third figure represents a musician, and most musicians are one-sided people that can understand nothing but music; a fourth that represents admirably a backbiter, where two ravens are picking his tongue till domesday. This was working not simply to ornament, but every ornament had a meaning and a sentiment, without which it was dead. You want to know iconography and iconology: when you know the meaning of these you might compose nice little poems in your ornamentation. That we have improved very much in late years, I am sure. Mr. Crace does not think we have improved so much as we ought to have done. We must not forget the influence of the 220 years in which we were Puritans. It was quite recently a reproach to have ornamental surroundings. It is not so long since all your places of business in this city were holes in which no respectable butcher would care to enter now. Stability in business was only deemed compatible with dusty, dark dens for offices. We must not forget the advantages art has found on the Continent it has failed to find here. The best men were sought out and protected by the Popes themselves, to study art and everything that would aid it. We shut our museums and galleries at the only times most of you can go to see them. You work with heart and soul, but it is mechanical. What is wanting is the brain,—the thought. Give you anything to copy, and you do it admirably; but ask you to design anything, however small, and you stumble; you are not used to that; you do not know what to do. There is a different method on the Continent. The child, even, of ten years old, when it has drawn a simple flower, say a forget-me-not, and knows the form, has the flower taken away from it, and is put to draw,—to *design*,—a wreath of forget-me-nots for the brim of a plate, and a cluster for the centre. Here your fine ladies and gentlemen get in front of a beautiful bouquet, and paint and copy carefully, like the Chinaman, all copy, no invention, no design. You want to *think* in the forms you are to use as ornamental forms.

A. B.

* See p. 291, *ante*.

Sanitary Institute.—The autumnal congress of this Institute will be held this year in Glasgow from September 25th to the 29th. The Exhibition of Sanitary Apparatus and Domestic Appliances in connexion with the congress will remain open until October 20th.

NOTES FROM BIRMINGHAM.

SIR,—Jupiter Pluvius has sustained his reputation during the early days of the present year in the capital of the Midlands. Mr. Plant, of Moseley, tells us that his records show that during the month of January and the first eighteen days of February no less than 8·64 in. of rain fell in Birmingham, equal to the enormous amount of 864 tons to the acre. The pursuit of agriculture under such conditions was impossible. Since the 18th ult. no rain worth mentioning has fallen, and the soil is now resuming its more normal condition. It is generally believed that the autumn-sown wheat is a total loss.

A very elaborate set of baths has recently been completed in the Monument-road, at a cost to the Corporation of some 30,000*l.* This set of baths is the largest and most complete of any of the four sets of public baths belonging to the town, and comprises first and second class swimming-baths, first and second class private warm and cold baths, with shower baths if required, and first and second class Turkish or hot-air baths. The swimming-baths are the special feature to which attention has been directed, and are of large dimensions, and lined with white glazed bricks throughout. The charges for them are 6d. and 3d. each person, but on two mornings each week the second-class bath at each establishment is reserved for school children of both sexes, who are admitted in charge of their teachers at a nominal charge of ½d. each. A Leander club devotes much of its time to teaching any of the frequenters of the baths who desire to learn swimming. The charges for private baths are :—

1st class warm, with shower.....		6d.
,, cold	,, ,, ...	3d.
2nd class warm	,, ,, ...	3d.
,, cold	,, ,, ...	1d.

For the Turkish baths the charges are :—

1st class (including shampooing)...	1s. 0d.
2nd class ,, ,, ...	0s. 6d.

These charges are very low, and the baths are much used.

Since the baths were established by the Corporation, now many years ago, a profit and loss account has been kept, and this shows that at the very low charges stated, and after paying all expenses, these establishments have been nearly self-supporting. The new buildings are very substantial, and have their own water supply from an artesian well, and a lofty chimney, with steam engine and boilers. The elevation towards Monument-road is *very* Gothic, in brick and terra cotta, and the roofs are covered with red tiles.

A new theatre, begun some time ago by a Birmingham builder, who failed, has been recently let to a Wolverhampton builder to finish for some 25,000*l.*, who has agreed to get the same completed by the fall of the year. It will have a frontage to Old-square.

A continuation of the Great Western Arcade from Temple-row to Corporation-street is now in progress, covering in a great part of its length the tunnel of the Great Western Railway. The building will be carried over the tunnel on girders resting on piers carried down to the railway level, and will cost some 25,000*l.*

The remains of the old Stork Hotel, at the bottom of the Minories, and fronting Old-square, have been pulled down, and a new building is being erected as a warehouse for a woollen firm, who have employed a Dewsbury firm of architects and a Sheffield builder to execute their work. The contract was tendered for by several Birmingham firms, and although it is notorious that contracts have been taken here at less than cost price for some time past, the local men failed in securing it.

As an instance of the above fact, it may be stated that at a meeting of the creditors of one of three builders and contractors of this town, who have failed in as many months, held on the 5th inst., the trustee reported that he began in 1876 with a capital of 500*l.*, and that up to March, 1881, the debtor had made a small profit; but that since that time his losses on contracts had amounted to 8,508*l.*, or nearly 400*l.* per month, and offering a composition of 5s. in the pound on liabilities amounting to nearly 15,000*l.*, payable during fifteen months, which was accepted. When will builders' merchants learn wisdom? They have been punished fearfully of late, but they have the remedy in their own hands.

The new branch Free Public Library in Constitution Hill is slowly approaching completion, and will be open to the public shortly. The old building in which the library has been held was closed some time ago, and during the past winter the Northwood-street Swimming-bath has been utilised as a library and reading-room. The various libraries belonging to the Corporation here are well appreciated. Recently a proposal was made by the committee to remove one held in the Steward-street Board School in the evenings only to another Board school at a mile distant; but so much opposition was raised to the proposal, that the committee have withdrawn it, and will now have to maintain the two. If the new Consolidation Bill now before Parliament passes without alteration, the Town Council will have no limit to their power to tax the inhabitants for Free Library purposes, and we shall, no doubt, have a large increase in the number of these branch establishments throughout the town.

Owing to the failure of the contractor, the new Eye Hospital, in course of erection in Church-street and Edmund-street, to cost some 15,000*l.*, is not progressing. When this building is complete, it is intended to vacate the present building, which originally formed part of the Royal Hotel in Temple-row, and an opportunity will present itself for restoring the hotel to its former dimensions.

Some time ago a committee was formed to consider and recommend some method of marking the appreciation of the inhabitants of Birmingham of the eminent services rendered to the town and country by its very distinguished representative in Parliament, Mr. John Bright. The committee recommended a statue, and in deference to a wish expressed by Mr. Bright, has placed the commission in the hands of Mr. Bruce Joy.

A new coffee hotel, of a costly character, with frontages to Corporation-street and to Cherry-street, in Bath stone, in a good substantial Gothic style, is rising up towards its roof.

The committee of the "Old Meeting" Chapel, now pulled down for the extension of New-street Railway Station, has bought a corner plot of land and houses on the east side of the Bristol-road. The houses are cleared away, and a new large and costly chapel is shortly to be erected there to accommodate the congregation, which till then has its temporary services in the Masonic Hall.

The new street recently made by the Corporation, in continuation of the Bristol-road towards New-street Station, and named John Bright-street, has let daylight into one of the vilest quarters of the town. The new frontages thus created are being rapidly appropriated, and a number of substantial shops and buildings above are in course of erection. A very large and substantial building in the Gothic style is being erected in Smallbrook-street, and is rising up towards the roof.

The selected works of the pupils of the local School of Art, executed during the past year, have recently been exhibited to the public at the rooms of the Society of Artists, and fully sustained my former criticism. The few works in sculpture and modelling shown were only very third-rate, and quite unworthy the town.

E. G.

Payment of Wages in Public-houses Prohibition Bill.—In the House of Lords, on the 16th inst., on the motion that this Bill be read a third time, Lord Bramwell called attention to the fact that the preamble was inconsistent with the clauses, because the preamble said it was desirable that certain things should be done which it had been determined not to do. He had suggested to the noble lord in charge of the Bill that the preamble should be struck out, but the noble lord said that if the preamble were struck out the Bill would be gone. It was only as the shortest way of getting out of a difficulty that he made the suggestion. Clause 3 said that wages were not to be paid in a place "contiguous" to a publichouse, so that if a beershop were erected in contiguity to a builder's yard, the builder could not pay the wages there. This might be got over by striking out the word "contiguous." Lord Stanhope said the Bill would not be interpreted by the preamble. The Bill was read the third time. Lord Bramwell moved that the word "contiguous" in the third clause should be omitted. The amendment was agreed to, as was also another amendment to leave out the words in Clause 4 referring to the Summary Jurisdiction Act. The Bill, as amended, then passed.

TELEGRAPHS OF THE ANCIENTS.

FROM THE FALL OF TROY TO THE BATTLE OF WATERLOO.

ON Wednesday evening in last week Mr. Alderman W. H. Bailey delivered a lecture on the above subject at the Museum and Art Gallery in connexion with Peel Park, Salford, Mr. Alderman Bowes in the chair. It was a spirited and instructive composition, and much interested the audience. In the course of it, Mr. Alderman Bailey said,—

We now come to the semaphore signals, which are used even to the present day, chiefly for railway purposes. Probably the most ingenious and among the first of this class of telegraphs was that invented by the brothers Chappe. It appears that this invention is due to the affection entertained by the two brothers for each other. They were placed as students at different schools, a mile and a half apart. They were inconsolable at being thus separated, and, by means of pieces of wood exposed from the back windows of each school, the brothers Chappe contrived to talk to each other. In their first system of telegraphing they arranged a code of signals which enabled them to send 192 different messages, this being done by means of instruments similar to the one I now have on the table. As the ingenious brothers became older, the invention was placed before the Government, and was tried just before the Revolution in 1791. The people, however, looked upon the invention as only another means of increasing the power of the Government and the aristocracy. The introduction of the invention was opposed; the people destroyed the telegraph stations, and the inventors barely escaped with their lives. A second attempt shared the same fate. Again the various telegraph stations were burned to the ground. The brothers Chappe, however, continued their efforts, and in 1793 the Government adopted the system. Circumstances were favourable. The telegraph, having been adopted, was fortunate enough to communicate to Paris the news of a great French victory; and now the brothers Chappe were considered part and parcel of the glories of France. This message was transmitted from the frontier to Paris :—"Condé is taken from the enemy," to which the Directory replied :—"The army of the North deserves the gratitude of the country." These messages ran like an electric shock throughout the Convention and throughout Paris. The once-abused telegraph was now the pride of the nation, and its inventors were worshipped as public benefactors. The system invented by the brothers Chappe soon became universal on the Continent. A line was carried from Paris to Lille, and two minutes only were occupied in transmitting a word. In 1802, the system was adopted in Denmark. Shortly afterwards it was made use of by the Government of Belgium, Sweden, and Germany. Mahomet Ali erected stations on this system from Alexandria to Cairo. The most expensive series of stations was constructed in Russia by the Emperor Nicholas. A line of towers was erected from the German frontier, through Warsaw, to St. Petersburg. This line embraced 220 stations, at each of which were six men, so that 1,320 men were employed on this route, besides those who had charge of the general administration. The erection of these towers cost the Russian Empire millions of pounds sterling. The system was only finished and got to work so comparatively recently as the year 1858; and, after being in operation but a very short period, it was completely superseded by the electric telegraph. The towers are still standing, silent monuments to the ingenuity of the past. Scarcely any description is required of this Chappe semaphore telegraph. The method of manipulating the arms was by means of levers, similar to those now in daily use on our own railways. Occasionally the system was used at night by placing lanterns on the ends of the vanes. Men were stationed along the line of communication with telescopes. And thus, by means of known changes, various codes could be worked at great speed. In France, along the route between Toulon and Paris, a distance of 475 miles, there were 120 stations; and it is said that so complete were the instruments made that over 82,000 different signals could be sent. The Prussian system of semaphore signals, a model of which we have on the table, was introduced in the year 1782. It will be seen that this is but a modification of the French system.

English Semaphores.—Forty thousand signals could be sent by this means. The English semaphore shutters, or louvre telegraphs, were invented by Lord Murray, in 1795. The instrument consists of six shutters working on pivots. Sixty-four distinct signals could be sent by this system from London to Dover in ten minutes. These were placed along the coast, leading to stations inland, and were in general use in this country up to the invention of the electric telegraph. Messages could only be sent in the day time by this system. It is mentioned that after one of Wellington's victories over the French, when the news was being sent to London, the sender at the coast end began the signal with the words "Wellington defeated." A dense fog prevented the rest of the message being seen, and the result was great consternation in London and a panic on the Stock Exchange. When the fog cleared up the following day the rest of the message was received, and the message then read,—"Wellington defeated the French." I remember, when I was a boy, this system being used between Holyhead and Liverpool for sending news of the arrival of the American mail. On the vessel being sighted at Holyhead, the news was sent forward right across Anglesey to Puffin Island, thence to the Great Orme's Head, thence right along the Welsh coast to Parkgate, across the mouth of the river Dee, and thence to Liverpool. For many years the intelligence sent in this old-fashioned way from Holyhead to Liverpool, was sent from Liverpool to Manchester by electric telegraph. Many of the old stations on the line of route between Holyhead and Liverpool are still in existence, though their occupation has gone. . . . .

It is not within the scope of the lecture this evening, nor have we time, to consider modern telegraphy. For the present I may be permitted to say that, according to Mr. W. H. Preece, 400 words per minute can now be telegraphed along one wire, as result of the recent improvements of duplex and quadruplex circuits in connexion with automatic instruments. When the telegraph service was taken over by the Government a few years ago, 126,000 messages were sent per week. Now, the weekly number is over 600,000. In Press work the increase is most marked; the rate in this period having risen from 5,000 words per day to nearly 4,000,000; that is to say, 340,000,000 words of press messages having been delivered during last year. England has not a monopoly of this useful agent. All prominent countries exhibit corresponding growth. The Japanese even despatch 200,000 messages a year. The telephone is another wonderful advance in telegraphy. To enable people to speak in actual words, with the accent and exact tone, to their friends miles away, is a splendid scientific triumph. The electric telegraph is one of the great mutually dependent blessings of these modern days. It is powerful in promoting the uses of civil life; it is blessed in strengthening the arts of peace. It gives giant-like strength to man in fighting his ancient enemies,—plague, pestilence, and famine. It sings psalms to the poor, for if in any part of the earth the crops are abundant, the glad tidings of cheap food are proclaimed before the autumn sun makes them ready for the gatherers. It has no sunrise or sunset; it knows no night; for it ever merrily chirps, like Longfellow's birds,—

> 'Tis always morning somewhere, and above
> The awakening continents, from shore to shore,
> Somewhere the birds are singing evermore.

DECORATION OF THE DOME OF ST. PAUL'S.

Sir,—I had no intention when I wrote my last letter to return to this subject, and though I may notice another point or two by the way, I only return to it now to rebut the imputation by your correspondent, "A Painter," of having proposed to "utilise the dome of St. Paul's for the pictorial presentment of the vault of heaven," which would indeed be, what he terms it, an insult to common sense, though some such false treatment of a roof has more than once occurred in modern practice. But if he will really read my letter in the *Builder* of the 3rd inst., he will perceive that such a project exists only in his own imagination.

What I really suggested was the adoption of the principle on which nature has worked in her treatment of the greatest of all domes known to man, the glorious firmament,—not a literal imitation of her celestial dome,—on which there are no circular medallions and arabesques, or prophets and apostles, skirting the horizon, as in my scheme for the decoration of the dome of St. Paul's.

In reference to his depreciation of the hemisphere as a form of dome, which he lightly esteems, because "circular curves were never lines of beauty," let me say: I believe, on the contrary, that the hemisphere is the grandest of all domical forms, because the circle,—of which the sphere is the corollary,—is the simplest of all curves, and that its monotony is essential to its grandeur. Domes may be spherical, ellipsoidal, hyperboloidal, or paraboloidal, and many other shapes; but the most noble and majestic is the spherical. And this must have been the general opinion of the Romans and their Greek architects, since the numerous remains of their domes are nearly all spherical. It may, I think, be considered the typical dome-form: the Italian word *cupola* signifies an hemispherical roof covering a circular building; and the French word *dome*, though from the Latin *domus*,—a house,—has the same meaning. It has probably only been departed from in the erection of modern domes in favour of more elevated vertical sections, through sympathy with the aspiring spirit of the Gothic; as in the domes of the Cathedral of Florence, St. Peter's at Rome, and St. Paul's, which two latter are, as much as the first, Gothic domes. Michelangelo and Wren, though they may have despised the Mediæval piles around them, could not escape their influence.

It is not in the vertical section of a dome that the lines of living movement and growth are best displayed. They must come in the forms introduced by the painter or sculptor on the dome's surface. And though parabolic and hyperbolic curves were introduced by the Greeks into the entasis and mouldings of their columns, there is nothing to induce the belief that they would have figured in the contour of their domes, had they built domes; and they were only prevented building domes, I conceive, by the loss of their national independence. The spherical dome would have perfectly harmonised with their Corinthian order.

But what curves in the concave of the dome of St. Paul's could be duly appreciated under the treatment it has received, and amid the confusion of pilasters, entablatures, and arches which disguise its surface, and render it visually, and virtually, no dome at all, but a sham circular arcade?

If Wren approved of this, which I much doubt, it was one of the greatest mistakes that ever a great architect made; and "A Painter's" expression of the opinion that Thornhill's design is the best that could possibly be devised for the decoration of the dome, is, in my opinion, to use language which he has too hastily used, an insult to common sense.

A word on the Pantheon dome cited by your correspondent. I always thought that the object of the circular aperture or eye therein was simply to admit light; never that it had any relation to want of respect, on the part of the Romans, for unbroken hemisphericity, which is certainly an original idea. If the Romans felt a contempt for hemisphericity, broken or unbroken, why did they cover the magnificent Pantheon and so many of their circular temples with spherical domes?

Samuel Huggins.

PARTIAL RESTORATION OF AN ANCIENT SCOTTISH CHURCH.

At the close of the fifteenth century there were eleven places of worship in the town of Peebles. Of all these ancient fabrics the ruins of two only remain. The most ancient ruin is that of the church of St. Andrew, which was founded by Bishop Jocelin, of Glasgow, in 1195, and built out of materials, it is supposed, of a more ancient ecclesiastical fabric which occupied the same site. It was disused as a place of worship and stripped of its relics and revenues at the Reformation, and suffered further degradation in the time of Cromwell. Of the whole edifice, with the exception of a few shapeless remnants of walls, the square western tower alone remains. "The church was burnt and destroyed by England twelve years since or thereby," write the bailies of the town in a letter to the Lords of Secret Council in 1560, in which they request that "the same may in no wise be built at present without long process and great expenses, and that they may have the temporary use of another church as the parish church." The reply of the lords is, "Let it be done as prayed." Some movements had been made towards rebuilding five years previously, for the Burgh Records of 1555 state that "Charles Geddes desires the provost, bailies, &c., to uphold, repair, and build the Geddes aisle," and a few months later, "The Inquest,"—a board of inspectors chosen by the head court of the burgh,—"ordains the bailies and neighbours to pass to the church and sight the same with witty (!) men to see how it may be built, and thereafter to conduce a workman to see the same." It is doubtful whether any rebuilding was carried out. In 1560 came the Reformation. In February, 1561, the municipal authorities ordain "that the goods and property presently within the High Church (St. Andrew's) and the church walls be arrested by the sheriff officer and officiaries of the burgh"; and in a month later, "the inquest ordains the vestments to be 'ropit' [sold by public auction], and the money gotten for them to be distributed to poor householders." Of the "goods and gear" of the archdean of the church (1560), the records contain an inventory. Among the few items are, "two beds wanting the sides next the wall, together with one board at the foot and head of the beds," "one press for earthenware," "one pot," "two sand-bags and an iron chimney." In 1562 the bells are taken away from the tower or steeple, and the timber of the steeple is made into seats for the newly-adopted parish church. Still further degradation follows. In 1609 the Town Council "ordains that if it be possible a dovecot be built upon the High Church Steeple," and in later times the first story of the tower was used as a watch-house by the worthy burghers whose duty it was, between sunset and sunrise, "to guard the dead in the churchyard from the resurrectionists."

This tower is to be restored at the sole charge of Dr. William Chambers, who has entrusted the work to Mr. W. Hay, architect, Edinburgh. Its height in its dilapidated state is 45 ft., its walls are 3½ ft. thick, and it is, and has been, for centuries roofless. It is to be covered with a high roof of stone slabs, with crow-stepped gables. The slits in the tower, which serve for windows, are to be filled in with plate-glass, wooden floors are to be substituted for stone-vaulting, and a new approach to the door will take the place of a rickety wooden staircase. The spot is very dear to Dr. Chambers, for in the churchyard an ancient table-stone marks the burying-place of the Chambers family for several hundred years. Near to this is a stone inscribed,—

> "A silent, scatter'd flock, about they lie,
> Free from all toil, care, grief, fear, and envy."

And this is the summing up of the story of St. Andrew's Church, with its eleven altars, before which royalty had knelt, and masses had been said and sung for a long line of Scottish kings.

THE USE OF SAND AS A FILLING-IN SUBSTANCE.

Attention has recently been given in Germany to the hygienic dangers arising from certain substances being used for the filling in underneath flooring. Herr Lieblein, of Frankfürt, has called attention to the fact that dry sand forms a most suitable filling substance from all points of view. He remarks that the greater weight of this substance than that of others in common use does not form any real obstacle to its introduction, inasmuch as beams of solid construction are quite capable of supporting the weight, and none others should, under any circumstances, be used. In Frankfürt, it would seem that the use of sand as a filling material has been general for many years.*

In writing on the subject to the *Deutsche Bauzeitung*, Herr Lieblein also refers to the question of flooring-boards being placed sufficiently closely together for the penetration of moisture to be effectually prevented. He specially advocates the use of pitch-pine for this purpose, on account of its hardness and resinous properties, and records the fact that his application of that wood to the purpose indicated has proved successful in many instances,

* Dry sand and small shells have been used for this purpose in England. One objection to this material is the ease with which it may all run away.—Ed.

while its cost is, he maintains, but little in excess of that of other kinds of flooring.

Another German technical paper has called attention to the advantages of using deal flooring-sleepers impregnated with creosote in place of oak ones. Durability and freedom from rot are ascribed to this kind of sleepers. It is said they do not spread any smell of creosote in the rooms in connexion with which they are used. They are spoken of as being specially applicable to the lower parts of houses built in damp situations, or in which damp has manifested itself.

THE LONGEST AND HIGHEST BRIDGES OF THE WORLD.

THE longest viaduct built of stone in the world is that which connects Venice with the mainland. Its length is 3,598 mètres, or about two miles and a quarter. The longest iron bridges in the world are the following:—Parkersburg Bridge, 2,147 mètres, or one mile and a third; St. Louis Bridge over the Missouri, 1,993 mètres, or about a mile and a quarter; the bridge over the Ohio at Louisville, 1,615 mètres, or about a mile; East River Bridge, New York; Delaware Bridge, Philadelphia, and the Victoria Bridge at Montreal, all these about fifteen hundred mètres; the Volga Bridge at Sysran, 1,485 mètres; and the Moerdyk Bridge in Holland, 1,479 mètres; the five latter all being rather under a mile. The loftiest bridge is in France. It is the Garabit iron bridge, in the department of Cantal, but will not be ready for opening till next year. It stands at such a height that the Vendôme Column on the top of the Cathedral of Notre Dame could stand under it, its height above the valley being 124 mètres, or 406 ft. This is 72 ft. higher than the Kinzu Viaduct in America.

THE PROJECTED IMPERIAL PALACE AT STRASBURG.

A FEW weeks ago we gave some particulars of the projected palace for the German Emperor at Strasburg, and since that time the general question has come before the German Imperial Parliament. On the proposal in the budget to grant the first instalment of 553,200 marks (27,660*l.*) for the commencement of the work, a lively debate arose. There was a strong opposition to some portions of the design of the architect, Herr H. Eggert. That gentleman is an official in the Berlin Ministry of Public Works, and had been selected by the Minister to furnish the design for the Palace, as the Government deemed it expedient not to invoke a public competition. Herr Eggert's building, for which he had furnished only a sketch, and not complete and perfect drawings, is one of three stories, forming an oblong of 68 mètres in length by 48 mètres in depth. In the centre of the façade, between two courts, is the entrance, approached by a noble flight of steps and flanked on either side by colonnades. The steps led up to the principal floor, on which were the dwelling apartments and reception-rooms of their Majesties. On the upper floor were apartments for the Imperial retinue and servants, while on the ground-floor was the kitchen and the offices of the Marshal of the Court. All the floors were to be fireproof. The façade, which was to be built of the grey Vosges sandstone, is in a rather heavy Renaissance style. The site was the west side of the Emperor's Square in the axis of the new University buildings. Of the frontage towards this square the chief motive is an open portico or colonnade crowned with a pediment, and in front, over the covered drive to the chief entrance, stands a deep balcony. Over the reception-hall, on which the loggia opens, rises an ornamental cupola, adorned with the imperial crown. Rich groups of figures, along the centre of the building, and obelisk-like crowns on the corners of the side risalites, were further to adorn the exterior of the edifice. It was specially against this façade that the liveliest opposition was manifested. The Budget Committee had objected to it, but upon the Government explaining that Herr Eggert's design was only a sketch capable of modification, that Committee had withdrawn its opposition on the understanding that the architect would in his matured designs, attend to the objections raised. However, in the full House, the opposition gathered such strength that after two lengthy debates it was ultimately resolved to request the Government to cause the design to be remodelled. The question whether a public competition is to be invited, or whether two or three eminent architects are to be requested to compete, or whether the change is to be made by Herr Eggert alone, is left for the Government to decide. This decision by the Imperial Parliament has caused no little disappointment, as the realisation of the scheme is prevented for another year at least.

ELECTION OF DISTRICT SURVEYORS.

AT the meeting of the Metropolitan Board of Works on the 16th inst., applications were received from candidates for the district surveyorships of Hatcham and Rotherhithe, being the two districts into which the district held by the late Mr. Snooke has been divided by the Board. There were thirty-one candidates (including Mr. Bridgman, whose name was not put to the meeting because it was stated that his letter of application for one of the appointments had not been received). Of the remaining thirty candidates, the names of two (Messrs. F. C. Notley and F. Stone) were struck off on account of their absence.

The following is a list of the candidates whose names were retained, with the number of votes recorded for them in the preliminary voting for each appointment, viz.:—

Name.	Age.*	Hatcham.	Rotherhithe.
Ashbridge, A.	30	26	23
Brooks, C. W.	39	18	15
Cheston, H.	33	7	5
Edmeston, J. S.	33	12	7
Elkington, G., jun.	31	27	21
Ferguson, J. M.	37	6	2
Grellier, W.	35	9	4
Hamilton, J.	38	10	7
Hunter, P.	31	26	23
Inskipp, G.	35	2	2
Jackson, G.	34	5	0
Karslake, L.	38	8	5
Lean, G. A.	37	6	6
Lees, W. H.	39	21	18
McLachlan, H.	31	25	18
Marsland, E.	29	18	21
Mundy, T. E.	38	5	3
Renton, O.	35	0	1
Scrymgour, W. H.	39	19	15
Smallpiece, W.	40	7	6
Spiers, W. L.	34	7	9
Stenning, A. R.	37	31	35
Stevens, W. H.	40	3	3
Stock, H. W.	31	21	18
Street, E.	34	26	24
Tanner, A. W.	39	30	†
Taylor, A. T.	32	6	3
Todd, F.	48	11	15

The subsequent voting was as follows:—

Hatcham.

	Second Vote.	Third Vote.	Fourth Vote.	Fifth Vote.	Final Vote.
Ashbridge	13	—	—	—	—
Elkington	16	13	—	—	—
Hunter	18	18	15	—	—
Stenning	23	23	23	21	16
Street	19	19	17	12	—
Tanner	27	27	28	28	23

Mr. Tanner was therefore the successful candidate for this appointment.

Rotherhithe.

	Second Vote.	Third Vote.	Fourth Vote.	Fifth Vote.	Final Vote.
Ashbridge	22	11	—	—	—
Elkington	18	16	12	—	—
Hunter	28	21	18	19	11
Marsland	17‡	—	—	—	—
Stenning	31	3	30	28	30
Street	17‡	17	13	10	—

Mr. Stenning was thus the successful candidate for this appointment.

Architectural Association.—At the ordinary fortnightly meeting of this Association on the 16th inst., Mr. E. G. Hayes, president, in the chair, the following gentlemen were elected members, viz., Messrs. W. Bamber, L. Dennis, W. S. King, G. McCombie, W. T. Gibbings, G. T. Hellicar, and G. Corderoy. A vote of thanks was passed to Mr. Thos. Verity for permitting the members to visit the Pandora Theatre, Leicester-square, described by us a short time ago. Mr. Walter Emden then read a paper "On Theatres," which we print on preceding pages. A brief discussion ensued, the speakers being the Chairman, Mr. Trubshawe, Mr. Max Clark, Mr. W. H. A. Berry, Mr. Cole, and Mr. Mountford, and a vote of thanks having been accorded to Mr. Emden, that gentleman briefly replied, and the meeting terminated.

* The limit of age fixed by the Boards is between twenty-eight and fifty years.

† Elected for Hatcham.

‡ In another vote taken on this list, the numbers were Street, 19, Marsland, 14. Mr. Marsland's name was, therefore, dropped.

THE ELEPHANT AND CASTLE THEATRE AND THE BOARD OF WORKS.

PROPOSED STRUCTURAL ALTERATIONS.

THE alterations and works on which the Metropolitan Board of Works are insisting at the Elephant and Castle Theatre are somewhat extensive. The alterations are eleven in number, amounting in a large degree to the reconstruction of the theatre. They include the construction of a new floor of fire-resisting materials in the box saloon; the erection of a brick wall, 14 in. thick, to separate the arches of the London, Chatham, and Dover Railway from the theatre premises; the construction of fire-resisting roofs over the pit saloon, and so much of the theatre premises as extend under the platform of the Elephant and Castle Station of the railway company; the stage entrance and the passage-way leading to it to be made 4 ft. 6 in. wide; and a staircase of teak, 3 ft. 6 in. wide, to be provided at the south-west angle of the stage, in lieu of the present stairs; the staircases to the upper part of the gallery at the north-east and north-west angles to be removed, and new staircases, 4 ft. 6 in. wide, consisting of fire-resisting materials, to be substituted; brick parapet walls to be built to the external walls of the theatre, carried up 3 ft. above the eaves; strong handrails to be fixed to both sides of all staircases, landings, and flights of steps, where not provided; a gangway, 3 ft. wide, to be formed down the centre of the pit; three gangways, each not less than 3 ft. wide, and having easy steps, to be formed in the gallery, one at each side, and one in the centre; also that the concrete steps of the gallery staircase, and the concrete flooring, be reinstated; and that all doors be made to open outwards.

REBUILDING OF GATTI'S MUSIC-HALL, WESTMINSTER BRIDGE-ROAD.

DURING the last few months Gatti's Music-hall, or Theatre of Varieties, as it is now called, has been in course of reconstruction, and, having just been completed, is now open. In order to meet the requirements of the Metropolitan Board of Works under the powers which the Board now possess as to the construction of public places of entertainment, Messrs. Gatti had to purchase the premises adjoining their establishment. These they acquired at a cost of more than 3,000*l.*, by which they have been enabled to erect a greatly enlarged building with considerably extended facilities for ingress and egress. The new building forms a prominent feature in Westminster Bridge-road, to which it has a frontage of 45 ft. in length, and is upwards of 50 ft. high. The lower or ground portion of the frontage is in red Shawk stone from the Newcastle quarries, and consists of the main central entrance to the body of the hall, and two entrances to the gallery, one at the east and the other at the west end of the frontage. This portion of the frontage is ornamented with Dalbeattie granite pilasters, having carved capitals. The main entrance is surmounted by a massive central arched pediment, above which is a niche in which an allegorical figure representative of Music is intended to be placed. The gallery entrances are likewise surmounted by pediments. The elevation of the three upper floors is in Portland cement, relieved and ornamented by pilasters with capitals, carried up to the top of the building. The structure is finally surmounted by a balustrade and a central block arch. As a further relief to the materials of the frontage panels in iron-work are carried across the frontage above the first floor, and similar panels in red terra-cotta above the second floors.

The vestibule, the walls and ceiling of which are richly decorated, leads into a spacious corridor, the full width of the building, the floor of which is laid in mosaics of varied patterns. The lower part of the walls of the corridor has a dado, composed of ornamental polished tiles, surmounted by a moulding in Rouge Royal marble. The floor of the promenade in the body of the hall, under the gallery, is also laid in mosaics. The auditorium has been entirely reconstructed and much enlarged. The front of the gallery is decorated in white and gold, numerous musical figures being introduced. The ceiling is in panels, formed of ribs springing from pilasters on the walls. The ceiling decorations are in varied colours on a buff ground. The stone staircases to the gallery are fireproof,

whilst the staircase walls are faced with Minton's glazed tiles. Within the building there are three hydrants in connexion with the main street water-service which can immediately be brought into use in case of fire. In addition to the two distinct and separate entrances to the gallery, there are likewise three entrances to the body of the hall.

Mr. Bolton, of Lincoln's Inn-fields, is the architect, and Mr. G. Gaisford is the general contractor. Messrs. Dike & Bruton, of Buckingham Palace-road (agents for the Shawk Stone Paving Company), have executed the stonework; and the tile work and mural decorations have been carried out by Mr. Diespecker, of Holborn-viaduct. The cost of the building, exclusive of the purchase of the premises already referred to, is upwards of 7,000*l.*

ARCHITECTURAL IMPROVEMENTS IN FORE STREET.

Fore-street, in the City, is at present a busy centre of activity in connexion with the building trade. Something like one-third of the south side of that thoroughfare is in course of construction. A few months ago a number of building sites in Fore-street, on what is known as the Blackden Estate, were let on building leases, for terms of eighty years, one of the conditions of the letting being that the lessee of each lot was to expend a certain amount named in new buildings on the site leased. The total amount of ground-rents realised for the property was about 3,400*l.* per annum, and the conditions stipulated that a sum of not less than about 40,000*l.* was to be expended in new buildings, and it is on these several sites that the buildings in progress are to a large extent being erected. At the west end of the street, immediately adjoining the block called Cripplegate-buildings, recently erected, two extensive blocks of new warehouse premises are in course of erection, having a frontage of 140 ft. in length, with a fine architectural elevation, the materials of the frontage being pressed red brick and Dumfries stone. Messrs. Curtis & Son, of Blomfield-street, are the architects, and Mr. Brass, of Old-street, and Mr. Morter, of Stratford, are the contractors. At the corner of New Basinghall-street another new block, in Portland stone, and four stories in height, has just been completed, and immediately adjoining them eastward, a similar block is now in progress. A short distance still further eastward, another new building is fast advancing towards completion. The ground-floor portion of this structure is in Mansfield stone, the first and second floors being carried up with continuous four-light bay windows, ornamented with Mansfield stone shafts and piers. Above a cornice, also in stone, there is a third floor faced with red brick, and elaborately carved and fluted stone work. Mr. G. A. Dannage and Messrs. Harvey & Protheroe are joint architects of this building. Continuing eastward another block of about 40 ft. in length, and 60 ft. in height, is nearly completed. The ground and first floors are in Portland stone, with massive piers. The second and third floors are in white Suffolk brick, with Portland stone dressings. Each floor has spacious three-light windows of 10 ft. in width. The elevation is surmounted by three arched domes. Mr. Lawrence, of Wharf-road, City-road, is the contractor. A few yards west of Moorgate-street preparations are being made for the erection of a block of shops and offices, the building extending in depth to London-wall, the ground-floor portion of which is to consist of warehouses, and the upper stories of offices. Messrs. Curtis & Sons are the architects, and Mr. Morter, of Stratford, the contractor.

GOTHIC ARCHITECTURE IN ITALY.

The Royal Academy of Arts at Naples has offered a prize of 500 lire for the best essay on the origin, development, and suitability of Gothic architecture in Italy, and the different forms it has assumed in different provinces of that kingdom. The last day for the receipt of the essays will be March 30th, 1884. The competition is without restriction as to the nationality of competitors, but the essays must be either in the Italian, French, or Latin language. Treatises already published on the subject are not admissible. The competitors must enclose their names in a sealed envelope, distinguished by a motto, which is to be also prefixed to the essay.

ROPE TRACTION ON TRAMWAYS.

LIVERPOOL ENGINEERING SOCIETY.

The fifth meeting of the Session was held on Wednesday, the 14th of March, at the Royal Institution, Colquitt-street,—Mr. H. Bramall in the chair,—when a paper entitled "Wire-Rope Traction on Tramways as practised in American Cities" was read by Mr. C. F. Findlay, M.A. The author pointed out the reasons why stationary engine systems had universally been disregarded for general railway purposes in favour of locomotives, and described the conditions under which alone the stationary system could successfully compete, the advantage in economy which resulted when the stationary system could be adopted, the difficulties in the way of its adoption, and how these difficulties had been met,—first in San Francisco, and then in Chicago and other cities. The grip used on the Clay-street Hill-road, the first of the kind constructed (in 1873) was described, and a model of it exhibited. The author then went on to give a detailed account of the latest and more extensive application of the system to the tramway lines of the Chicago City Roads Company, which, when the whole system is complete, will embrace nearly fifty miles of tramway all actuated from one engine-house by ten long endless cables. Various plans of the works were shown, and the result of the experience of the system so far,—twenty miles of cable being now at work,—were described as being entirely satisfactory, and surpassing the expectations of its promoters. Burning 630 lb. of coal per hour, they were doing work which would require 600 horses to be kept. The engine indicated 115-h.p. when moving the cables of one street, four miles and a half in length, at the busiest part of the day,—there being forty-three trains of two cars each on the cables, and 1,900 passengers (estimated) on board. The line constructed by the Union Passenger Road Company in Philadelphia was described, and also the grip used on the rope tramway or railway over the East River Bridge from New York to Brooklyn. Plans were also shown of the Highgate-hill tramway, now being formed in London from the designs of Mr. Jas. Cleminson, M. Inst. C.E.

THE ELECTRIC LIGHT ENGINE-HOUSE ON THE THAMES EMBANKMENT.

The agitation which has been caused by the ventilators which the Metropolitan District Railway Company are at present erecting on the Thames Embankment imparts some interest to the engine-house, which the Jablochkoff Electric Light Company have just erected in the Embankment Gardens, near the Charing-cross Station of the District Company. The building is understood to have been erected by permission of the Metropolitan Board of Works, for the use of the Jablochkoff Company, who have for some time past supplied the electric light on the Embankment. The structure itself has now been covered in and externally completed for some weeks past, but those persons passing along the Embankment will have noticed that the works are now suspended, and there appears no present intention of getting in the necessary machinery, and completing the structure for its intended purpose. The stoppage of the works is said to be owing to an objection which has been taken to such a building ever having been allowed to be erected within the Embankment Gardens, and that with the emission of smoke and steam from the engine-house chimney it would be almost as great a nuisance as the ventilators, and equally injurious to the plants and flowers in the gardens. It is said to be not unlikely that the building may never become an engine-house at all, but that, on the other hand, it will ultimately be removed. It is urged that the Jablochkoff Company might easily find a site for their motive power without turning the Embankment Gardens into a machine-shop.

AN IRON THEATRE.

According to the *National Zeitung* of Berlin, a local theatrical manager, who is obliged to leave his own theatre next autumn to make room for a new tenant, proposes, in order to prevent any possible interference from official inspectors, to construct a theatre entirely of iron.* A circus proprietor is said to have come to a similar determination.

* Much would still depend on the planning.

VISIT OF ENGINEERING STUDENTS OF KING'S COLLEGE, LONDON, TO THE WEST HAM SEWAGE WORKS.

Professor Robinson, M.Inst.C.E., and several senior engineering students, paid a visit, by the courtesy of the West Ham Local Board, to the sewage works and pumping-station of the West Ham district at Bow Creek on Saturday last. They were met by Mr. Lewis Angell, M.Inst.C.E. (Associate and Hon. Fellow of the College), and engineer of the West Ham district. Mr. Angell explained the works, which were originally designed in 1857 by Mr. Rawlinson, now the chief engineering inspector of the Local Government Board, at a cost of about 90,000*l.*, when the population was about 30,000, since which time more than 100,000 had been added to the population (now about 140,000). Since Mr. Rawlinson's time the drainage system has been more than doubled, and the necessity for sewage purification imposed. The party were conducted round the works and the system of pumps, tanks, and purification explained, after which Mr. Bowes Scott, in the absence of Major-General Scott, C.B., explained his system of sludge treatment then in progress by the addition of superphosphate of lime, and Mr. Hutchinson, of the firm of S. H. Johnson & Co., Stratford, explained the action of a new filter-press for solidifying the sewage sludge. Major Flower, the sanitary engineer of the Lea Conservancy, and Mr. Bryan, Engineer of the East London Waterworks, were also present.

BERLIN HYGIENIC EXHIBITION.

According to details recently published in the German newspapers, the applications for space at the above exhibition would seem to have exceeded the room at the disposal of its promoters, so that a selection has had in some instances to be made of the most interesting objects proposed to be sent in. In some cases the programme, as drawn up for last year, has been extended in its scope, the new features including the laboratory of the Imperial Sanitary Administration, several mining exhibits, and finally a complete dwelling-house, with all needful domestic and furnishing appliances. Several bakehouses will also be shown in operation.

The large pictorial *tableaux* of Professor Preller will form suitable adjuncts to the display. They represent the charitable deeds of St. Elizabeth, and the thanksgiving of a family restored to health, the members of which are kneeling before the altar of Æsculapius. The surroundings of these main objects are said to be appropriate and effective.

Amongst the events which will be associated with the progress of the exhibition will be course of popular scientific lectures to be delivered in a special building, by leading German authorities, on the respective subjects to be treated. A competition is to take place of plans for the erection of a fireproof theatre. These have to be sent in by the 30th of June, and will be on view after that date at the exhibition.

THE MARBLE OF ATTICA.

The German Academy of Sciences has sent to Greece the two eminent geologists, Professor Lepsius, of Darmstadt, and Professor Bücking, of Kiel, to make a thorough investigation of the geology and petrography of Attica. The principal object of the expedition is to throw light on the marble strata of that portion of Greece. The learned gentlemen have already arrived in Athens, and are commencing their labours.

Leeds.—Three north-aisle windows of the Church of St. Bartholomew, Armley, have just been filled with painted glass, at the cost of Mrs. Ellis, of Armley, by way of family memorials. The aisle windows of the church have been devoted to the illustration of Scriptural antetypes. The selected subjects in the present case are Moses lifting up the Brazen Serpent in the Wilderness; David decapitating Goliath with the fallen giant's own sword; and Elijah carried up to Heaven by fiery horses in the chariot of fire. Messrs. Powell Bros., of Leeds, are the artists. The style of treatment is Early English, in accordance with the church architecture.

COMPETITIONS.

Gosport Town-hall and Parochial Offices.—A competition among architects has recently taken place for a memorial hall and offices for Local Board, Guardians, and Overseers for the parish of Alverstoke. The professional referee employed was Mr. Benjamin Tabberer, F.R.I.B.A., of 10, Coleman-street, London. The number of competitors was limited to seven, and the designs they sent in were placed in the following order of merit, awards being made to the first four successful competitors, viz.:—1st premium: The commission to supervise the erection of the buildings at a remuneration of 5 per cent. upon the money expended,—Messrs. Davis & Emanuel, London; 2nd: 50*l.*,—Mr. W. Yeardye, Gosport; 3rd: 30*l.*,—Mr. A. H. Ford, Portsmouth; 4th: 20*l.*,—Mr. A. Hudson, Portsmouth. The other competitors were Mr. Sulman, London, Mr. A. H. Bone, Portsmouth, and Messrs. Rake & King, of Portsmouth and Gosport respectively. Under conditions of competition (which were drawn by Mr. Tabberer, after consultation with the committee), the building is to consist of three blocks. The total cost is not to exceed the sum of 8,800*l.* The selected design, which is Flemish in character, is proposed to be built in red brick with stone dressings.

All Saints' Church, Ipswich.—The exhibition of plans sent in in this competition (referred to in the *Builder* a fortnight ago) has now closed. The *Ipswich Journal* says that large numbers of people have inspected the numerous designs with much evident pleasure. The public will have to wait a short time before they are made acquainted with the name of the gentleman who may secure the 50*l.* premium offered by the building committee. It was originally anticipated that the referee, Mr. Ewan Christian, would have visited the exhibition and made his recommendation to the committee, but the number of separate designs,—between eighty and ninety,—rendered this next to an impossibility to a gentleman whose time is valuable, so the plans are to be sent to him.

The Science Museum in Dublin.—Last week, in the House of Commons, Mr. Courtney, in reply to a question by Mr. Coope as to the Dublin Science and Art Museum, stated that it was the fact that five designs for carrying out the original scheme were selected, but no guarantee was given that one of them would, in any case be carried out. In deference to local opinion, the former scheme was abandoned, and quite a different one substituted for it; and it was for this that a new competition was about to be instituted. The position of the architects formerly selected would not be forgotten, and he had now before him papers on the question.

Fordingbridge.—At a meeting of the Guardians of Fordingbridge Union, held on Friday, the 9th inst., the plans for the new workhouse, prepared by Mr. Fred Bath, architect, of Crown-chambers, Salisbury, and 342, Strand, London, were approved.

BANKS.

THE North-Eastern Banking Company, in order to meet their rapidly-increased business, have lately built and opened new banking premises at Jarrow and Loftus-in-Cleveland. The building at Jarrow is situated at the corner of Ellisin-street and Grange-road. On the ground-floor is a large telling-room, manager's office, strong room, and all requisite adjuncts. The upper floors are conveniently arranged as a residence for the local manager; the exterior is of Renaissance design, with a quiet and dignified effect, and executed in polished stone ashlar and dressings. The work was carried out by Messrs. Storar & Murray, contractors. The buildings at Loftus are situated in the main street, and form a prominent feature; the accommodation is the same as at Jarrow. The design is also of Renaissance character, in polished stone from the Zetland quarries. The contractor who executed the work is Mr. Thos. Dickinson, of Saltburn-by-the-Sea. Both buildings have been erected from the designs of Mr. W. Lister Newcombe, F.R.I.B.A., of Newcastle-upon-Tyne.

Addington Church.—A window in memory of the late Archbishop of Canterbury is in course of execution for Addington Church, by Messrs. Clayton & Bell, of Regent-street.

DANGEROUS CONDITION OF HOUSES IN CANNON-STREET.

THE RAILWAY WORKS.

THE construction of the Inner Circle Completion Railway, which is now in progress, is attended with some considerable danger to houses in the locality of Cannon-street. Tunnelling under this thoroughfare is now going forward from one end of the street to the other, the neighbourhood of Abchurch-lane being a central point of the operations. Within the last few days several houses in the street have shown symptoms of being affected by the Company's works. Amongst these are the premises of Mr. W. Christie, watchmaker, which have just given evidence of subsidence, and although the premises were at once shored up on the subsidence showing itself, the walls have since given way, and are now out of perpendicular. Following upon the above-named premises being injured, the two adjoining houses have since become singularly affected, shoring-up being necessary in order to prevent their further giving way. An opinion prevails that there is a probability of the houses in question having been built on faulty foundations, and that now the railway company's tunnelling operations have disturbed the structures at their base, and caused the displacement of the walls.

THE DECORATION OF THE HOUSE OF THE SOUL AND OF ITS OUTER MANSION.

SIR,—The close analogy subsisting between the human body, regarded as the house of the soul, and its outer mansion of builded material in which we dwell, was very anciently recognised. In the first book of Corinthians the body is regarded as "the temple of the Holy Spirit." In the Scriptures the temple and the house are interchangable terms, and the human body, house, or temple is in several passages alluded to as the edifice which is gradually to be built up to perfection. The soul's house, therefore, to be a fit and proper house must be possessed by the Holy Spirit of moderation or temperance. The great poet Spenser did not fail to perceive that this was a necessary condition,—a condition essential to its true proportionment and decoration. And in the Faërie Queene, in the legend of Sir Guyon or Temperance, he describes the house of temperance so deftly that the novice never suspects whilst reading that Spenser, under the titles of their architectural analogues, is describing the different features of the rightly-ordered human body, of the house of the soul. The opening stanza commences thus:—

> "The frame thereof seem'd partly circulare,
> And part triangulare: O worke divine!
> Those two the first and last proportions are;
> The one imperfect, mortal, feminine;
> Th' other immortall, perfect, masculine;
> And 'twixt them both a quadrate was the base,
> Proportion'd equally by seven and nine;
> Nine was the circle sett in heaven's place;
> All which compacted, made a goodly diapase."

This analogy may be pushed to the uttermost, and the principles of decorating or of dressing the house of the soul may be instructively transferred to the decoration of its outer mansion or home of bricks and mortar. It may possibly be said that this mode of teaching the proper decoration of the home is exceedingly roundabout, and that those who happen to be destitute of taste, and who, therefore, neither dress well nor decorate their mansions artistically, will not be improved by the method. Those who may entertain this opinion will nevertheless, I believe, on maturer consideration change it, for they will come to perceive that every one is more sensitive and teachable as regards taste in personal adornment, in regard to the decoration of the soul's house, than in taste with respect to other matters. The fair sex are more especially teachable in this direction. It must have come within most persons' experience that women have an intuitive perception of the right means of mitigating any peculiarity either of body, feature, or complexion, and the means taken, if rightly studied, would furnish useful hints for mitigating analogous peculiarities in the aspects of the dwelling, to guide us in the tasteful decoration of our homes. This spirit of mitigation or of compromise is imperatively demanded in tasteful decoration, for we have to take our dwelling-house and our soul's house pretty much as we find them. We may sometimes, indeed, have the power of altering the former to our will, but never to any considerable extent the latter. We have, therefore, in the majority of cases to make the best of both our possessions. And the mode of making the best of our personal appearance may always be made to suggest analogous means for making the best of some peculiarity of construction, or some other inevitable condition of the house we live in. If these views be just, they suggest the possibility of an essay upon "Art in the House," founded upon the principles of taste in dress, for dress is the decoration of the soul's house. It is a project which some artist who may have deeply studied his profession may think it worth his while to take up and carry out. We have, however, even in this brief discourse, already come to perceive that in dress and in decoration, as in conduct, moderation or temperance is the great principle of rectitude. This one conclusion may be fruitful in results with respect to the topics I have touched.

W. CAVE THOMAS.

THE BRAIN TAX.

UNDER this title one of your correspondents, in your issue of the 31st of May, 1879, proposed to "fight" the Patent Laws. There has not been much fighting since that date, although the question has occasionally come to the front, by way of general murmur from some son of Albion who has had an idea *strike* him, but who has not been able to *strike* the idea for want of funds, or rather, for want of a cheap Patent Law.

Out of the two Bills * now before the House, and which have just been read a second time, we may look forward to some good and cheap legislation upon this matter. A cheap Patent Law will no doubt have a good stimulating effect upon the general trade of the country, while the new Bankruptcy Bill, also before the House, should prevent too much risky goaheadativeness, and keep trade upon a healthy footing.

I do not think it desirable to have the Patent Laws too cheap, or we should soon have a mushroom growth of *English novelty* shops, similar to those selling Yankee notions, which have lately sprung up amongst us.

Below is a tabulated scale of fees from the two Bills now before the House; and, in juxtaposition, I have placed the rates now payable under the Act of 1852.

Comment upon the great difference in fees between the old Act and the new Bills is unnecessary. It will be apparent to your readers at a glance:—

	Under Act of 1852.	New Bill No. 2.	New Bill No. 3.
	£. s. d.	£. s. d.	£. s. d.
On Petition for grant of Letters Patent	5 0 0	2 10 0	1 10 0
On giving notice to proceed	5 0 0	—	1 0 0
On warrant and sealing of Letters Patents	10 0 0	5 0 0	1 0 0
On final specification	5 0 0	—	1 0 0
Total cost for three years, Act of 1852	25 0 0		
Total cost for four years, No. 2 Bill		7 10 0	
Total cost for seven years, No. 3 Bill			4 10 0
Stamp duty at end of third year	50 0 0	—	—
Stamp duty at end of fourth year	—	20 0 0	—
Stamp duty at end of seventh year	100 0 0	—	20 0 0
Stamp duty at end of eighth year		50 0 0 and 10*l.* per annum after	—
Stamp duty at end of twelfth year		up to seven-	20 0 0
Stamp duty at end of seventeenth year		teen years, viz.:— 90 0 0	20 0 0
Total cost for fourteen years, Act of 1852	175 0 0		
Total cost for seventeen years, No. 2 Bill	—	167 10 0	
Total cost for twenty-one years, No. 3 Bill	—	—	64 10 0

There are several other minor fees for notice of objection, disclaimer, assignment, &c. The new Bills propose twelve months as the term of provisional specification from the date of the petition, instead of six months. No. 2 Bill also provides for alteration to specification for additional fees.

INVENTOR.

* One (No. 2) introduced by Sir John Lubbock, Mr. W. H. Smith, and Mr. J. C. Lawrance, and the other (No. 3) by Mr. Anderson, Mr. Broadhurst, and others.

FROM IRELAND.

Monaghan Cathedral.—The Rev. Dr. Donnelly, R.C. Bishop of Clogher, having decided to complete his cathedral, has made a contract with Messrs. M'Elhatten Brothers, of Belfast and Cookstown, for the erection of the spire, which (according to the *Freeman's Journal*) is to attain an altitude of about 240 ft. above the level of the ground, and will be surmounted by a foliated cross, wrought in brass, and set with crystals. The bishop has also undertaken to finish the flooring, plastering, seating, and stalls of the cathedral, as well as the boundary walls, so as to have everything complete on the day of dedication. The architect engaged by the bishop for these works is Mr. W. Hague, No. 62, Dawson-street, Dublin, under whose superintendence, with the assistance of Mr. Dooly, clerk of works, the various items are now in active progress.

Knock.—The preliminary portion of the buildings of the Convent Schools and Industrial Training-house at Knock has been contracted for. It comprises the usual arrangements of conventual establishments, with large airy cells, and is provided with every modern sanitary requirement. The exterior of the building is simple in style. The most rigid economy consistent with strength and durability has been exercised, in accordance with the special instructions of the Mother Superior. Designs have been furnished for the entire buildings by Mr. William Hague, of Dawson-street, Dublin. The first contract has been confided to Mr. Joseph Clarence, of Ballisodare, county Sligo.

THE QUEEN'S SCHOOL, CHESTER.

This school was opened on the 10th inst. by the Duke of Westminster, who laid the foundation-stone of the building on the 6th of March, 1882. To Dean Howson is due the credit of having taken the initial step towards the execution of the project. The advantage conferred by the King's School coming home forcibly to the Dean's mind, he conceived the idea of establishing a school for girls on similar lines. He soon set practically to work with the view of carrying out his scheme. He rallied around him a number of willing auxiliaries, subscriptions came to hand, a guarantee fund was established, premises were secured, school furniture was purchased, and, in a very short time, the work of education was in full swing. The council under whose management the school was constituted showed a vigilance and industry which commanded success. Before long it became apparent to the Dean and all who were interested in the school that if, as an educational institution, it was to fill the important position to which from its constant progress it seemed destined it should be more suitably housed. The question of providing better and enlarged accommodation was anxiously taken into consideration by the council. The Duke of Westminster, who had learned the nature of the work which the school was accomplishing, offered, as a site for a new building, the ground on which the old city gaol once stood, and, as a further encouragement to the council, he added a donation of 500*l.* Other ladies and gentlemen who took an interest in the undertaking were not slow in contributing, and it was resolved to commence building operations at once. Accordingly Mr. E. A. Ould, of 24, Newgate-street, Chester, was employed as architect, and Mr. William Andrews as builder, and the foundation-stone having been laid, the process of erection was carried out so quickly and effectively that in twelve months the building was been completed and occupied. It is in the Tudor Gothic style, and accommodation is provided for 180 pupils and a resident headmistress and five assistants. On the ground-floor is a schoolroom 55 ft. by 33 ft., within which the girls can assemble for prayer or collective tuition, and also for prize distributions and concerts. There are likewise on the ground-floor four class-rooms and a dining-room, in which forty day boarders can be accommodated. To the rear of the north block are kitchen and store-rooms and kitchen offices, and likewise a covered cloister which enables the pupils to reach the various parts of the building under cover, without passing through the school-rooms. On the first floor in the south wing is a fifth class-room and a music-room, altogether apart from the rest of the house. The north wing contains sitting-room and bedroom accommodation for the mistress and her assistants, whilst in the attics are servants' and spare rooms. Under the south class-room is a cell, from which the entire premises and passages are heated, by means of Messrs. Gibbs's heating apparatus. Fresh air is introduced by Tobin's ventilators, and the vitiated air will be carried off by shafts from the ceilings to the *flèche* on the roof. The material of the building is red brick. The windows, doors, and ornaments are in terra-cotta, from the works of Mr. H. R. Bowers, at Ruabon. To the rear of the building there is a large asphalted space, on which the pupils can play tennis. The total cost of the building has been 3,800*l.*

JESMOND WESLEYAN CHURCH.

The opening services of the new Wesleyan church at Jesmond took place on Wednesday, the 7th inst. The building comprises a church, with vestries, class-rooms, and a lecture-hall, all upon one floor, and with perfect communication with each other. In the church there are 830 sittings, and the total cost will be about 10,500*l.* The interior of the church is planned with nave, aisles, and transepts, the nave being divided from the aisles by a series of columns and arches, which carry a clearstory wall. Galleries run along either side and the north end of the church. The pulpit-rostrum is of pitch-pine and American walnut, and can be used, not only as a pulpit, but as a platform, in case of public meetings being held, will be exceptionally low. The organ and choir are placed in an apsidal end, semi-octagonal, and forming the southern termination of the nave, from which it is divided by a bold, deeply-recessed arch, rising from clustered marble shafts. The angles of the apse are occupied by ornamental marble columns, carrying moulded ribs, springing from decorated capitals. The seats are constructed of pitch-pine, and are exceptionally wide and comfortable. They will accommodate 837 persons. The subjects of ventilation, light, and heating have received the closest attention. The church will be warmed throughout by hot water, and the pipes will extend into the lecture-hall. The lobbies and approaches are also heated by masses of hot-water pipes to the same temperature as the inner portions of the building. Most complete and elaborate arrangements have been made to secure good ventilation. Fresh warm air, which can be regulated according to the condition of the temperature, is admitted into the chapel and lecture-hall, while the arrangement at the roof is such as to form an outlet for the vitiated air, and at the same time prevent the possibility of down draughts.

The contractors for the mason's and joiner's work of the building were Messrs. Lishman & Salter, Ryton; Messrs. Beck & Co., slating; Messrs. Copland & Rollo, painting; Messrs. Thompson Bros., Leeds, leaded glass work and stained glazing; Mr. Atkinson, Newcastle, entrance-screens; Mr. T. R. Spence, Newcastle, stained glass for the vestries and lecture-hall; Messrs. Walker & Emley, Newcastle, heating apparatus; Mr. Snook, Newcastle, pulpit; Messrs. Sherrat & Ovens, Preston, stone-carving; Mr. Abercromby, Newcastle, wood-carving; Messrs. Beaty Bros., Carlisle, red freestone for banding the building. Mr. Allen has acted as clerk of the works, and Mr. J. J. Lish, Newcastle, is the architect.

LINCRUSTA-WALTON.

Messrs. Frederick Walton & Co. (Limited), the manufacturers of this invaluable decorative material for wall and ceiling coverings, dados, door panels, &c., have now on view, at their stand in the south nave of the Crystal Palace, a number of specimens illustrating the varied applications of the material. In addition to the artistic effects which Lincrusta-Walton is capable of producing, it merits attention on sanitary grounds, for it is readily washable without injury; while it is practically incapable of being damaged by the contact of furniture with its surface, so that walls, passages, and staircases once covered with it seem likely to last as long as the house of which they may form part. It is made in certain ground or body colours, variation of surface being obtained where required by patterns stamped in relief, these patterns being picked out in various colours according to taste. Many of the designs contained in the new pattern book issued by the Company are of very great merit. One of the newest applications of the material is as a lining for railway-carriage divisions and ceilings, and a section of a railway-carriage so treated is shown in the rear of the stand in the Crystal Palace. The material is also largely used now for the decorations of the saloons of the large passenger steamers running between this country and India, America, and other parts of the world. For folding and other screens intended to be painted upon, and for decorative panels, the material is prepared with a slightly granulated surface.

SMOKE ABATEMENT COMMITTEE'S EXPERIMENTS.

Sir,—To prevent misapprehension arising from Mr. F. Edwards's letter published in your issue of the 3rd inst., it may be well to state that Mr. Edwards's description of the chimneys is incorrect. There is no brickwork at all in their construction. Larger grates than his were tested under corresponding conditions, and the committee's report shows in what respects they proved superior to his. It may further be observed that Mr. Edwards's grate professes to be a "slow combustion" one, and, therefore, the small size of the chimney would, on his own showing, be in his favour as compared with some other competitors.

With regard to Mr. Edwards's statement that Captain Douglas Galton and Dr. Siemens have "disclaimed responsibility" for the testing, the fact is, Captain Galton said, in reply to Mr. Edwards's inquiry, that he was laid up during the testings, and, therefore, could not give him any information about them. The secretary of Dr. Siemens replies to inquiry that he knows of no communication whatever having passed with Mr. Edwards. All the information Mr. Edwards can require is to be found in the report of the testing engineer, Mr. D. K. Clark.

Wm. R. E. Coles, Hon. Sec.

"AN ARCHITECT ON LAWYERS."

Sir,—As a lawyer (although a retired one) I naturally read the letter headed "An Architect on Lawyers" in yours of the 10th inst., p. 311. Had I been "a fledgling" I might have entered in my notebook as valuable and technical information in case I had to draw up a building agreement that "a brick is an incombustible material," and "fire-brick, a lining for chimneys." My "fledgling" building contract, therefore, would probably contain a clause that "all furnaces be lined with brick and mortar," "all chimneys (of the dwelling-house) to be lined with fire-brick." Would Mr. Kerr call the builder who carried out these instructions "a commendable person, a trump, a jolly good fellow," and so on, as long as fancy might hold out?

The "fledgling" who would not admit Mr. Kerr's incontestable proposition "without evidence" was, I think, simply "reserving his forensic rights" (whatever that may mean), and probably thought it would be "more convenient for his purpose" to elicit Mr. Kerr's grounds for supposing brick to be an incombustible (that is, that it cannot be burned, decomposed, or consumed by fire), and to ask Mr. Kerr whether bricks made about London did not contain a considerable proportion of coal ash, upon cross-examination.

I have consulted books of reference without discovering the *habitat* of the wood-brick tree, upon which, (I suppose, grow the blocks used for wood paving; and I cannot find any mention of air-bricks being used for ballooning purposes. I even looked in my "Dictionary of Phrase and Fable": they were not described even there.

Perhaps Mr. Kerr can explain what he means by the term, "a false issue,"—perhaps he means a false fact,—because "issue" is a very technical word: it means the point in dispute as ascertained by the pleadings, and as the pleadings are founded upon the statement of the parties, it is they, not the arbitrator, who are to blame if a case be decided upon "a false issue," and that whether he be a lawyer or an architectural expert.

I do not think that the architectural and building world are likely to "increase facilities for the settlement of disputes" by bad judgments, certainly not by "the worst judgment of an architectural referee." I have often been asked not to insert an arbitration clause on the

ground that it was cheaper and more expeditious to go to law than to arbitration.

I do not think that Mr. Kerr's story about the lock of a "ledged" door "ledges" his case. Punctuation is not used by lawyers,—a judge once said that it would be unfair that a man's title to an estate should "hang on a comma." I think the mistake was one that even an architect might possibly have passed over, and even an architect might, if unaided, be unequal to price a carpenter's bill; but an arbitrator is not called upon and need not be competent to price bills or to fix a fair price. He is to decide between the price asked and the price offered, and this he does upon evidence. He, therefore, requires to be trained in sifting and weighing the value of the evidence before him, and for this purpose it seems immaterial whether the price in dispute be of a door or of a lock. If, however, builders' disputes especially lie between the two extremes, and both parties admit that fact, then arbitrating would be, indeed, cheap and expeditious. However, I forgive Mr. Kerr for his bad appreciation of us in consideration of his introducing wood-brick trees and air-brick balloons to public notice.

ONLY A LAWYER.

A DOCTOR'S HOUSE, BEDFORD PARK.

SIR,—I cannot understand how an architect,—as your correspondent, "Architectus," appears to be,—could have fallen into such a misunderstanding, and it is a pity he should commit himself to unjust remarks without the slightest foundation. No one supposes for a moment that I or Dr. Hogg lay claim to having "designed" the principles of the system upon which this house is ventilated; whether the principles were first laid down by Drs. Drysdale and Hayward, or were used by Messrs. Price, Lee, & Co., or by some one before them, I do not know, but the only source of information I had were those parts of Messrs. Drysdale & Hayward's book dealing with the practical application of these principles.

I certainly designed Dr. Hogg's house and adapted these said principles to it, and moreover, for anything I know to the contrary, most of the practical details of the system are original. As I never heard before either the names of Messrs. Price, Lee, & Co., or of anything they had done, it was hardly possible for me to "inform the members of the society" at the Architectural Association visit that the design of this house "belongs to Messrs. Price, Lee, & Co."

I ask "Architectus" to say what building he refers to in which "the principles and the whole arrangement" have been carried out, so that I may go and see it. E. J. MAY.

P S Dr Drysdale, of Liverpool, has just written to me, and he says "I have never heard of Messrs. Price & Lee, nor was I aware that our plan had ever been proposed or carried out before when I built my house in 1881. I fancy this is their plan and be the only one, although perhaps, it may resemble ours in some points, but unless it contains the tubular chamber it would not be complete nor work practically." E. J. M.

VARIORUM.

AMONG Messrs. Longman & Co.'s Text Books of Science comes a new edition of "Metals: their Properties and Treatment," by Chas. Loudon Bloxam. It has been partially re-written and augmented by Mr. Alfred K. Huntingdon (of King's College, London). It includes numerous useful illustrations, and the information is conveyed in a very clear manner. ——We have this month received a more than usually bulky packet from Messrs. Cassell, Petter, Galpin, & Co., containing "Picturesque America," Part 24, to be completed in forty-eight parts, uniform with their publication of "Picturesque Europe" (an excellent book it will be when finished,—good paper, style, well printed, and with effective woodcuts, of which there are many in each number, as also a steel engraving of wild and picturesque scenery); "Our Homes, and How to Make them Healthy," Part 12 (which answers well to the title); "The Practical Dictionary of Mechanics," Part 75; "Gleanings from Popular Authors, Grave and Gay," illustrated, Part 18; "The Family Magazine," Part 100, illustrated; "Arabian Nights," Part 7, to be completed in sixteen parts, profusely illustrated; Part 1 of the "History of the German-Franco War" (new edition, fully illustrated); Part 1 of "The Library of English Literature," illustrated, to be completed in forty-eight parts; "Popular Educator" (new and revised edition), Part 28; "Illustrated Universal History," Part 18, illustrated; *Little Folks*, Part 99 (a periodical that ought to be in every house where there is a rising and increasing family, and it would be the means of giving children many hours of employment, accompanied with pleasure); and the *Quiver*, an Illustrated Magazine for Sunday and General Reading, Part 209. We may say, as we have said before, that the whole of the above are exceedingly well got up, and cheap (6d. and 7d. a part, with the exception of "Picturesque Europe"). The illustrations surpass those of many periodicals of more than double the price.——Part 374 of the *Leisure Hour* (56, Paternoster-row, London, and 164, Piccadilly) gives amongst other illustrations a fac-simile of an engraving published in 1803,—the time of the threatened invasion of England by Napoleon,—from a collection in the Bibliothèque Nationale, Paris, wherein numerous balloons and kites are seen crossing the Channel carrying various freights, and the sea well covered with ships of each country, and also a temporary tunnel, supported with wooden uprights and struts, wherein the various arms of the French are seen marching to England. It would be curious to know how long ago the execution of such a tunnel was first contemplated.——The *Girl's Own Paper*, Part 38, and the *Boy's Own Paper*, Part 49, each published at the *Leisure Hour* Office, include much reading of a very miscellaneous but appropriate character, and are fully illustrated. ——The Religious Tract Society (56, Paternoster-row and 164, Piccadilly) issues this month Part 32 of "Friendly Greetings: Readings for the People"; also Part 347 of "The Sunday at Home," which contains an elevation and a view of the cloisters of the Certosa at Pavia, in illustration of a paper by the Rev. E. Paxton Hood, headed "The King's Sceptre"; also No. 171 of "The Child's Companion," and No. 167 of "The Cottager and Artisan."——"Shakspeare as an Angler" is the title of a little book by the Rev. N. H. Ellacombe, announced by Mr. Elliot Stock. It is an enlargement of some articles which appeared in the *Antiquary* in 1881, with additional notes.

Miscellanea.

Royal Scottish Society of Arts.—A meeting of this Association was held on the 12th inst. in their Hall, 117, George-street, Edinburgh, Professor Swan, president, in the chair. The first communication, which was made by Mr. Henry Adolphe Salvesen, engineer, Polmont, was concerning a new arrangement for preventing accidents arising from over-winding pit-cages, invented by Mr. Thomas Gillespie, underground manager for the Redding Colliery Company. By means of a working model Mr. Salvesen explained that the merit of the invention lay in a contrivance by which the rope became detached on the top of the cage coming in contact with the wheel, and by which the cage would remain suspended on two spring catches projecting from the guides. The arrangement being fixed to the cage and being a part of it, there would, it was pointed out, be no dangling of chains above the cage. The next paper, which dealt with electric valve-closing apparatus, invented by Mr. Tate, Bradford, was read by Mr. Robert Girdwood. The advantage of this invention was stated to lie in the possibility, by its means, of instantly stopping steam-engines. Mr. Girdwood also communicated a paper on "Davis & Company's Chimney Cowls and Ventilators." The peculiarity of these was stated to be that, instead of the smoke issuing from the cowl, the cowl drew the wind for some distance down the chimney in a pipe, turned at the lower end, and the wind, rising from the lower end of the pipe, forced its way up, carrying along with it the smoke, which would thus escape at the chimney-top.

New Parsonages.—The following is an extended list of new parsonages which it is intended to provide in connexion with the churches in the diocese of Manchester:—Bury, St. Peter's; Blackburn, St. Thomas's; Chorlton-upon-Medlock, St. Chrysostom's; Castleton, St. Martin's; Eccles, St. Andrew's; Greenheys, St. Clement's; Manchester, St. James the Less; and Ramsbottom, St. Andrew's.

A New Theatre for Edinburgh.—At a recent meeting of the Edinburgh Dean of Guild Court, the plans of a new theatre, proposed to be erected in Grindlay-street, were laid before the Court, and Mr. D. W. Paterson, S.S.C., on behalf of Messrs. J. B. Howard and F. W. Windham, the petitioners, moved that the Court grant authority for the erection of the building. In reply to the Court, Mr. Phipps, the architect, stated that there were to be iron railings on both sides of the staircases. The Court considered that the seats in the pit were too long, as they stretched from one side to the other, and it was suggested that there should be a passage down the centre. Mr. Phipps remarked that the highest authorities were now of opinion that there should be no break in the seats, and that the surrounding gangway of passage was sufficient. Where there was a centre gangway people blocked it up by standing, and it was difficult, if not impossible, to remove them in the event of a crowd. Ultimately the Court agreed to dispense with the centre passage, on the understanding that the passage surrounding the seats should be widened to 5 ft. Mr. Phipps agreed to give effect to a number of suggestions. In reply to the Dean of Guild, Mr. Phipps said, in regard to an iron curtain dividing the stage from the auditorium that no special arrangement had been come to. It was a matter on which much difference of opinion prevailed all over Europe. Iron curtains that had already been put up in theatres were being taken down, because one had fallen down. Captain Shaw, the chief of the London Fire Brigade, disapproved of them altogether. He (Mr. Phipps) was now, however, considering with Mr. Wilkins, the Firemaster, whether to adopt a special curtain proposed by him. If they did not put up an iron curtain, they proposed to put up one made of asbestos cloth. The Court granted the warrant for the erection of the theatre.

A Builder's Will.—The will (dated Oct. 24, 1878), with a codical (dated June 20, 1881), of Mr. John Spicer, late of the Earl's-court Park Estate Office, South Kensington, builder, who died on Jan. 7 last, was proved on the 17th ult. by Mr. George John Spicer, one of the executors, the value of the personal estate amounting to upwards of 294,000*l*. The testator leaves to his wife, Mrs. Charlotte Spicer, 100*l*., and for life his residence with the furniture and effects, horse and brougham, and 600*l*. per annum; his executors are also to provide a coachman for her. To each of his three daughters, Fanny Charlotte Emily, and Albina, 100*l*. per annum during the lifetime of their mother; to his son his jewels; and there are bequests to the widow and daughters of his late brother, and to an old servant. The residue of his property, real and personal, is to accumulate until the death of his wife, and is then to be held in trust for all his children in equal shares. The testator directs his funeral to be of the plainest and simplest kind, and a block of granite is to be placed over his grave, as he wishes to be buried as he has lived, in a plain and solid manner.

Work and Wages in the Engineering Trades.—The returns issued by the leading trades-union societies connected with the engineering branches of the industry show a general improvement in the state of employment. After the close of last year, there was a tendency to increase, although not to a large extent, in the number of out-of-work members, but during the past month there has been a decided decrease all round. In the Manchester and Salford district the Amalgamated Society of Engineers have now less than 2 per cent. of their members in receipt of out-of-work donation, and the returns received by the Steam Engine Makers' Society, which are the most satisfactory for some time past, show that throughout all their branches, numbering 4,000 members, there are now forty, or less than one per cent., of the members receiving out-of-work support, whilst the Boiler Makers' Society is practically paying no out-of-work donation. To a large extent the present good demand for labour is due to the great activity throughout the shipbuilding yards of the country, which is absorbing surplus labour from the engineering trades of the inland districts.—*Manchester Courier*.

Huddersfield Fine Art and Industrial Exhibition.—This exhibition promises to be a great success, and especially so in the machinery department. The applications for space have been so numerous and important that the committee have been compelled to provide more shed accommodation.

Proposed Sanitary Certificates for Brighton.—At the last meeting of the Brighton Town Council, the Works Committee presented a report from the town clerk (Mr. F. Tillstone) and the solicitor to the Corporation (Mr. A. F. Gell), to whom had been referred a suggestion made by Messrs. Jenner and Dell, that the Corporation should give an official certificate of the sanitary state of houses in the town, for the purpose of production to persons applying for a residence in Brighton. Both officers were of opinion that the Town Council had no authority to grant the certificates suggested. Mr. W. Sendall (chairman of the committee) regretted the inability of the Corporation to do as suggested, believing that, if the idea could be carried out, it would be for the benefit of the town. Something of the kind was very desirable. Alderman W. H. Hallett (ex-mayor) referred to an offer which was made some twelve months ago by a society of sanitary engineers to establish themselves in Brighton for the purpose of doing that which was suggested, and said the matter would, no doubt, come before the town again shortly. Alderman David Smith expressed a hope to see the society established in Brighton; but Mr. Botting regretted that the town authorities would not take upon themselves to give the certificates as suggested, as the certificate of a public officer would be of more weight than that given by a private society. Mr. Bostel entertained a similar opinion, and said the sanitary work of the Borough Surveyor's office ought to be separated from the other work of the department. Mr. Sendall said if the Council would only consider the matter, they would see how grave were the responsibilities which they would assume in undertaking to give certificates of the kind suggested. The pains of a house were the all-important things, and it must be borne in mind that they were all underground. To examine those thoroughly, in order to give a certificate, would be very expensive, and unless that were done, the certificate might be very delusive.

Fine Art in Whitechapel.—For the third year the Easter holidays will be turned to account in this crowded part of London by the holding of a fine-art loan exhibition in St. Jude's School, Commercial-street. The collection, filling four rooms of the school-house, contains many works which will be remembered by all frequenters of West-end exhibitions. There are pictures by Rossetti ("Head of Dante," "Fra Pace," "The Annunciation"), Walter Severn, John Linnell, Gustave Doré ("Midsummer Night's Dream"), Sir Frederick Leighton ("Romeo and Juliet"), Millais ("My First Sermon"), Watts ("Love and Death," "Poverty and Love," "The Four Horses of the Apocalypse," and portraits of Carlyle, Garibaldi, and Cardinal Manning), Sir E. Landseer, Holman Hunt ("Strayed Sheep" and "The Light of the World"), Calderon, H. T. Wells, Edwin Long, R.A., C. T. Dobson, Burgess, Orchardson, Armitage, Frith, Sir Noel Paton, B. W. Leader, Sidney Cooper, Briton Riviere, Brett, J. R. Herbert, Lawson, Baron Desanges, F. Goodall, Phe, Mrs. Allingham, Miss Clara Montalba, and many others. Explanatory notes and suggestive poetical quotations have been inserted in the catalogue to increase the interest of visitors in what is presented to them. In the absence through illness of the Earl of Dalhousie, the exhibition was opened by Mr. W. S. Caine, M.P.

Elevators.—By far the largest contract for elevators ever made was awarded by the Building Committee of the new Produce Exchange to Otis Brothers & Co., of New York. It covers the passenger elevators and amounts to 9,800. Ten years ago the expenditure of this amount for such a purpose would have been considered a wasteful extravagance, but what is then regarded as a luxury has meanwhile become a necessity, and now an appropriation for elevators for every important building devoted to business purposes is as much a matter of course as that for a roof. The same description of lifts (six in number) are fitted up in the Mills Building, New York, noticed recently in the *Builder*. The American Elevator Company of London are connected with Messrs. Otis Bros., of New York, as makers of the lifts or elevators in both buildings.

Royal Birmingham Society of Artists.—E. L. Alma Tadema, R.A., has accepted the office of President of this Society, in succession to Mr. Millais, R.A. Mr. Claude Pratt has been elected an Associate of the society. The spring exhibition will be opened in Easter week.

Stonehaven Harbour.—At a recent meeting of the Board of Harbour Trustees of this port, a report relative to the harbour, made by Messrs. T. & D. Stevenson, Engineers to the Fishery Board for Scotland, with a request by that Board for the observations of the trustees thereon, was read. After referring to the extent and condition of the present harbour, the report states that it is somewhat surprising that for so long a period as about fifty years the undoubtedly great capabilities of this bay for harbour extension should not have been taken advantage of and turned to account for the encouragement of the fishings and the general trade. It concludes by recommending the erection of a breakwater, which would project into deeper water than exists at the present entrance; and though it would not have the effect of making the present harbour in any sense a harbour of refuge, it would be of such a nature as to produce a great improvement at a cost, say of 20,000*l.* to 30,000*l.*

Rival Cities.—On the 12th inst. Mr. W. Landless, architect, read a paper on "The Rival Cities,—Edinburgh and Glasgow," before a meeting of the architectural section of the Glasgow Philosophical Society. Having stated the comparative areas of the two cities, he mentioned that the population to the acre was fifty-one in Edinburgh and eighty-six in Glasgow. During the past ten years the average death-rate of Edinburgh had been 23 per 1,000 per annum, and that of Glasgow 28. The climate and situation of the respective cities having been referred to, the lecturer spoke of their architectural features, and advocated a statutory classification of properties similar to that of ships. The president, Mr. J. Sellars, thought that the movement for the classification of buildings might be revived with great advantage.

Royal School of Art Needlework.—Some fine specimens of ornamental needlework done by ladies studying or engaged at this school may be seen during the next few days at the showrooms of the institution in the Exhibition-road, near the Albert Hall. The most elaborate of these is a hall *portière*, worked for the Duke of Bedford. Another large piece of work, from one of the Scottish branches of the school, is a pair of curtains worked for Lady Eglinton. Several very handsome curtain sets also have been made for General Whittier, of Boston.

Water Engineer's Office, Liverpool.—At the meeting of the Liverpool City Council on the 14th inst., on the recommendation of the Water Committee, Mr. James Jennings Campbell was appointed superintendent of the water engineer's drawing office, in the place of Mr. Joshua Nunn, resigned, at a salary of 225*l.* per annum, the engagement to be determinable by one calendar month's notice, and to be subject to the superannuation provisions of the Liverpool Improvement Act, 1882.

Leeds Architectural Society.—Mr. W. H. Thorpe, of Leeds, read a paper on "Recollections of Flemish Architecture" before the members of the Leeds Architectural Society, in the Society's Lecture-hall, Albion-street. Mr. J. B. Fraser, the president, occupied the chair. A vote of thanks to the lecturer was adopted on the motion of Mr. Ambler, seconded by Mr. Tweedale. The officers for the ensuing session were afterwards elected.

Naworth Castle.—Messrs. Burt & Potts state that they supplied their patent water-tight casements to all the windows in the new addition to the above castle. They are also supplying all the casements for Mr. T. Hartley, Armathwaite Hall, near Cockermouth, which is being built under the same architect, Mr. C. J. Ferguson.

Precinct of the Savoy.—Her Majesty the Queen has ordered the erection of new schools for the Precinct of the Savoy, and the works have been commenced by Mr. William Brass, contractor, of Old-street, St. Luke's, from the designs of Messrs. Perry & Reed, of the Adelphi. It is expected that the Duchess of Albany will lay the foundation-stone for the Queen.

Parkeston, near Harwich.—We are asked to mention that the slating here was done by Messrs. Ashton & Green, which firm also manufactured the lavatories, urinals, stoves, chimney-pieces, and marble work for the hotel and refreshment-rooms.

The Female School of Art.—The Queen has been pleased to purchase the four fans which obtained the Baroness Burdett Coutts's prizes for designs distributed by the Princess Beatrice on the 10th inst.

Damages against a Railway Contractor.—At the Croydon County Court, last week, an engine-driver, named Doughty, recovered his full claim of 253*l.* 10s. from Mr. Firbank, contractor for the new Croydon and Oxted line, for the loss of his sight in a collision between two trains, which occurred in the Riddlesdown tunnel on August the 1st last. The judge held that the accident occurred through insufficient regulations and the gross neglect of the driver of another engine.

TENDERS.

For a new road, surface water drain, gullies, &c., for the British Land Company (Limited), on their estate at Manor Park, Essex. Mr. H. B. Michell, surveyor:—

Peill & Son, Bromley, Kent	£648 0 0
Dunmore, Hornsey	600 0 0
Bloomfield, Tottenham	599 0 0
Wilson, Walthamstow	598 0 0
Keeble, Regent's Park	590 0 0
Harris, Camberwell	580 0 0
Pizzey, Hornsey	565 0 0
Jackson, Leyton (accepted)	488 0 0

For interior renovation of Trinity Church, Arundel, Sussex. Mr. E. J. Hamilton, architect, Brighton. No quantities:—

Lockyer, Brighton	£397 1 3
A. Smith, Bognor	430 0 0
S. Norman, Burgess-hill	432 15 0
Snewin, Littlehampton (accepted)	368 10 0

For alterations and additions to Northern District Boys' School, St. John's Common, Sussex, for the Clayton and Keymer School Board. Mr. E. J. Hamilton, architect. No quantities:—

Kent, Hayward's Heath	£335 0 0
F. Parsons, Brighton	320 0 0
Woolgar & Son, Horsham	256 15 0
Downer, Burgess-hill	240 0 0
S. Norman, Burgess-hill (accepted)	225 0 0
Scutt, Brighton (withdrawn)	177 10 0

For alterations and additions to roofs of 27 and 29, Westbourne-grove, Bayswater, for Messrs. Evans & Fisher:—

R. Smith, Pickering-place (accepted).

For eight villa-residences in Birdhurst-road and Birdhurst Rise, South Croydon, for Mr. J. Kendall. Mr. Edward C. Homer, architect, Mansion House Chambers:—

A. Waterman (accepted)	£11,600 0 0

For bringing out shop-fronts of four shops at Whittington-terrace, Forest Hill, for Mr. H. C. Morris. Mr. J. Slater, architect:—

T. Watson, Dulwich	£881 0 0
Roberts	771 0 0

For repairs, 3 and 4, Vere-street:—

Bamford	£177 10 0
Riley Bros.	163 10 0
Hornett	155 9 0
Waller	142 12 0

*** The list sent to us last week was erroneous.

For new stabling, Temple-street, Hackney:—

J. Smith	£1,159 0 0
Steele Bros.	1,090 0 0
B. Smith, Downham-road	1,045 0 0
Wire	990 0 0
Thomerson & Son	970 0 0
B. T. Wood	895 0 0
Hughes	878 0 0
Hawkings	872 0 0

Accepted for altering three houses and shops, and building a warehouse, Kirkgate, Wakefield. Mr. William Watson, architect:—

Squires (carpenter and joiner's work)	£275 10 0
Bagnall Bros. (excavating, brick, and stonework)	218 0 0
Wild (plumbing, glazing, & ironwork)	117 10 0
Rycroft (slating)	45 5 0
Turner (painting)	19 10 0
Tattersall (plastering)	15 3 7

Accepted for rebuilding stabling at St. John's, Wakefield. Mr. William Watson, architect:—

Summers (excavating, brick, and stonework)	£147 0 0
Loyd (carpenter and joiner's work)	66 8 6
Kirk (plumbing, glazing, & ironwork)	34 5 0
Rycroft (slating)	16 10 0
Lockwood (painting)	6 14 6
Driver (plastering)	6 5 6

For making roads and drains on land adjoining Jacob's Well-lane, Wakefield. Mr. William Watson, architect:—

Tattersall	£633 18 3
Vale	604 14 0
Hartley	558 19 3
Summers	447 0 0
Wilson	444 6 5
Flower Bros.	425 0 0
Fawcett	424 0 0
Storr	391 0 0
Bagnall Bros. (accepted)	287 0 0

For kerbing and making up North-street, Bromley, Kent, for the Bromley Local Board. Mr. Hugh S. Cregeen, surveyor:—

Davis & Attwood	£415 10 0
E. Peill & Sons	297 0 0
T. Lansbury	287 10 0

For billiard-rooms and additions to the West Kent and Greenwich Carlton Club, Point House, Blackheath. Mr. A. L. Guy, architect. Quantities supplied:—

				Wood Ceiling and Linerusta Dado.
Hatfield	£930	0	0	£60 0 0
Redman	897	0	0	95 0 0
Kennard Bros.	892	0	0	29 0 0
Jerrard	887	0	0	68 0 0

For receiving-house and casual wards, Wallis's-yard, Buckingham Palace-road, for the St. George's Union. Messrs. H. Saxon Snell & Sons, architects:—

Staines & Son	£22,970	0	0
Bolding	22,787	0	0
Nightingale	21,870	0	0
Garlick	21,800	0	0
Wall Bros.	21,255	0	0
Parker	21,000	0	0
Adcock	21,000	0	0
Lucas & Son	20,999	0	0
Mowlem & Co. (accepted)	20,900	0	0
Peto Bros.	20,379	0	0

For pulling down and rebuilding 32, Broadway, Westminster, for Mr. Cohen. Mr. H. W. Budd, architect:—

Moore & Son	£1,291	0	0
King & Son	1,250	0	0
Pink & Co.	1,230	0	0
Lamble (accepted)	1,148	0	0

For goods warehouse for the Dover Harbour Board. Mr. Rowland Rees, architect:—

Martin, Wells, & Co., Aldershot	£2,538	0	0
T. Bourne, Dover	2,483	0	0
W. Hill & Co., London	2,480	0	0
W. Wiles, Dover	2,450	0	0
A. Mathews, Dover	2,418	0	0
Hayward & Paramor, Folkestone	2,370	0	0
H. Stiff, Dover	2,287	0	0
W. J. Adcock, Dover (accepted)	2,285	0	0
H. Richardson, Dover	2,230	0	0
H. Whelch, Dover	2,155	0	0

For stabling, &c., the Queen's Hotel, Upper Norwood. Mr. J. Randall Vining, architect. Quantities by Mr. F. Rogers:—

Thomas Crossley, Bromley	£2,967	0	0
S. J. Jerrard, Lewisham	2,673	0	0
T. H. Adamson & Sons, Ealing	2,641	0	0
John Mowlem & Co., Milbank	2,580	0	0
Geo. Amer, Catford	2,480	0	0
Killby & Gayford, Finsbury	2,436	0	0
R. H. Jenkin, Norwood	2,432	0	0
W. Johnson, Wandsworth	2,430	0	0
H. Burman & Sons, Kennington	2,407	0	0
G. Masters, Anerley	2,400	0	0
J. & C. Bowyer, Norwood	2,389	0	0
J. F. Sargeant, Hackney (accepted)	2,378	0	0

For additional premises to 8, High-street, Croydon, for Messrs. Grant Bros. Mr. Robert Ridge, architect:—

Smith & Bulled	£1,295	0	0
Smith & Son	1,219	0	0
Marriage	1,210	0	0
Legg	1,194	0	0
Pearson	1,193	0	0
Pollard	1,190	0	0
Maides & Harper	1,137	0	0
Loe & Son	1,120	0	0

For painting and decorations of the officers' mess-room, billiard smoke-room, and reception-rooms, for the Officers of the Royal Artillery, Shoeburyness, Essex:—
G. W. Stewart, Chapter-road, Walworth (accepted).

For alterations and additions at Tierney Arms, Edward-street, Brighton, for Mr. James Whiffen. Mr. Geo. Treacher, architect:—

John Beale (accepted)	£368	0	0

For new fittings, counter, and stillion at the King's Head Tavern, Wandsworth-road, for Mr. J. C. Scott. Mr. Geo. Treacher, architect:—

John Beale (accepted)	£432	0	0

For new fittings, &c., at the Burlington Arms Tavern, Old Burlington-street, for Mr. J. H. Docker. Mr. Geo. Treacher, architect:—

John Beale (accepted)	£290	0	0

For new counter, lobbies, and fittings at the Yorkshire Grey Tavern, Langham-street, for Mr. T. Maguire. Mr. Geo. Treacher, architect:—

John Beale (accepted)	£562	0	0

For alterations and additions, fittings, painting, and decorating the Tower Tavern, Westminster Bridge-road, for Mr. Robert Day. Mr. Geo. Treacher, architect:—

John Beale (accepted)	£584	0	0

For alterations and additions at 27, Panton-street, Haymarket, for Mr. Thurston. Mr. J. T. Wimperis, architect. Quantities by Mr. Morris Evans:—

Hatfield & Son	£398	0	0
T. & T. Bush	323	0	0
John Beale	299	0	0
Drake	253	4	0

For the erection of a warehouse in the Gray's Inn-road, for Mr. F. Sage. Mr. A. Bedborough, architect. Quantities supplied by Messrs. R. L. Curtis & Sons:—

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Sabey & Son	2,498	0	...	142	0	...	50	0	
Styles & Holdstock	2,356	0	...	99	0	...	30	0	
Martin & Goddard	2,353	0	...	104	0	...	20	0	
Hearle & Son	2,298	0	...	105	0	...	—		
Abraham	2,297	0	...	103	0	...	—		
Staines & Son	2,284	0	...	108	0	...	18	0	
Howell & Son	2,215	0	...	95	0	...	20	0	
Morter	2,207	0	...	104	0	...	25	0	
Belham & Co.	2,199	0	...	100	0	...	20	0	
Farrish & Hawker	2,193	0	...	99	0	...	20	0	
Langmead & Way	2,079	0	...	90	0	...	10	0	
Bolding	2,077	0	...	117	0	...	—		
Bartlett	2,074	0	...	105	0	...	14	0	
Sly	2,060	0	...	98	0	...	30	0	
Brown & Co.	1,997	10	...	97	8/6	...	15	0	
Aldridge & Jeavey	1,998	0	...	87	11	...	10	0	
Higgs	1,952	0	...	105	0	...	7	0	
Roberts	1,898	0	...	89	0	...	25	0	
Ball	1,885	0	...	85	0	...	30	0	
Parker	1,850	0	...	84	0	...	10	0	

For the erection of cottage adjoining the Parish School, East Farndon, Northamptonshire. Mr. Herbert W. Chattaway, architect, Trinity Churchyard, Coventry:—

Adams, West Haddon	£225	10	0
Ball & Claypole, Broughton	195	0	0
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Jennings, Market Harborough	179	15	0
Adkins, East Farndon (accepted)	176	10	0

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The Builder.

VOL. XLIV. No. 2095. SATURDAY, MARCH 31, 1883

ILLUSTRATIONS.

Palazzo Contarini Fasan, Venice.—Sketched by R. T. Conder 414
New Schools for the Finchley School Board (Plans, 321).—Messrs. Dunk & Geden, Architects 416
Entrance-door, San Juan de los Reyes, Toledo (Double-page Engraving). -Senor Alonso de Covarrubias, Architect 418, 419
Triforium Traceries, Lucca Cathedral.—Sketched by R. T. Conder 423

CONTENTS.

lood, Helplessness, Ruin, and Remedy 401
anterbury Cathedral 402
ocomotion in London, Under and Above Ground 403
nternational Municipal Exhibition at Vienna, 1883 403
Recent Decision on Architects' Certificates 404
ome Hints and Maxims 405
he Holidays 405
he Reclamation of Land 406
ouses in Corea 407
he Historical Development of Ornamental Art 408
lectrical Transmission and Storage of Power: The Institution of Civil Engineers 409
omparison of Dwelling-houses in the various European Capitals 409
ottingham School of Art 411
he New Railway Station at Strasburg 411
laintenance of Main Roads 411
ornaments of Arabian Art in Egypt 411
openhagen 412
lonastery of San Juan De Los Reyes, Toledo: Entrance-door of Chapel 412
Sketches in Italy 412
German Sanitary Congress 412
Finchley Board School Competition 412
Prize Competition for a New "Northern Museum" in Stockholm 413
Underground Paris 425
The Disinfection and Drying of Inundated Houses 425
The Sun as a Source of Power 425
Pauperism 425
Lunatics in a Prize Competition 425
Forests of Surrey 425
Edinburgh Architectural Association 426
Sale of Frescos 426
"An Architect on Lawyers" 426
"Wright, of Derby" 426
Stuttgart 426
Extension Works at Fenchurch-street Railway Station 427
Progress of the Mersey Tunnel Railway 427
Prussian Church Building Statistics 428
The Grosvenor Bridge, Tunbridge Wells 428
Building Patent Record 428
Country Houses 428
Architects' Assistants as Clerks of Works 429
The Decoration of the Dome of St. Paul's 429
The Decorative Arts 429
The Smoke Abatement Committee's Experiments 429
The Street Memorial 429
The Durability of Wood in Buildings 429
Patent Tip Van for Vestries 430
New Buildings on the Site of Bolton Row Schools 430
Competition Cases.—Arthur and Morris v. The Metropolitan and District Railway Company 430
Right of Building to Support from Adjacent Land: Field & Co. v. Jones & Willis 430
"A Doctor's House, Bedford Park" 430
Charity-Building News 431
Strand Glass 431
Books: Amateur Work (Ward Lock, & Co., Woolrych's Metropolitan Building Acts (Stevens) 431
Miscellanea 432

Flood, Helplessness, Ruin, and Remedy.

WHEN, we may venture to ask, do things become intolerable in England? Certainly not until long after the time when it has been predicted, or asserted, that such is the case. We speak of that material proof of a thing being intolerable which is to be found in its being no longer tolerated; in the fact of the persons mainly interested setting their shoulders to the wheel, and putting down the nuisance.

Assuredly it might have been thought, ten years ago, that our river floods had attained this intolerable stage. Repeated reports from committees of both Houses of Parliament have placed on record the vast amount of damage caused, in wet years, by the neglected state of our river valleys. The subject has been so often, and so fully dwelt upon in our pages that we may almost seem as if there were nothing fresh to be said about it. But the present year seems to have surpassed its predecessors in the evil eminence of mischief thus caused. The rainfall of February, chiefly occurring in the first eighteen days of the month, attained a depth of 23·57 in. at Birmingham, according to the trustworthy measurement of Mr. Plant. And the rainfall at Birmingham is, on the average, some 10 per cent. less than that of the mean of the United Kingdom. The fall this year has been 10·13 in. over the average for the month,—that is to say, 43 per cent. in excess of that of an ordinary year; and 5·20 in., or 22 per cent., in excess of that in the wet year 1872, which was 36 per cent. above the average of the five years from 1860 to 1865.

We are all the more moved to say one word more on this subject, of such vital importance as it is to the health and wealth of so large a portion of our fellow subjects, from observing a letter from Algiers, in one of the morning papers, suggesting the necessity of survey as the basis for dealing with floods. The letter is clearly distinct and to the point; but what chiefly strikes us is the apparent unacquaintance of the writer with the fact that the measures he suggests have been, year after year urged on the attention of the Legislature in our own columns and in other journals. For more than ten years we have explained to our readers the necessity of obtaining that information as to the hydraulic condition of our river valleys, which is regarded as indispensable by our Continental neighbours. It is not with us as it is in the United States, or even in many parts of Europe. We have no unruly giants to deal with, like the Danube or the Mississippi. Our longest river has a course of only 225 miles, and in that distance there is a fall of 800 ft. from the source to the mouth. "In the British Isles," says Professor Ansted, "there are only four drainage areas of the first class, each gathering the waters of upwards of 4,000 miles of country, and carrying them to the sea in a single great channel. The Humber, the Severn, and the Thames in England, and the Shannon in Ireland, are all that lay claim to consideration of this character, and it will be found by comparing their drainage areas with those of the great rivers of the world, that in point of magnitude they are all insignificant as compared with the principal rivers of the Continent." According to the best available accounts, the flow of the Thames varies from 26·3 metric tons per second in drought to nearly 400 metric tons per second in flood, and that of the Severn from 7 metric tons per second (at Tewkesbury) in drought, to 682 metric tons per second in flood. The above-stated flood of the Thames is one-fourth of that of the Seine, one-seventh of that of the Tiber, and one seventeenth that of the Po. The ordinary flow of the Danube is 174 times the volume of the ordinary flow of the Thames. When we are made aware of the great efforts that have been made, though not with absolute success, yet with much abatement of the former ravages of the great Continental rivers that we have named, in France, in Italy, and in Austria, what can be said of the state of our own engineering knowledge, or of our public spirit, that allows, year after year, the dwellers in our valleys, traversed as they are by such comparative driblets of water, to be flooded out of house and home?

The effect of each recurrence of disastrous flood, observes a writer in the *Edinburgh Review* (No. 314) is cumulative. As regards the individual sufferers, their health is often permanently impaired, and their powers of resistance to the diseases that damp brings in its train are ultimately broken down. As regards the land, the long presence of undrained water turns rich pastures into hungry swamps, destroying all the finer grasses, which are replaced by semi-aquatic weeds. As regards the rivers themselves, each neglected flood erodes the banks, and piles up fresh obstacles in the channels. The question is therefore extremely urgent, what is to be done?

The scientific reply to this question we have long ago given; nor has any exception been taken to that answer. All scientific men are in accordance on that point. Our first need is to have such an hydraulic survey of our river valleys as to give us the simple facts of the case. Most of the materials for these surveys are already available, and it only requires to arrange what is known, and to add the purely hydraulic observations which yet require to be collected. The cost of such a measure would be far less than the loss to which we are liable in every year for which it is neglected. What, then, is the reason why flood succeeds flood, report succeeds report, and session of Parliament succeeds session of Parliament, while yet we have not advanced a single step towards the first requisite for dealing with our river floods, viz., ascertaining the hydraulic features of our river basins.

We believe that the reason is a simple one. It lies in the jealousy of different classes of landowners, and the desire of each class to pay nothing for work that it may be thought to be the duty of another class to pay for; or, if not their absolute duty, at all events to be chiefly beneficial to that other class. It may seem unworthy, unbusinesslike, unwise; but we think no one can run through the cumbrous library of blue books that has been created on the subject of river floods without coming to this conclusion. And, such being the case, the fact has to be looked in the face. It is of no use to argue, of no use to preach. How is the mutual distrust and suspicion which has prevented improvement and paralysed legislation to be dealt with? If it is not dealt with somehow we shall have to make up our minds to allow the richest grass lands of the island to relapse into bog.

We venture to suggest the lines on which, and on which alone, it can be thought that any measure which Parliament can or will pass as to prevention,—not of floods, but of damage from floods,—must be laid down. We will purposely give a wide margin to our statements, being more anxious to indicate a *modus vivendi* between upland and lowland proprietors, than to insist on any cut-and-dry scheme of our own.

The watering of any river-basin or inland district may be regarded under two aspects,—to wit, that of the beneficial, and that of the injurious, effect of water. In the absence of water, cultivation is impossible. Vegetation refuses to exist. In the presence of too much water useful is replaced by useless vegetation. It is thus the common object of all sorts and kinds of agriculturists,—highland and lowland,—to obtain such a regulated and regular supply of water as may best suit the nature of their soil, and the character of the vegetation which it is their purpose to cultivate.

The proportionate amount of water supply, and the consequent character of the most remunerative kind of cultivation, in this country, is mainly a question of level. It is not so much of the proportionate amount of total rainfall that we now speak (although this is not to be left altogether out of sight), as of the behaviour of the rain when it has fallen. This depends, in some measure, on the geology of a district. But it also depends directly on its levels. Out of every inch of rain, a portion is evaporated, a portion is retained in the soil, or is absorbed by

organic beings, and the remainder runs off, either over or under the surface, to the nearest river outlet.

It follows that, while each piece of land receives approximately a like amount of rain, the low-lying lands receive a much larger amount of water than the uplands. For they receive both the rain that comes down on their own surface, and the unabsorbed rain that runs off from the surface of the higher lands.

Each district, then, is dependent to a certain extent on its neighbours. The higher districts are dependent on the lower districts to carry away their surplus water. The lower districts are dependent on this surplus water for carrying on that more lucrative kind of cultivation which accompanies irrigable soils.

The owners of land on the lower districts, as matter of fact, are more directly called upon to execute works of outfall and drainage than are those in the upper. For however they may complain of the outflow from the upper lands coming upon them, they have to deal with the fact. And as they also have, as a fact, to deal with their own rainfall, they must go to a larger expense than their neighbours if they wish to secure any crops at all. On the other hand, their crops may be made so abundant as a nply to repay this larger expense. Of this we can cite abundant proofs from the Severn valley. It would seem, therefore, just and fair that the area of a river basin should be divided into zones of elevation. We will take three, not as insisting on the number, but as a first approximation. We have now existing a line of water carriage from the Thames to the Severn, of which the summit is not quite 400 ft. above low-water mark. If, then, we take zones of elevation of 200 ft. each, we have a primary division of the land. All the land more than 400 ft. higher than the sea is drainable at comparatively small cost, and can be very easily protected from floods, by turning its waters on its neighbours. The zone between 400 ft. and 200 ft. above the sea receives a double, or more than a double, supply of water, the excess of which, in its turn, it throws on the valley between. These rich grazing-grounds, fed with a triple supply of water, make a triple call on the industry of their occupiers, and yield nearly a corresponding return for its exercise.

Subject, then, to more accurate division in special cases, it seems fair that the rating necessary for that drainage of a river basin which can be only efficiently and economically effected as a whole, should be divided into three grades. If the assumed cost of the thorough regulation of the water-shed be *l.* per acre, it should be divided, we suggest, into the proportion of 10s., 20s., and 30s. per acre respectively, for the upper, the middle, and the lower levels. The outlay thus provided for should cover all expense that comes under the head of arterial drainage. Thus an upland farmer, who lays his own tile drains 4 ft. below the surface, would have a right to expect an outfall drain to be provided for him that will take off the water at that level. It is true that the greater part of his 10s. may be laid out 400 ft. below the level, and perhaps twenty miles beyond the boundary of his own land. But it is part of the general scheme, in which he must take his fair share of the burden; and of which the remuneration to him will not be insignificant. On the low-lying owner, again, the direct money impost will be the heaviest. But he must remember, first, that his need is the most urgent; secondly, that he will have the benefit of the expenditure of a great part of the contribution of his neighbour; and, thirdly, that the returns from his own land, if his own industry keep pace with the work carried out by the authorities ruling the scheme, will be more remunerative than that of the less irrigated districts.

We repeat that we do not propose to lay down a hard-and-fast line, or to define, with absolute certitude, zones of level or *pro rata* payments. But we submit to the consideration of those who will make the law, that the above proposal, in its main principles, is just, and that being so, it is feasible. Nothing is more certain than that it is impossible to effect any serious improvement in the condition of our valleys by leaving those concerned to come to an agreement on the subject. As to that, the whole outcome of the evidence of the Blue Books is concurrent and unmistakable. There must be one authority for the entire water-shed, and this authority must have the power to compel all contributors to pay their fair share. All that any one can have a right to demand is that the share should be fair. No one, as a citizen, has the right to refuse to bear his fair share of the burden. It is almost as essential to be defended against flood and the famine and pestilence that follow in its train, as it is against hostile invasion or domestic brigandage. That the land should bring forth her increase, the nation has a right to expect. In the case we are putting, it is our full belief that each class of proprietors would be amply rewarded for the compulsory outlay. Even if that were not the case, there can be no doubt that the nation,—the people of England, as a whole,—would be benefited. The national wealth would be enormously increased by the removal of one of the main causes of its waste. If it should prove that the upland owner only got half of his 10s. per acre added to the value of his land, while the lowland owner, paying his 30s., had his land raised in value by 40s. or 50s., such a disproportion would be better for all parties than their present tax all round. It is the case of the fable of the two cats, the monkey, and the cheese. The cats are the owners, each of whom dreads that the advantage that may be given to his neighbour will be more than that which he will secure himself; the impartially greedy judge is the devouring flood.

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"Canterbury, the earliest royal city of German England, became a centre of Latin influence. The Roman tongue became again one of the tongues of Britain, the language of its worship, its correspondence, its literature. But more than the tongue of Rome returned with Augustine. Practically his landing renewed that union with the Western world which the landing of Hengest had destroyed. The new England was admitted into the older commonwealth of nations. The civilisation, art, letters, which had fled before the sword of the English conquerors returned with the Christian faith." *Green's "History of the English People."*

THE enthronement of the Primate of all England at Canterbury turns the thoughts of many to the stateliest and, at the same time, the most ancient of our cathedrals. It evokes some little reflection upon the growth of the Christian faith, whose cradle and nursery in this country must be looked for in that grand metropolitical church which first arose over the rude homestead of a heathen king. Shorn of the splendour and entertainments which attended the enthronement of a Chicheley or a Warham, the ceremony retains all its old significance. As in ages past, the archbishop and patriarch is first conducted in the choir to within the rails, and thence, at the end of the first lesson, to the throne in which he is installed as Bishop of Canterbury. The service concluded, he is escorted from the throne to the historic marble chair, where the bishop becomes Primate, and the induction is completed as, seated, he hears repeated the forms appertaining to his assumption of further dignity,—of redoubled trust. Then, having blessed the congregation from the dean's stall, he proceeds to the chapter-house, where, the chief seat assigned to him as lord archbishop, he declares that he will maintain the rights and liberties of that church, and cause the same to be observed by others in so far as they shall not be repugnant to God's word, the laws and ordinances of the realm, or the prerogatives of his sovereign.

Some years elapsed since the patrician monk of the St. Andrew's Convent, which he had himself founded on the pine-crowned Cœlian Hill, first encountered three fair English slaves from Deira in the Forum of his beloved Trajan, before he could accomplish his cherished design of winning Britain to the Faith. This task he proposed for himself; leaving his convent in secret with a few chosen companions, they had advanced but three days' journey beyond the Flaminian gate when messengers overtook them with the news that a mob had attacked the Pope in St. Peter's Church, and demanded Gregory's instant return. Elevated to the Papal chair, he at length found his opportunity in the marriage of Berchta, daughter of the Frankish king Chariberht, of Paris, to Æscing * Æthelberht, king of Kent. Berchta, whose own great ancestor, Hlodwig, had been converted by his wife Hlothilda, had taken Luidhard, a Christian bishop, from Gaul to her new home. There was assigned to them a ruined Christian church, which she re-dedicated to St. Martin of Tours, beside her husband's palace at Longport, overlooking the high road from Rutupiæ, along which Plautius had led his legions.* Sent forth with forty associates, in spite of all remonstrance, Augustine landed at Ebbe's Fleet, in Thanet, where Hengest had arrived a century before him; Æthelberht, with his queen, stipulating that the Stour should flow between them, and, fearing magic, that no roof or tree should cover them, met the monks stationed on the chalk down by Minster, in the island, whence are now seen, miles away across the marshes, the dim towers of Canterbury. Listening to the Gaulish interpreters, your words are fair, says the king, with native honesty, and your promises,—but because they are new and doubtful, I cannot assent to them, and leave the customs I with my countrymen have so long observed; yet, he adds, I will not deny shelter and hospitality to strangers from a distance, or hinder you from gaining all you can to what you so earnestly believe to be true and good. He gave them leave to cross the ferry to Richborough (Rutupiæ), and formally received the missionaries beneath the cliff of the Roman fortress whose extensive ruins yet remain. Thereupon the band of monks advanced to the capital, one bearing before a silver cross, another the picture of the Saviour, painted and gilded,† chanting the while a Litany that Gregory had composed for the plague at Rome,‡ varied, ever and anon, with the jubilant cry of the older Hebrew worship, which Gregory, with prophetic earnestness, wrested from the name of the Northumbrian king,—Alleluia! Æthelberht gave them first, as a resting-place, Stablegate, by a heathen temple near the present church of St. Ælphage, and soon allowed them to worship with the queen at St. Martin's.§ There, within a few months, he was himself baptised on Whitsun-day, June 2nd, A.D. 597, and, as some would affirm, in the venerable font preserved in the church. He gave the holy band a temple, which Augustine dedicated to the child saint,—St. Pancras,—martyred under Diocletian, and, moreover, himself retiring to Reculver, yielded to Augustine his own wooden palace and another neighbouring temple, with its grove, within the city walls, whereon to found a new cathedral to be consecrated to Christ. Augustine, appointed archbishop of Canterbury, obtained more missionaries from Rome, of whom Justus was to found the see of St. Andrew at Rochester, Mellitus that of St. Paul in London, and Paulinus that of St. Peter at York. Of his own original companions Lawrence succeeded him as archbishop, and Peter became first abbot of St. Augustine's. Finally, Æthelberht granted to Augustine a plot of ground by St. Pancras for the monastery of St. Peter and St. Paul, that subsequently grew up into the great abbey known by his name, and which, by the liberality of Mr. A. J. Beresford-Hope, was some years ago re-established as a college of missionaries to our Colonial church. This was beyond the city walls for the reason that whilst Augustine "desired," in the words of Dean Stanley, "to have in this land of strangers a spot of consecrated ground where his bones should repose after death," intramural sepulture was forbidden by the usages he brought from Rome. And here he was buried A.D. 604,—in a spot by the Roman road where now stands the Kent and Canterbury Hospital,—and soon after Berchta with Luidhard were laid by his side. On the completion of the abbey (it was consecrated A.D. 613 by Lawrence and Æthelberht) his body, with those of the queen and her chaplain, was removed into the church, whither, after a reign of forty-eight years, the first Christian Brehtwalda was carried from Reculver, to be buried by his first wife on the north side of St. Martin's altar, in the church of St. Augustine.‖

Christ Church did not escape the troubles of the times. Repaired by Odo, A.D. 938, both it and the city were burned by the Danes, who, bringing a large fleet to the mouth of the Stour (or Wensome as that part of it was then called), carried away St. Ælphage, archbishop, whom they murdered at Greenwich (April 19th, 1011), where a church distinguishes the spot of his martyrdom. King Cnut restored the ruined minster, giving it, with more substantial benefactions, his golden crown, which the monks retained until the Dissolution. Within a few

* "Son of the Ash-tree," a name given to the dynasty of Hengest.—*Bede*, ii. 5, sec. 101.

* Legend traces the origin of this church, with those of St. Mary in the Castle at Dover, St. Peter's, Cornhill, West Minster, and Winchester, to Kin; Lucius. Cotter Ussher's "Eccl. Brit. Antiq."

† "Formose atque aurate."—*Acta Sanctt.*, 326.

‡ H. E. Fleury, book xxxv. 1.

§ Thorn, 1758.

‖ Thorn, 1767; Bede, ii., secs. 102, 101.

months of the Conquest, a fire ravaged a city which then surpassed London in extent and importance. Lanfranc began to rebuild the cathedral, and secured the see's superiority over York. Part of the crypt and two small square towers,—St. Anselm's and St. Andrew's,—by the east transept are shown as his work, which was carried on by Prior Conrad and by Anselm, his successor. At their hands the church assumed the form which inspired William of Malmesbury's panegyric. "Nothing similar was to be found in England, either for the brilliancy of the painted windows, the splendour of the marble pavement, or the pictured roof which attracted the eyes of beholders." Rededicated to Jesus Christ by Radulphus de Turbine (1114-1122), we have a description of the building from the pen of Gervase, a monk of the adjacent priory of Christchurch. Speaking of Prior Conrad's choir, Gervase, in the "Decem Scriptores," gives details of the magnificence which was reported on to King Henry as an example of profusion and waste of his liberal donations. With the unbounded veneration for the church that characterised his age, that sovereign replied,—"If those treasures have contributed to the increase and glory of the house of God, blessed be the Lord that he has inspired me with the will to grant them, and that he has bestowed such grace upon my reign that I am permitted to behold the increased prosperity of my holy mother the church." In the choir, as rebuilt ninety years after Lanfranc's time, we have a striking exponent of the improvement introduced into ecclesiastical architecture. Amongst the more remarkable features of difference set forth in the comparison made by Gervase may be instanced these following. The pillars of the new choir are of the same form and thickness as the old, but are 12 ft. higher; their capitals, instead of being plain, are richly yet delicately carved, whilst they include marble columns which did not exist in Lanfranc's work. The stones of the former arches had been cut with an axe; these, of the Early English style, are chiselled. The old vaulting was plain; the new is pointed, with key-stones and bosses. The choir ceiling, flat and ornamentally painted, like to that of St. Alban's, gave way to one elegantly arched with ribs of hard stone, and a light fine stone for the interstices. Again, whereas there ran but one triforium around the former choir, this is beautified with two. Thus, before the close of the twelfth century there was not to be found a member of the *soi-disant* Anglo-Saxon architecture in the whole chancel and choir of the church, except, indeed, in the main arches of the crypt (the most spacious in England) where it is probable the round arches were expected to give a stronger support.

For a whole year after the assassination of Thomas à Becket the cathedral was desecrated; the bells were fastened up, the pavement torn up, the hangings and pictures removed, and dirt suffered to accumulate. Fire interposed to complete the expurgation, the choir and surrounding fabric being reduced to ashes on the 5th day of September, 1174. During the interval 1175-1180, Richard being then archbishop, the whole was rebuilt under the superintendence of William of Sens, who borrowed largely from his own cathedral, and another architect, William, the first English architect of whom anything is known. Soon afterwards the monks set about the erection of Trinity Chapel, with the round tower adjoining, though the division which, fomented by the Pope, arose between them and King John on Hubert Walter's death interrupted their labours. On Tuesday, St. Thomas's fatal day, the 7th day of July, 1220, in the presence of "King Henry the young child," the Cardinal Archbishop Langton, the legate Pandulph, bishop of Norwich, the Archbishop of Rheims, and the celebrated Hubert de Burgh, with "four great lordlings, noble men and tried," bore the martyr's body from its grave in the crypt behind the altar of the Virgin to the high altar eastward of the patriarchal chair and immediately over the grave,—a shrine which thenceforward formed the object of pious pilgrimages "from every shire's end of England," and, indeed, all christendom. Celebrated with prodigious pomp, circumstance, and expense, the Feast of the Translation, with its survival "Becket's Fair," has long since ceased to be observed, but its memory will live until Chaucer, with his "Canterbury Tales," shall be forgotten.

St. Anselm's Chapel at the eastern end of the southern side is conspicuous for its large window, enriched with beautiful tracery of the fourteenth century; beneath is the fresco-painted chapel of St. John the Evangelist, rarely shown to visitors. In the "Martyrdom," containing the door which formed the ordinary entrance from the cloisters,—and whose position, on the northern side, indicates the British origin of the church,—Margaret of Anjou was united to King Edward I. The exquisite window in this transept, the gift of King Edward IV., was almost entirely destroyed by the fanatic Richard Culmer,—"Blue Dick,"—thrust by the Parliamentarians into the office of one of the six preachers who, in his own phrase, set about rattling down proud Becket's glassy bones. The window, even in its present condition, is of especial value as presenting authentic likenesses of the king, his queen, and daughters, King Edward V. and his brother the Duke of York. The doorway, from without, was constructed by Prior Eastry (*temp.* Ed. I.), to whom the finely-sculptured choir-screen also is due. Simon of Sudbury, beheaded by the rebels in the year 1381, commenced the rebuilding of the northern transept and of the nave, the latter being completed under Chicheley (1414-1443) by Prior Chillenden. The central or "Bell Harry" tower, outrivalling those of Gloucester and York, and once styled the Angel Steeple, being surmounted by a pinnacle carrying a gilded angel, was erected by the building-loving Cardinal Morton and Prior Thomas Goldstone, the second of that name (Hasted, iv., 556). This Goldstone (prior 1494-1517) designed the gate at the Close entrance. Arundel's tower (*circa* 1390) at the northern corner of the western end no longer appears as seen in Hollar's print. The lofty lead-covered spire was burned in the year 1704; and forty years ago the tower was restored by the dean and chapter, under the care of the late George Austin, cathedral architect, as a counterpart of the south-western or Chicheley tower. Whence the easternmost apse obtained its name of Becket's crown cannot with certainty be predicated. It is said to have occasionally contained the scalp or crown of the saint, enshrined as a relic, that was severed by Richard Le Bret's sword. To this derivation Mr. Way inclines; whereas in his History of Canterbury Cathedral Professor Willis would treat it as an architectural term. The apse itself, as Gervase tells us, was raised in the year 1180, though not completed until the middle of the last century at the bequest of Capt. Humphrey Pudner. There were three objects of especial veneration by the pilgrims: the *caput beati Thomæ*, the *punctum ensis* in the Martyrdom, the *feretrum* in the chapel of Holy Trinity. Each had its own altar, to which the Black Prince bequeathed tapestries by his will.* In his account of a visit which he made with Colet, dean of St. Paul's, to Canterbury, Erasmus states that the *caput* was shown to them in the crypt. It is worth notice how on this occasion the course of coming events is foreshadowed in the little reverence Colet displayed not only over the relics shown to them by Prior Goldstone in the cathedral, but at the lazar-house of Harbledown hard by. Eight years later Warham received at the western door the Emperor Charles V., Cardinal Wolsey, and the King Henry VIII., who, but for his elder brother's death would have been Primate: eighteen years had not passed before sentence was pronounced (June 10, 1538) at Westminster against the dead archbishop, his bones were to be burned, the priceless offerings at his tomb forfeited to the Crown.

Amongst the earliest recorded visits to St. Thomas's shrine are those of King Henry II. and Louis VII. of France; the last is that, on the 31st of August, 1538, of Madame de Montreuil, who had just attended Mary of Guise to Scotland. The month following Dr. Leyton and his destroying commission arrive at Canterbury. The mortal remains are scattered to the winds, eight men† scarcely suffice to carry off the jewels and gold in two coffers, six-and-twenty carts wait at the church-door for the rest of the spoils.‡ The "Regale of France," bestowed by Louis, was long worn by the king in his thumb-ring, and is last heard of among the precious stones of his daughter Mary's golden collar.§ The posthumous miracles of Becket are represented in the windows of Trinity Chapel, and in one of the north side is a picture of the shrine or *feretrum* itself, being a group of the Saint appearing to the monk Benedict. Another drawing,—showing it covered with the wooden canopy,—exists on a folio page of the Cottonian MS., Tib. E, viii., fol. 269. This is copied, but inaccurately, in Dugdale's "Monasticon" and Nichols's "Erasmus." The shrine, ark-shaped and containing an iron chest which held the boxes, rested on a marble platform supported by six pillars, the space between these, as in the shrine of St. Eadward the Confessor, being open, so that crippled and diseased votaries might be placed in closer approximation to the martyr's body. On one side of the spot where it once stood,—now marked only by the broken purple pavement,—lies the hero of Crécy, Poitiers, and Nejara, with whose death the hopes of Englishmen died too, who directed by his will that he should be buried in the undercroft "où le corps du vray mastir Monseignour Seint Thomas repose" (and in which he had founded two chantries at his marriage), but whom they place in the venerated ground above. On the other side rests he who as a little child witnessed the funeral of the Black Prince, whose son he was destined afterwards to overthrow.

* L'autier là où Mons'r Saint Thomas gist,—l'autier là où la teste est, l'autier là où la poynte de l'espie est.

† Stow's Annals.

‡ Sanders in Wilkins's Lore, iii. 836.

§ Nichols's "Erasmus," p. 224.

LOCOMOTION IN LONDON, UNDER AND ABOVE GROUND.

At a time when, as referred to in our issue of the 17th inst. (p. 337, *ante*), public attention has been so eagerly directed to the working of the underground system of London railways, much interest attaches to all experiments, or feasible projects, for substituting some other motor power for the present ponderous locomotives, which are mechanically so triumphant, and on physiological grounds so objectionable. For this reason the trials of electric motors, such as that reported on the West Metropolitan Tramway between Kew and Hammersmith, demand more than the mere reproduction of the account furnished to the daily press.

We have before this expressed the gravest doubts whether it could ever prove feasible regularly to propel trains of carriages by electric power, so long as it was attempted to do this by direct transmission of force from a stationary dynamo-motor. The objections, it seems to us, are not of that class which we may expect further applications of skill and science to remove, but of that character which is in itself almost insuperable. Thus the laying down through the country on the ground, or even the suspending from poles, in the rude mode adopted by the telegraph companies, of lines of electric conductors, the slightest contact with which might involve sudden death, has always seemed to us an expedient that no argument could justify. Again, the loss of force, either as considered in relation to the resistance offered by the conductors in proportion to their length, or from that electric leakage which increases so rapidly with the intensity or dose of electricity sent through a given conductor, must always, it would seem, put a sharp limit on distant transmission, except in cases where the power obtained is supplied so freely by Nature as to allow of the waste of a very large percentage in order to send a small portion to a considerable distance. These two objections are, we think, independent of detail, and are of a nature that it is folly to despise.

With the use of accumulator batteries, on the other hand, these objections to electric propulsion disappear. It is in this direction, therefore, that we look with the greatest anxiety for the outcome of inventive labour. We are not in possession of the data of the experiments made publicly on the 10th of March; and it is obvious that it is one thing to run a tramcar for a mile, and another to prove the mechanical and financial success of any given invention. But we hope for farther particulars.

There is, however, one point to which we wish to call the attention of all those interested in electric propulsion. It is a point which it is the duty, as well as the interest, of the electric engineer to clear up; and, moreover, it is one as to the clearing up of which we recommend all our friends to be quite certain before they venture on any electric propulsion scheme any money that they cannot afford to lose. We refer to the question how much energy is lost in the double process of the accumulation of power and of its impartation to motive purpose.

In all forms and descriptions of the exertion of mechanical power there is constantly going

on a waste of the nature of leakage. In the most perfect of all locomotive machines, that is to say the living animal, this leakage is so utilised as to emphasise the beauty and poetry of nature. What are the gambols of the kitten, the rabbit, or the lamb; the circling gallop of the dog, when taken out by his master; the dash of the dolphin through the surf, the frisk of the squirrel on the bough, the songful soaring of the lark, the very dance of the gnats on the sunbeam,—but the leakage of vital energy,—the blowing off of that animal steam, which, not being required at the moment for the duties of life, is devoted to enhance its enjoyment. In the young of all creatures this exuberance of power is found, and its display constitutes one of the charms of youth. When the aged stag-hound, the pensioned charger, the infirm old man, economises the little strength left him for the slow performance of only indispensable motions, this waste of power is over, but over with it is the enjoyment of the sense of vigour, and the display of the poetry of motion.

In mechanical motor power there is no youth, no enjoyment, no sense of beauty, except in so far as we measure the exact proportion of means to end, and admire the scientific exactitude of the balance. Leakage, then,—to generalise a word originally applied only to the escape of fluids from a containing vessel,—is an unmixed evil in mechanics. It is also an evil of very great magnitude; although we have done very little to measure it. In the wooden sheathing of the boiler of the locomotive we observe an attempt to stop a leak, that of heat; and the engineer is aware of the economy of "jacketing," and its effect on the available power of an engine. But of all the heat liberated by the combustion of coke in the furnace of the locomotive, how much is lost by radiation or by conduction? While the engine is waiting in the yard, with dampers down, and fire banked up, still this leakage of heat goes on. So it does in every kind of mechanical work. Whenever we meet with friction, with interruptions of the steadiest and smoothest motion, with the application of a brake on a railway train, of a paul in a windlass, there is wasteful leakage of heat, and there is loss of power in that definite form.

Even in the impalpable energy of light we see the operation of the same law. Light loses its intensity by reflection, loses by each successive reflection, can actually become extinct or invisible by dint of numerous interferences with the direction of its inconceivable speed of ray. We can not trace how the loss arises, but it is as mensurable as the loss of heat by radiation or conduction.

The point in which this well-known loss by leakage bears on the question of propulsion (beyond what is usually well known) is this. What is the loss of energy involved in passing a given amount of dynamic force into an accumulator? What is the loss incurred on returning this force from its chemical to its mechanical condition? Be it much or be it little, there must be such loss. And, so long as it is unmeasured, it is impossible to say how far it may invalidate the results which the engineer hopes to secure by the use of the accumulator battery.

Anticipating, as we do, great results from the accumulation of energy, results which will be all the sooner attainable if electricians will set themselves at once to reply to our above inquiry as to loss by accumulation and distribution, we can hardly expect much light to be thrown on the problem of underground locomotion from this source. Every one now is offering some nostrum for the performance of a task that takes the highest ability of the most experienced engineers. Compressed air, electricity, funicular traction, are all advocated in the daily press as if they were new discoveries, which it only needed a little ordinary care to make available to supersede the present locomotives. We do not hesitate to say that most of these recommendations betray an equal ignorance of mechanical law, and of the history of invention. Of the use of compressed air, not, as it is incorrectly termed, as a motor power, but as a transmitter of motion, we have before spoken with some detail (see vol. xliii. p. 387). In this case, as in that of the atmospheric railway, the leakage of heat is so great as to put a very sharp limit to the purposes to which this very elegant mode of transmitting power can be economically applied. But in the working of the Metropolitan Railway we have a problem of extreme difficulty. It is one that we consider to have been very ably solved in a mechanical point of view, though it still presents great difficulties in a sanitary or physiological point of view. But it is idle to attempt to trifle with the case, or to suggest motors or transmitters of power which a little judicious investigation will show to be utterly inadequate to the work to be done. That work is equivalent at the very least to a run of forty miles, at forty-five miles an hour, with a weight of 160 tons. The difference between the actual distance from terminus to terminus and the distance we have named, and that between the running speed actually maintained and the maximum attained between the stations is taken out in destructive friction in that rapid starting and stopping at each closely neighbouring station, without which the Underground Line could not compete with the street omnibuses. And if our readers will refer to the very interesting discussion on modern locomotives which is continued in volume xxxvii. of the Proceedings of the Institution of Civil Engineers, they will see the horse-power of the engines that perform about the same amount of work as those on the Metropolitan line rated at 678 horse-power. Taking the same *formulæ*, and allowing for 160 tons, at forty-five miles an hour, up inclines of 1 in 100, we obtain a higher resistance than that of the Great Northern engine here cited, or 748 h.p. So that those persons who would replace the potent force of coal for propulsion must be prepared to show their command, from other means, of a force of from 600 to 700 h.p. for their machinery.

Now it will be well for those who propose either electric or compressed air apparatus to set before themselves, in the first place, this great power as required to be maintained for at least an hour. We must then calculate what weight and bulk of accumulation, whether in the form of battery or of reservoir, will be required to supply it; and we think that the outcome of a few figures will tend materially to check any very sanguine hopes that may be entertained as to the practicability of the change. And in either the one case or the other the inventor must be prepared with an exact measure of the loss of power by leakage of heat, or by conversion of the form of energy.

Another mode has been suggested with the utmost confidence by some one who is apparently but ill-acquainted with the actual history of funicular traction on railways. Two of our Metropolitan lines, within our own personal knowledge and remembrance, were designed for traction by ropes. The traffic was thus conducted, in each case, for a time; and then the whole capital laid out in engines, drums, sheaves, ropes, and other appliances was written off, and recourse was had to the locomotive, which has ever since been used. The two lines are the London and North-Western, from Camden-town to Euston-square, and the London and Blackwall; and the change has been made from practical necessity, in spite of the fact that rope traction is considerably cheaper than locomotive traction.

The main practical difficulty which all the skill and ingenuity at the command of the fathers of the railway system were unable to overcome, was due to the constant twisting of the rope, which finally twisted itself in two. Hemp ropes and wire ropes were equally unequal to this destructive strain, nor were any means found of obviating the evil; and here comes the conclusive disadvantage, that one fracture,—one bit of the long train of connexions out of order,—and the whole line comes to a standstill. This is a difficulty which must, in all probability, prevent any stationary generation of power from coming into competition with the locomotive on busy lines.

And even if the mechanical difficulty could be overcome, there exists another, which cannot fail to prove fatal to the application of any form of stationary power to the Metropolitan Railway. From the Mansion House Station to Aldgate occur sixteen stoppages, including that at the latter terminus. The time occupied in the run, we find from the time-tables, to be sixty-one minutes. If this line was worked in two divisions, which would incur some little loss of time, but which may well be regarded as an indispensable measure, we should have something not so very different, in each of them, from the Blackwall line, which was 3·75 miles long. As to power, we see no difficulty. But how would the line work? At present there is a train about every five minutes. This is three times as many as were run on the Blackwall. But that is not the point. The mode of working would be this. At the moment when the engines start, if we take a train from Aldgate, there will be a carriage standing attached to the rope at each of the platforms at Bishopsgate-street, Moorgate-street, Aldersgate-street, Farringdon-street, King's Cross, Gower-street, and Portland-road. On the supposition that the line is divided at Baker-street, there would also be eight carriages attached to the rope at Aldgate. When the engines were put in motion, first the Portland-road carriage would arrive at Baker-street, while at about the same time carriage No. 8 would be disconnected from the rope and stopped by its brakes at Bishopsgate-street. In the same way one carriage would run into the terminus, and one be dropped on the line, station after station, till the eighth carriage came in to Baker-street. That is all very well for those persons who wish to go from either of the above-named stations to the latter terminus. But how in the case of any one wanting to go from Farringdon-street to King's-cross? He could only do so by going either to Aldgate or to Baker-street, and then returning to King's-cross. This, it is needless to say, is out of the question. The passenger would go by omnibus. He could walk in less time than he could make this roundabout journey. It will thus be seen that, apart from any mechanical difficulty of traction, the impossibility of going from one intermediate station to another by any arrangement for funicular traction puts this method entirely out of the question for any part of the Metropolitan Underground System.

A private member of Parliament is endeavouring to introduce a Bill to render it imperative on the railway companies to "consume their smoke" on the subterranean lines. If there be the ground for this Bill that any smoke-burning engines now ply on any of these lines, such a measure has our hearty support. But as far as we are aware this is not the case, with the exception, perhaps, of some of the goods trains. We quite hold that smoke-producing locomotives should not be allowed to run through the tunnels. But the smoke is a preventible evil, and it has the great advantage,—in the point of view of those who would prevent it,—of being a visible and detectable evil. Not so with the mephitic vapour which is the real trial to the lungs of the passengers. This, partly consisting, probably of steam, partly of carbonic acid and other allied gases, is the direct outcome of that combustion by which the heat that moves the train is liberated from the fuel. We do not see how this product is to be dealt with, except by ventilation. So vast is the amount of duty expected from the locomotive that, in the present state of our science, it can only be accomplished by the production or liberation of heat, second after second, during the trip. But just in proportion to this conversion of the heat stored up in the fuel into motion, is the production of noxious gas. We may regret the fact, but we cannot alter it.

We have spoken of the magnitude of the work actually done on the metropolitan underground lines, as very considerably complicating the case, where any attempt is made to interfere with existing arrangements. The marvellous command which, by the powerful 42-ton engines, is attained of speed, and the almost incredibly short time in which a train of 160 tons is started and stopped, are points which it may well be regarded as impossible to secure if any lighter engine were used, although the weight of the engine is altogether disproportionate (but for this consideration) to that of the train. Again, notwithstanding the manner in which the carriages are crowded at certain hours of the day, the proportion of dead weight to net weight conveyed must be something like 18 or 19 to 1. The question of the capacity of any given line of communication is one to which the investigation of the case for the Manchester Ship Canal has caused much attention to be given. Not less, we are prepared to show, than 12,000,000 units, or tons gross of load conveyed for a mile, per mile of line, is the annual amount of tonnage which the Metropolitan Railway now conveys, being equal to 37,000 unit tons per mile per day. Of this, not more than 2,200 mile tons is the net load of passengers. The rest is the weight of the carriages alone, to which at least 30 per cent. more must be added for that of the engines. Thus the disproportion between the weight actually transported and the weight of passengers carried, is very great. If we suppose a steady movement of four passengers abreast marching Cityward,

and at the same time an equal number marching westward, along a street, the flow or movement of weight would be about equal to the average flow of weight of passengers over the Metropolitan lines. This is at the quick-march rate, of 108 steps in a minute. If we suppose this great host to move at double-quick time, which is, perhaps, nearer to the ordinary hurried tread of the Londoner, we should have 3,464 tons per day of 12 hours, on foot, against 2,200 tons per day of 18 hours by the railway. As compared with the quick-march rate of three miles an hour, there is more than a fourfold gain in time over the whole distance. But when we take shorter distances, and allow for the time requisite for taking tickets, going downstairs to the platform, waiting for trains, and again losing space and time in emerging to the outer air, it will be seen that the saving of time effected by the use of the underground railway is not always proportionate to the immense cost, both of capital laid out and of dead weight moved, at which that gain is secured.

We mention these important facts, not in any way as depreciatory of the service that has been rendered to London by the engineers of the Metropolitan Railway. On the contrary, we think that the skill, science, and care displayed on the plan, construction, and working of these lines, are such as to deserve far more marked public acknowledgment than they have yet received. We apprehend that the names of Mr. Fowler, Mr. Tomlinson, and Mr. Fenton are those most intimately connected with the successful working of a line which stands alone among public works for the safety to human life with which, regard being had to its celerity and enormous traffic, it has been conducted. Our object has been to show how great have been the difficulties overcome, how serious is the problem thus solved, and how idle and unconsidered are some of the proposals now so confidently brought before the public.

On the other hand, it cannot be denied that the margin of cost, and of unproductive work, is so enormous that it would ill become the engineer to say that science has spoken her last word on the subject. It is a very remarkable fact that both the actual cost per passenger, and the return to the shareholder on the capital invested, are very nearly the same on the Metropolitan Railway, by the London General Omnibus Company, and on the average of the tramways of the United Kingdom. On the railway, the average receipt is 1·80d. per passenger, on the tramways it is 1·93d. per passenger, and by the Omnibus Company 2·29d. per passenger. On the railway, the working costs, in 1878, were 35·62 per cent. of revenue; and they have, we think, been somewhat reduced since that date. On the tramways, the percentage of working costs, in 1881-2, was 80·8 per cent. of revenue. On the omnibus lines they were 94·16 per cent. But the amount of interest on capital by these different routes so far counterbalances the mechanical facilities acquired by the outlay, that while the railway, and the tramway, each returns 5 per cent. dividend, the net profit earned by the omnibus company (last year) was 3·50 per cent. on capital.

It is only by the patient, steady, conscientious accumulation and collection of facts like these that either the man of science or the man of business can arrive at a clear knowledge of the laws that regulate transport, whether of passengers or of freight, and can become able to offer an opinion that shall be of any value on any of those great questions which are now about to be brought under the notice of Parliament.

INTERNATIONAL MUNICIPAL EXHIBITION AT VIENNA, 1884.

A novel kind of exhibition is to be held in Vienna in the summer of 1884. It is to consist of a collection of drawings, &c., showing the results of the labours of the municipal authorities of various places in the way of sanitary and other improvements; a collection of articles, implements, and so forth employed for these purposes, and likewise publications on the history of cities. At one of its last sittings the Vienna Town Council agreed to make a grant of 100,000 florins to defray the expenses of the exhibition which it is proposed to hold in the great Rotunda, which was built by the late Mr. Scott Russell, and in which the International Electric Exhibition of the coming summer is also to be held.

A RECENT DECISION ON ARCHITECTS' CERTIFICATES.

The law courts have again and quite recently been discussing a case which is of considerable interest to all who are concerned with building matters. It shows also very conclusively that the tendency of the law is to consider an architect's certificate as final when it is possible to do so. As a general rule, this principle acts most against builders, for the question usually arises when architects have not included some extras in their certificates. In the present instance it was the builder who relied on the certificate and the employer who contended that it was not final. This case seems also to show the extreme folly of parties to building contracts not adhering to the forms authorised by the Builders' Society and the National Association of Master Builders of Great Britain. These are clear and well known, and although many solicitors have pet forms of their own, every builder ought to insist on the use of the authorised conditions. It may be said that in the present instance the affair has turned out all right for the builder. This is true to a certain extent, but he has had all the extra cost and the annoyance of litigation in order to substantiate his claim.

The case to which we refer is that of Richards *v.* May, which came before a Divisional Court of the Queen's Bench Division on March 8th, and is reported shortly, but sufficiently at length for the purpose of our comments, in the *Law Journal* Notes of Cases for 1883, p. 36. It will be also found at p. 50 of the *Weekly Notes*, which, as being published by the Incorporated Council of Legal Reporting, might be expected to be the best publication, but, so far as this case goes, it is inferior to the *Law Journal* notes.

The question arose in this way. Mr. Richards, a builder, contracted to erect, for Mr. May, two villas in accordance with certain plans and specifications prepared by one Lethbridge. In the contract these two provisions occurred. "All extras or additions payment for which the contractor shall become entitled to, under the said conditions, and all deductions which the proprietor shall become entitled to, shall be respectively paid or allowed for at the prices as shall be fixed by Mr. S. J. Lethbridge, the surveyor appointed by the proprietor." Then there was also the following:—"The contractor to be paid on the certificate of the surveyor, at the surveyor's discretion, during the progress of the works in payments on account at the rate of 85 per cent. value of works executed, and the balance of such contract to be paid at the completion of the works to the surveyor's satisfaction." After the work had been completed the surveyor gave a final certificate by which it appeared that the builder was "entitled to receive the sum of 875*l.* in settlement of contract and for extras and omissions." In this certificate were the detailed items of the extras measured and valued, and omissions also measured and valued. But the employer—like many employers,—was disinclined to pay the amount which the builder stated to be due to him, and declined to allow that the surveyor had any jurisdiction to decide what were extras and omissions, although he admitted he had authority by the contract to fix the prices at which extras and omissions should be allowed. It must be obvious that this defence was possible from the want of clearness in the contract, and that if the latter had stated, as it might well have done, that the surveyor should include in his final certificate the extras and omissions, then there could have been no doubt at all on the subject. The certificate would on the face of it have been final, and the rule expressed in the well-known case of Goodyear *v.* The Mayor of Weymouth (Roscoe's "Digest of Building Cases," second edition, p. 24) would have clearly been applicable. As we have already said, the Court determined in favour of the builder, and they did so on this ground that (we quote the words of the epitome of the judgment) "as there was no clause in the contract providing any other mode determining what were extras and omissions, and as the surveyor was empowered to fix the prices at which extras and omissions should be allowed for, the parties must be taken by necessary implication to have agreed that the surveyor should determine whether the items appearing in his certificate were properly extras and omissions." We confess that this seems to us somewhat in the nature of a happy thought to justify a decision which was clearly in favour of the party who was seeking to enforce a rightful claim. For, although a surveyor may fix the rates at which extras shall be allowed, is it not quite possible for the parties to mean the decision as to what are extras to be that of an arbitrator, and not of the person who has had the ordering of them? We mention this because the reasoning of the judgment does not appear quite clear, and we wish to make it very evident that persons engaged in building transactions should have their contracts clearly drawn. Nothing is ever gained by using either short or fanciful conditions.

SOME HINTS AND MAXIMS.

A house in danger, a family in peril.

Shore up carefully if you would pull down safely.

Sharpen your tools properly and you will husband your strength.

Hit the nail straight upon the head and you will save many crooked blows.

Build with seasoned timber or you will build to your own discredit and others' loss.

Set out your work with accuracy, and the time you will save will bring profit as well as credit to your employer and yourself.

The mason should work the stone to the lie of the stratum, and bed it to the same.

The builder that deceives the architect wrongs the client as well, and if he connives at bad workmanship he demoralises the workman and constitutes himself a criminal.

Garden mould may be good for vegetables, but as a component of mortar it spells early ruin.

Glaze your sashes with putty if you will, but make your mitres and other joints without it.

In taking out building quantities do not overtake them too much, for you may calculate too liberally for your own good, as well as estimate by guess work too lowly to your own and others loss.

Good workmanship needs no coat of paint to enhance the execution, for like sculptor's work wood workmanship is best judged in the nude without drapery or colour.

If you would set out good work, do it by practical geometry; if indifferent or bad, by the "rule of thumb."

In planning stairs think of your headroom from the lowest starting-point to the highest landing, or somewhere in ascending or descending stunning falls and broken limbs may accompany bruised foreheads and battered hats.

Perspective is necessary in drawings; but do not carry its principles into practice in putting together workmanship.

Plaster-work has little heart beneath it, but plenty of ribs, and its whole soul is in its surface enrichments, like many of our fashionably-attired ladies.

Build plumb, and if you err at all let it be in against the carcass, and not out against the body politic.

Wet your bricks, wash your sand, slake your lime, but perish not your mortar with water, or your work will not be worth its bond.

Do nothing in building by guess-work, and in its conduct trust not too much to memory, for a jotting or two at the proper time are worth a hundred jogs on the brain, for the purpose of safe recollection.

Let no building workman be too proud to take a hint from the humblest labourer that attends him, for the experienced looker-on betimes sees more than the doer.

Houses may not be built from the roof downwards, though they are often burned in that direction by plumbers' fires.

If this were a Pagan era, stoning a builder to death who consciously built a bad unhealthy dwelling, would be an appropriate punishment. It would not be inconsonant with Christianity and justice to compel a builder to live in the worst of the houses he built for others.

A fair day's work for a fair day's wages should be estimated by its quality as well as its quantity.

Contrary to the old saying, "a carpenter is known by his shavings," he is known by the character of his work; and the state of his tools may be judged by the same standard.

Artificial, like natural, drainage, is governed by gravitation, and the absence of a proper fall in either is as opposed to nature as a swamp is to health.

The more irregular the outline of your walls, the more unsatisfactory and expensive your roofs, and in this view, remember, in planning, that next to a good foundation there is nothing of more importance than an efficient covering.

Master your trade, but do not let a pride in special or expert knowledge overmaster you, for the pedantry of the workshop or laboratory is as offensive as the pedantry of the school.

The workman that makes the most noise will be often found doing the least work, and doing it badly.

A kitchen and its belongings should not be planned solely for the comfort or ease of the cook, but for the general health of the household, for the purer the air below the purer will that be which circulates above.

Plan the attic story for bedrooms if you will, but do not stow the servants in a cock-loft between the ceiling joists and the slates, which will be a frying-pan in the summer and a refrigerator in the winter,—a choke-room instead of an air-space.

No matter how well arranged, water-closets immediately within a dwelling are objectionable. The minimising of the evil partly lies in keeping them as far as possible from the sleeping-rooms.

The majority of our modern chairs are not made for bearing the weight of the human body, but for ornament, and were not a compensating balance established by the position of our feet, the balance of sustaining power in the chair would be soon exhausted or overturned by a serious dismemberment.

Builders' horses are stable factors in the contracts, and like the workmen they have an interest in the extension of the "extras."

A clerk of works, though he should be the architect's true representative, should not be the contractor's wanton obstructive. To manufacture trivial faults on the one hand is to provoke artifice and concealment on the other, and naturally foreman and workmen will side with the employer, and as a consequence both architect and client are damaged in the struggle.

Moral principles and commercial honesty must accompany technical education, or the bud's will produce few healthy blossoms, and the latter less good fruit.

THE HOLIDAYS.

As so many of our readers are affected by the holidays, it may not be amiss to express our strong opinion that the time has arrived for an effort to be made to have the Easter and Whitsuntide holidays fixed for particular seasons in the year. The object of holidays is to add to the enjoyment and the health of our working population, whether they be manual or mental labourers, whether they be clerks or members of Parliament. But in a perfectly irrational manner we fix two of our most important holidays, —those called the Easter and Whitsuntide holidays,—at the same time as certain Church festivals. The consequence is that, as happens this year, Easter falls so early that the secular holiday is not only spoiled, but in many respects wholly prevented in the case of persons who are not robust or who are young and tender. The whole face of North Wales, for instance, was covered with a deep snow, and when it is remembered that North Wales is the playground of hundreds of workers from Liverpool and Manchester, the absolute loss of a holiday to them may be at once imagined. The importance of securing, so far as we can, fine Easter and Whitsuntide holidays, is perhaps more important in the interests of the lower middle classes than is at first supposed. For these are in some respects more purely holiday seasons than the time which occurs in August when the Bank holiday is fixed. Consequently a loss of holidays at Easter and Whitsuntide means the loss of the best holidays of the year. All that is required to effectuate the change is for Sir John Lubbock to amend his Bank Holiday Act by fixing the two spring holidays for the first or second Monday in April and June, and for the Judges to make rules fixing the legal vacations for the same dates. Politicians would be only too glad to have their holidays at the same time, and thus, though we could not command fine weather and healthy enjoyment, we should have a much better chance of them than can possibly exist when the holidays fall so early as they do this year.

THE RECLAMATION OF LAND.*

THE EMBANKMENTS OF THE THAMES.

THE traveller by the North Kent Railway, as he runs through the rich alluvial marshes which fringe the Thames between Greenwich and Gravesend, sees one of the oldest embankments in England, which stretches on both sides of the river to a length of more than 100 miles, enclosing nearly 30 square miles of what was once a broad estuary, choked with mud banks, ooze, and marshes.

For 400 years the Romans occupied England, —those grand old engineers who boasted they built for eternity,—but of whose massive masonry time has left so few traces, except perhaps in the wild north country, remote from civilisation; but the long earthen banks they raised in the estuary of the Thames still remain to attest the industry and skill of those who reared them.

Gradually as the land accreted, further portions were reclaimed, and whilst the high-water mark of the river was gradually raised, the scour of the tidal water deepened the bed, thus approximating its condition more nearly to that which obtains at present. But these banks were a source of anxiety and danger from the earliest period. In the reign of Edward II. numerous breaches occurred, whilst in the time of Henry VIII. Plumstead and Lesnes Marshes were all drowned by a breach at Erith. So serious was the inundation that the marshes and levels would have been (so it was then considered) irrevocably lost, unless the bailiff had advanced the money to repair the gap; but having done so, he found the collection of the amounts due a matter of such difficulty that complaint was made to Parliament, and it was ordered that the bailiff should cause proclamation to be made on any Sunday afterwards, in the parish church of Plumstede, for the payment of all arrears within twenty days; if not discharged then, there was the option of liquidating the debt by a double sum, until Michaelmas, after which the bailiff could claim the lands for himself and his heirs,—a sure mode of enforcing payment. Again, in the time of Elizabeth, more than 2,000 acres of good pasture ground were laid waste through sundry breaches in the banks, a damage which it took twenty years to repair, so much was the work hindered by floods and tempests. Turning now to the Middlesex and Essex shores, a similar state of things is to be found.

Even in historic times London was almost encircled with marshes. Westminster Abbey stood on Thorney Island, almost surrounded by the water at every tide, which flowed over nearly the whole of St. James's Park. The City itself was partially belted by marshes. Stow describes a great fen stretching from the walls, betwixt Bishopsgate and the postern called Cripplegate, to Finsbury, and to Holy Well, which, when frozen, were covered with multitudes of young people, who go to play on the ice, some "more expert in sporting thereon fix bones under their heels, and taking a pike-staff, do shove themselves forward with so much force that they glide with no less swiftness than a bird flieth, or an arrow passeth from the bow."

Below London continued breaches occurred from the earliest period, but the most serious was that in the Dagenham bank in 1707, which had been once before repaired by Vermuyden, in 1621. Here the tide made a gap more than 100 ft. and 50 ft. deep, which remained open for seven years, in spite of all efforts to stop it, by scuttling ships and sinking cases filled with chalk. At last matters became so serious that about 1,000 acres of marsh were spoiled, and more than 100 acres were swept out into the Thames, forming a bank which seriously impeded the navigation. The Government were then obliged to employ Captain Perry, who succeeded, after much trouble, in stopping the gap, by driving a row of piles across it, strengthened by clay heaped in a mound against it.

The history of the Banks of the Thames has been, from the earliest period, a record of a struggle between man's skill and labour and the winds and waves.

ROMNEY MARSH.

Crossing Kent, we find at the extreme eastern point of Sussex the extensive rich pasture-ground of Romney Marsh, comprising about 24,000 acres, the original embanking of which dates from remote antiquity; and here also as accretions took place, the banks were extended, until the marsh was brought to its present condition. Our public records contain warrants for repeated commissions to repair the sea banks, "rendered ruinous by the rage of the sea"; and the most dreadful storms and inundations are chronicled to have overwhelmed portions of the land during the thirteenth century. Off the southern end of the Marsh lies Old Winchelsea, drowned in the sea on the eve of St. Agatha, 1287, when all the lands were covered from Clivesden to the voucher of Hythe. To resist these inundations the old custom of Romney Marsh was to choose twenty-four chief men or elders, who had power to levy a rate on the marsh lands to maintain the banks, and this ancient local usage laid the foundation for the management of the other enclosures in England.

THE FENLAND.

From the south of England we cross to the eastern counties, where, in the Great Fens of Lincolnshire, extending over more than 1,300 square miles, the largest reclamations in England have taken place. Here, too, we find the Romans' handiwork in the banks which bound the marshes; built to reclaim the silt lying as a fringe around the coast, and which extend for about 150 miles. These ancient engineers proceeded on sound principles, although their works subsequently proved inadequate. They banked the sea fringe of Salt Marshes, and, to carry off the upland waters, cut the Carr Dyke and improved the arterial drainage; but after their departure, in the troublous times which followed, the Fens remained one great dismal swamp, with here and there an island, crowned by one of the numerous abbeys of which the quaint old rhyme runs:—

"Ramsey, the rich in gold and of fee;
Thorney, the flower of many fair tree;
Cowland, the courteous, of their meat and their drink;
Spalding, the gluttons, as all men do think;
Peterborough, the proud;
Swavrey, by the way,—that old abbay,
Gave more alms in one day than all they."

Through this dreary Fenland wound the rivers Witham, Ouse, and Nene, which often saw the flashing oars of the Danish galleys, and reflected the lurid light of blazing minsters; but a dreadful doom awaited the savage Northmen if captured, as the remains of tanned hide discovered nailed to some ancient church-doors has attested. Time crept on, bringing gradual decay. In the Mediæval times the art of drainage seems to have become almost lost; outfalls of rivers became silted up, and drains and banks neglected: in consequence, from time to time, numerous breaches occurred; but the penalty was short and sharp, the defaulter being placed in the breach, and the bank built over and upon him,—a penalty bearing the impress of the monastic rule, which held sway in the district, and which punishment, it is needless to say, never required to be repeated.

Deeping Fen, however, appears to have been drained by Richard de Rulos in the reign of Henry I., but the bulk of the land continued drowned marsh, until the seventeenth century, dotted here and there with scattered islands, of which Ely was famed for its fertility, as Drayton sings,—

"Of all the marshland isles I, Ely, am the queene,
For each when sad, in me looks fresh and green."

An unwholesome country, which Dugdale describes in the following graphic terms: "In the winter time the inhabitants, on the hards and upon the banks, can have no help for body or soul; no means to baptise a child or partake of the Communion; no supply of any necessary, saving what those poor desolate places do afford. And what expectation of health can there be to the bodies of men when there is no element good? The air being for the most part cloudy, gross, and full of rotten harrs; the water putrid and muddy, yea full of loathsome vermin; the earth spongy and boggy, and the fire noisome by the stink of smoking hassocks."

An unpleasant picture, but now all is changed, and some of the richest land in England has rewarded the labour and skill of the engineer. To Cornelius Vermuyden belongs the credit of having first carried out a comprehensive scheme for the drainage of the Fens; but, unfortunately, the true principles on which such works should have been constructed were not followed. The plan adopted was to place a sluice on the river

* A paper read by Mr. H. Mcnell Whitley, A.M. Inst. C.E., on the 15th inst., at an ordinary meeting of the Cardiff Mechanical Engineers' Society, Mr. R. Harkness Fenn, M. Inst. C.E., president, in the chair.

Ouse at Denver, and thus exclude the sea, whilst he fresh water drained into the Ouse by lateral anals. These works were carried out in spite f the determined opposition of the fenmen, who destroyed the banks and demolished the luices; Vermuyden triumphed in the end, but is victory brought ruin, and he died poor in bscurity. Conceived as these works were on rroneous principles, the inevitable result fol-owed; the outfalls silted up, and the drainage ecame more and more defective, and windmills, orking scoop wheels to lift the water, began o be generally adopted about the early part of he eighteenth century; but all such expedients nly palliated the mischief, and a systematic lan of drainage became an absolute necessity, nd this was carried out by Telford and Rennie arly in the present century: they adopted the ost certain principles of drainage, namely, the nprovement of the channels and outfalls of he rivers; catch-water drains to intercept the pland waters; and arterial drains with the est possible fall to drain the lowlands.

In addition, powerful pumping-engines, which ave been increased in number from time to me, were set to lift the water from the deeps. 'he results have been eminently satisfactory, nd the Fenland remains a monument of the kill of the engineer. In other counties large racts of land have been reclaimed, notably in omersetshire; but these it will not be neces-ary to allude to, as in many respects they esemble the great enclosures already described; nd, having thus briefly considered the history f land reclamation in England, the author will ass on to the general principles which should egulate all inclosures.

THE ACCRETION OF LAND.

In tidal rivers and in sheltered spots of stuaries, the accretion of land is slowly going n; and thus nature, in some measure, com-ensates for the waste of the coast-line, which other districts, more especially in the east of ngland, is year by year taking place, amount-g in some places, as along Holderness, to tween two and three yards per annum. The use of these accretions is almost, if not alto-ether, due to the alluvial deposits brought own by rivers when in flood from their basins. his water, highly charged with silt in suspen-on, flows downward, until arrested by the tidal ow, when it is deposited mainly in the higher aches of the estuary; whilst below the banks ill be found to be entirely formed of sea-sand. The proportion of silt brought down by our vers when in flood has thus a sensible effect the time in which land becomes ripe for clamation. The proportion of sediment held suspension by various rivers has been deter-ined to be approximately as follows:—

Hooghley	1 part in 615 in volume max.	
Mississippi	1	,, 3,000 ,,
Irrawaddy	1	,, 3,984 in flood.
Danube	1	,, 1,728 ,,
Mersey	1	,, 1,600 flood tide.
,,	1	,, 1,400 ebb tide.
Nile	1	,, 120 maximum.
Humber	1	,, 189 ,,
Waters of the Wash	1	,, 1 in 1 to 1 in 600.
Allen	1	,, 1,000 in flood.

The latter proportion was determined by the thor in the course of an investigation into the te of progress of the silting up of the creeks Falmouth Haven. The numerous branches this harbour are, in their higher reaches, led with a tenacious mud, brought down by e rivers and streams discharging into the tuary, which slob now rises on an average to out 4 ft. below high-water mark of ordinary ring tides. The amount of mud carried down to a tidal estuary, even by a small stream, is ry considerable. The author calculates from s own observations that from a watershed of square miles draining into Tresilian Creek, 0,000 cubic feet of mud are annually removed, d that the creek itself is thus silting up at e rate of about 1 ft. in 100 years.

By a comparison of charts taken in 1814 and 58, and cross sections of the adjoining Truro eek, it is found that an average depth of ft. 9 in. of mud has accumulated in this anch of the river between the dates above entioned; and as the tidal scour lessens by e gradually diminished water area, an increas-g rate of deposit obtains.

On the Lincolnshire coast, Mr. Gordon states, at by a survey made by William Hayward in 04, the old Roman bank was then the sea-nk between Lynn and Wisbeach, and Wis-ach and Spalding; there was then a mile of lt marsh accreted in advance of the sea-bank, between Lynn and Wisbeach, and nearly two miles between Newton and the Welland.

In 1723 these marshes were taken in; and in 1795 the banks were two miles in advance of the old Roman bank, and four miles in advance of Holland. The cause of the rapid accretion in the past two centuries has been the embank-ing of the salt marshes, which will only extend to a little over half a mile beyond the bank at the utmost, when they break off suddenly by a scarp about 1 ft. in height. In the formation of these salt marshes, the silt is gradually deposited on the surface of the base sand, adjoining the recently-formed bank, and, as it grows and becomes covered, first with samphire and then with coarse sea grass, the process of accretion is assisted by the warp being entangled in the vegetation.

The first indications of vegetation and samphire appear about the level of high-water neap tides. Above this level the sea grasses appear, which will grow to about 2 ft. under the level of the high-water spring tides, and the ordinary salt marsh will be from high-water spring tides to 2 ft. above it.

The marshes on the Seine require about twelve years to rise to the level of high-water; and Mr. Wheeler states that in the Fen district silt foreshores outside a new bank become grass marsh in about ten years, but that it is not ripe for reclamation until a further period of from twenty to twenty-five years has elapsed.

WARPING.

In order to hasten the accretion of land resort has sometimes been had to artificial means; this result may be attained by one of two methods; by embanking the land, and then allowing the tidal water, charged with mud in suspension to flow over the land and deposit its silt; its place being taken from time to time by a fresh supply admitted through the sluice. In favourable positions the accretion by this method is very rapid, and the consequent in-crease of value of the land great.

Whilst the second plan, much in favour on the Fen coast, is to entangle the warp in rows of faggots placed parallel to the bank, and thus assist its disposition.

TIME FOR RECLAMATION.

The time at which it becomes expedient to reclaim outlying marsh lands depends much on local considerations; but as a general rule it it may be assumed that it will not pay to inclose slob, which lies very much below the level of the salt marshes, although in some estuaries, as the Tay, some marshes 3 ft. to 4 ft. below high-water have been taken in, whilst other inclosures have been made at a much lower level. On the Thames the marshes lie about 7 ft. below high-water. Romney marsh is 10 ft., and some of the land in the Fens 11 ft. to 14 ft. below the same level. Broadsands, reclaimed by the Heanton embankment in the estuary of the Taw, is 6 ft. to 10 ft. below high-water. The character of the land, the rise of the tides, and the facilities for drainage, must be carefully considered in each individual case before determining the exact area of land it will be advisable to reclaim. If the land lies low, it will generally be found very advisable, if practicable, to warp the land to a higher level, by the admission of the tidal water, which rapidly deposits the sediment with which it is laden; the higher the lands are warped the more valuable they become, and the more easy they are drained. The process of soiling is, as a rule, a very expensive one.

In fixing the line of the embankment another matter to be considered will be the amount of tidal water that may be abstracted from the estuary without injuring the navigation. Re-clamation and the improvement of the tidal compartment of rivers are conflicting interests, and the former works require to be carried out with the utmost care.

In some harbours and estuaries, where a narrow entrance leads to a large sheet of tidal water, the flow in and out has scoured a deep passage, out of all proportion to the depth it is desirable to retain, and here land may be bene-ficially reclaimed; but in other cases the ab-straction of tidal water from one portion of the estuary should be compensated for by judicious works, whose effect will be to fix the navigable channel to one definite course, and to furnish a reservoir for tidal water to maintain the scour.

The amount of land that should be reclaimed at one time should not, as a rule, exceed 1,000 acres, and with this amount, with any con-siderable rise of the tide, the shut out will become a matter of some difficulty. When banks are closed in one tide, it would be ad-visable to limit the quantity to be inclosed to about 300 acres.

INCLOSURE BANK.

The first point to be settled in designing the bank will be its height above high-water ordinary spring tides. This will have to be fixed by deter-mining the highest flood level, and adding to it the height of the waves which may be expected.

The action of a strong gale in heaping up the water on a lee shore is well known, and Sir Charles Hartley states that the tide in the Black Sea, at the mouth of the river Danube, is raised 2 ft. above its main level by strong south-east winds, and the extraordinary high tide in the Thames of November 15th, 1875, which rose to 4 ft. 9 in. above Trinity high-water, occurred the day after a heavy gale from the west, which raised the water in the channel to a great height, and at Harwich the highest flood level in the estuary of the Stour during the past five years has been 4 ft. 4 in. above high-water ordinary spring tides. When on the occurrence of high tides a land flood takes place, the maximum flood level will be attained.

The amount of rise due to the land flood in the high tide in the Thames, previously men-tioned, is calculated by Mr. Redman to have been only about 3 in. to 3½ in., but above the tidal range in rivers the floods rise much more; thus, the Severn at Worcester has been known to rise more than 20 ft. during a heavy flood. As a general rule, if from 5 ft. to 6 ft. is taken as flood-level above high water ordinary springs it will be found to allow a sufficient margin. The height of waves, to which the bank will be exposed, depends mainly on the length of fetch, and for distances under ten miles, from 3 ft. to 4 ft. would be an ample allowance. Thus, from 8 ft. to 10 ft. may be taken as being the average height to which it will be advisable to raise the bank above high-water mark; but in exposed situations this should be still further increased. The profile of the bank has next to be con-sidered, whether a steep slope, heavily pitched, shall be adopted, or a flatter slope with a slighter defence. A diagram exhibited to the meeting illustrated a type of the first class of embankment, being a section of the bank along the face of the marsh in the Leven estuary in Morecambe Bay. Mr. Brunlees found by ex-periment that the slope which gave the greatest adhesion to the pitching was 2 to 1. This inclination was therefore adopted for the sea slope, which was faced with 12 in. of clay puddle and 18 in. of small rubble stones, on which the pitching, 18 in. thick at the bottom of the slope and 12 in. thick at the top, was laid. The bank varied from 15 ft. to 25 ft. high, and was of sufficient width to take two lines of rail, whilst the land slope was 1½ to 1. A cross-section of Dymchurch sea-wall in the Romney Marshes, as re-modelled in 1837, was also shown. This bank is 20 ft. wide, the top being 10 ft. above ordinary spring tides. The sea face has a very flat slope of 7 to 1, with a steep curved finish to a radius of 7 ft. 6 in., this portion of the bank being pitched. There is no doubt that this form tends to check the run of the waves over the bank; but, on the other hand, there is a tendency in such a concave bank to throw the wave back on the pitching, and thus cause breaches in it. The third diagram showed a cross-section of the Zuyder Zee Bank, lately constructed by Sir John Hawkshaw. This bank is founded on a layer of fascines; the top width is 13 ft. 1½ in., which is 10 ft. above ordinary high water; the land slope is 2 to 1, and the sea slope 3½ to 1; the slopes are coated to a depth of 3 ft. 3 in. with clay, and the sea-side is further protected by 12 in. of basalt paving, laid on broken bricks.

The ordinary dykes in Holland are raised from 10 ft. to 13 ft. above high water, the large banks are 10 ft. to 20 ft. wide at the top: and the small from 8 ft. to 10 ft. The sea slope is, at the top, usually 3 to 1; below that, 8 or 10 to 1 or even flatter; and when the site is much exposed, an inclination of 6 to 1 is adopted for the upper part of the sea slope; the land slope is generally 1½ to 1.

The cross section of the bank enclosing Sunk Island on the Humber, was next shown. Here the top is 4 ft. wide, with a slope to the sea of 5 to 1, and one to the land of 1½ to 1.

The St. Mary sea-wall on the Medway, on the site of the New Chatham Docks, was next illus-trated. The top is 7 ft. above Trinity high-water mark, the back slope is 1¾ to 1, and the

sea slope is 5 to 1, faced with 10 in. of pitching, laid on 6 in. of concrete, whilst the toe of the wall is protected by loose rubble and piling.

A cross section of the Heanton Bank was next referred to. This bank rises 7 ft. above high-water spring tides, is 4 ft. wide at the top, with a land slope of 2 to 1; the sea face is formed to a slope of 3 to 1 to high-water mark, and beyond to inclinations of 4 to 1, and 5 to 1, faced with 2-ft. of puddle, and protected by 12-in. pitching.

Such are a few of the forms that have been adopted for reclamation banks, the material of which they are composed being governed by the situation of the works.

Clay is the best material for a bank, and it may often be obtained seaward of the works, but in many cases sand only is available. If the latter is used some precautions have to be taken. The pitching should be carried to flood-level, and the bank above sodded 6 in. deep; with clay the inner slope may be sown with safety, but not with sand, as the effect of surf, breaking over the bank in a heavy gale, is to scoop out hollows, which rapidly enlarge, until they cause a breach through the bank; but if the slope is protected by careful sodding, this form of mischief is prevented in a great degree. Banks on firm sand are easy to construct: the Broadsands Embankment, of the Heanton Marsh Reclamation, was carried over a quick-sand where no solid ground could be touched with 20 ft. boring-rod, whilst banks carried over slob-lands require much more material from the displacement of surface, by the weight brought upon it.

THE SHUT OUT

The closing of the embankment is the most difficult portion of the construction of works for the reclamation of land. There are two methods which may be followed, either to narrow up the gap until scour begins to be seriously felt, and then close the opening in a single tide, or to bring the bank up to the "shut-out," and close it horizontally by gradually shallowing it from the bottom, guarding each layer with fascines weighted with clay and stones, and so filling the breach. The former plan is specially suited to small reclamations, whilst the latter is best adapted when a large area is reclaimed.

SLUICES.

The main sluice for the drainage of the reclaimed marsh should be laid out so as give the greatest possible fall consistent with a free discharge. If the sill is fixed at about mid-tide level the sluice will run about five or six hours every tide, which will ensure a sufficient natural drainage. Low-water neap tides is the lowest level that should be in any case adopted. The main drainage cut within the sluice should be of sufficient dimensions to store the drainage-water during the time the sluice-gates are closed by the tide. The doors themselves may either be hinged vertically or horizontally. In the former case they are fixed in front of the culvert, and form a letter V against the tide, opening by the weight of water behind them. In the latter, the door is hinged on the sea-face either in one leaf or several flaps one over another. In either case it is essential that groves should be provided in the masonry of the culvert to close it in case any breakdown occurs in the doors themselves. In fixing the level of the sill of the culvert, it must be borne in mind that reclaimed land, especially that of a loose nature, will subside by the gradual drainage of the water, and therefore allowance must be made. Whittlesea Mere, which was drained in 1850, may be mentioned as a very extreme case. Here the surface subsided 8 ft. 2 in. in the first fifteen years. The reclamation of land is essentially a commercial question, and the element of cost is thus an all-important one.

The following table gives particulars of a few reclamation works, showing the amount of land reclaimed and the expense incurred by the works and internal improvement:—

Name of Reclamation.	Cost per Acre.		Total per Acre.	Value of Land per Acre.
	Inclosure.	Internal Improvements.		
	£	£	£	£
Lough Foyle	20	10	30	45
Heanton	35	10	45	75
Fenland Marshes (average)	15 to 20	3 to 4	18 to 24	50 to 60
Friedrichen Koog, Schleswig	...	...	24	70
Maxquelle Koog, Schleswig	.	..	18	35
Lake Y, Holland			26	70
Leymeer, Holland	31	2	33	50

HEANTON MARSHES RECLAMATION.

As a practical illustration of the principles laid down in this paper, the author will briefly describe the reclamation works executed by his father, Mr. Whitley, of Truro, for the purpose of embanking the marshes which fringed the manor of Heanton Punchardon, on the estuary of the Taw. Here within the blown sand-hills which bound the bay, formerly lay a very extensive tract of salt marshes. Six hundred acres of these were embanked many years ago, and now form some of the richest land in the West of England; but this reclamation left scattered fringes of marsh land, and it was to enclose these that the works were undertaken. From the nature of the ground, a considerable length of embankment was required, amounting to about six miles, to reclaim 400 acres of marsh land. The section of the bank itself has been already described, and its form founded on the natural seaward slope of the "Pebble Ridge," has been found to be well adapted to resist the heavy seas to which it is at times exposed; indeed, during one exceedingly heavy flood, in which the majority of the banks in the estuary gave way, it sustained but very little damage. The paving was of Devonian slate, from the Braunton Down Quarry, laid up and down the slope, beaten into the clay puddle, with which the seaward face was coated. A small portion of the pitching, done with round boulders, was found not to be able to resist the beat of the sea.

The culverts were built in masonry, of local stone, in blue lias lime, the sills being laid at 16 ft. below high-water mark ordinary spring tides, and were closed with the usual valves. The shut out was effected by narrowing the opening, until scour began to be seriously felt; the ends of the banks and the floor of the gap, which was 200 ft. across, were protected with furze, weighted with stones, and by the aid of 140 one-horse carts, the shut out was completed in a single tide; the area of this portion reclaimed being 200 acres. The cost of the embankments was 13,394*l*., and to this must be added the expense of the internal improvements, about 10*l*. per acre, giving a total of 18,000*l*., or 45*l*. per acre. The value of the land reclaimed may be taken at about 75*l*. per acre, thus giving a fair profit on the reclamation.

Having thus considered the general question of the reclamation of land, the author, in conclusion, would point out the great importance of this subject, considering the vastly increasing population of the British Isles.

The waste of land around our coast is continually progressing, but nature compensates in some measure for this loss by adding, year by year, to the rich salt marshes which fringe our estuaries, and which only require capital, guided by the skill of the engineer, to convert them into luxuriant grazing lands, and thus to add to the food supply of the empire.

The cost and uncertainty of obtaining an Act of Parliament, by which alone enclosures can be carried out (except by the frontager to whom all land, as it accretes and rises above high-water mark belongs), necessarily deters capitalists from embarking in these useful undertakings, but the national gain that results from well-judged reclamation induces the author to draw attention to this subject. He would suggest that a Royal Commission should be empowered to ascertain what lands are ripe for reclamation around our coasts and in our estuaries, especially considering, in the latter case, what area may be embanked without injuriously affecting the tidal scour, and fixing in each case the lines on which banks might be constructed. If a general reclamation Act were then passed, authorising the enclosure of such lands within the lines laid down, a simple certificate from the Board of Trade might be substituted for the present course of procedure. An application for such a certificate should, of course, be accompanied by a sufficient guarantee that the works would be carried out, and should be only granted if the frontagers were not themselves prepared to enclose the lands.

The advantages that would attend such a course are numerous: not only the owner of the frontage would benefit by the compensation and additional security afforded to his low-lying lands, but capital would find a fresh field for investment; and, lastly, the nation itself would be the richer, as it has been estimated that about 500,000 acres of land may be added to our grazing marshes by judicious, well-considered reclamations.

These reasons have induced the author to bring the subject before the public, in the hope that he may succeed in drawing attention to what is, from a public point of view, worthy of serious consideration.

HOUSES IN COREA.

A DESPATCH from Her Majesty's Minister in Japan, forwarding a report on Corea, has been published, and contains some items of interest. We note, for instance, that the town of Wönsau is considered by the Coreans one of the great commercial centres of their country. It extends for more than a mile along the southern shore of the bay, and consists of about 2,000 houses with a population of, perhaps, 10,000 inhabitants. One main street of some 10 ft. or 12 ft. in width winds through it from end to end, and into open numerous narrow and crooked alleys. Near each end of the town there is an open space where a market, chiefly for agricultural produce, is held periodically. The houses strongly resemble those seen at In-chhön on the western coast. They consist of a kitchen with an earthen floor, and two or three other rooms, seldom more than 8 ft. or 9 ft. square, with ceilings about 6 ft. or 7 ft. in height. The kitchen has one or two large clay fire-places, the smoke from which passes in flues underneath the rest of the houses, warming them comfortably, and finding a vent at the other side in a chimney of stone cemented with clay and surmounted with a hollow log, or by several earthen pots lashed together by straw ropes. Many of these chimneys project into the street, giving it a very odd appearance. The doors do not slide like the Japanese doors, but are on hinges, and are not more than 4 ft. or 5 ft. in height. The windows are wooden lattices covered with paper, and no glass is to be seen. All the houses are of one story only, with thatched roofs, the eaves being only 6 ft. or 7 ft. from the ground. The framework is of wood, the interstices being filled with woven reeds plastered with clay. The floors are matted, and carpets of thick oil-paper are sometimes seen. There is no furniture. There are not many shops, and those there are have a very poor appearance, the whole stock in-trade amounting in value to a very few dollars. In only two or three were there any European goods exposed for sale. Road-making at Wönsau consists in filling up the hollows with soft earth, and there seem to be no arrangements whatever for cleaning the streets. There are numerous pig-styes in front of the houses in the main street, and the passenger is constantly in danger of stumbling over their occupants. The settlement contains about forty houses, including the consulate, a Buddhist mission-house, and twelve or thirteen merchants' offices, the rest being shops or restaurants. There are numerous vacant lots, less than half the available space having been built upon.

A Memorial Pulpit.—A new pulpit has just been erected in the parish church of Knill, near Kington, Herefordshire, on the borders of Radnorshire. The memorial was designed by Mr. S. W. Williams, architect and county surveyor, Rhayader, and is in keeping with the rest of the church, which was restored by the same architect ten years ago. Of Early English character, the pulpit has a base of wrought stone work, circular on plan at the bottom, and breaking into an octagon higher up. There is an approach of four steps to gain the body of the pulpit itself. All this portion is of oak, put together with oaken pins, and butt-jointed. The panels are recessed in each cant, traceried in their heads, and filled with carving. The whole is surmounted by a carved cornice. The pulpit is the work of Mr. Harry Hems, of Exeter.

THE HISTORICAL DEVELOPMENT OF ORNAMENTAL ART.

In the third and concluding lecture of this course, delivered under the auspices of the Painters' Company, in their hall, in Little Trinity-lane, the lecturer, Dr. Zerffi, began by saying that there were three things that every one believes himself able to teach without having learned any thing of either: theology, medicine, and art. They cannot understand that in art as in science one evolution naturally succeeds another; that the previous evolution must be the basis of what you are to produce; not merely copying the old forms, but using them with new spirit for new purposes,—as art progressing, not retrogressing. Your Gothic is a skeleton, your tracery only a vain meaningless something,—a copy and nothing more. The sentiment and feeling that produced it are gone. Could the Renaissance have been possible without the Reformation? Was the Reformation possible without the inventions that preceded and accompanied it? What did these owe to the inventions of paper and printing? What had hitherto been retained in a small circle was spread broadcast by these wonderful inventions. The Renaissance connects Greek and Gothic art. The Greek is plastic; the Gothic pictorial. The Greek a petrified organism; the Gothic a plant-like organic growth. You can add to the Law Courts as much as you like, but you cannot add to the Parthenon. Greek art keeps on earth; Gothic rises up to heaven,—strives after the infinite. The horizontal line is Greek. You cannot make your Greek temple higher than the just proportion to the counteracting horizontal line. In the Gothic you cannot go too high. Cologne Cathedral is an immense height, but were it much higher it would only the more impress and lift you up. The Greek art was one of passion, yet of harmony and repose. The Gothic art was an allegory of mythical and spiritualised life. Study the lives of the saints, fill your mind with the things which concerned them, and you will produce a totally different creation in art to that produced by one whose mind is imbued fully with Homer and the Iliad. The change that produced the Renaissance is the amalgamation of these two different ways of thinking. The Renaissance is the medium between the horizontal line of the Greek and the vertical line of the Gothic,—spreading and striving upwards. There are different styles of Renaissance,—the ornamentation is different,—but, remember, if you begin with Ionic continue with Ionic; do not mix it up with Corinthian and Doric, as we see some rooms decorated, where Japanese, Indian, Gothic, and Chinese are all muddled up together. There is a real law in art which must be obeyed. We are greatly addicted to believing anything that appears in print. "We read it in print, therefore it must be right," is a too common expression, when so much that is false and meretricious is constantly being printed. We have it in print from one writer that the Renaissance is a plague and a blight; and the same author goes on to admire a statue of Buddha, 53 ft. high, with a nimbus 83 ft. in diameter. Out of all proportion! Absurd! Some people will not understand how difficult it is to learn properly, how long we must study and yet only become a student and not an authority in art. For some, the eleventh and twelfth century work is highest art. In reality all is overdecorated and coarse. With such the Renaissance is meretricious and wants taste. When have ever the Goths produced gates like those of St. Mark's, Venice? But it is so much easier to copy those eleventh and twelfth century saints, with large heads, red hair, and blue eyes, dressed as with so many ropes hanging round the figure, and to cover this dress with diapers in blue, green, and violet. They admire and seek to imitate these coloured statues. Let marble never be painted. Let it speak for itself. If you make the form of a woman, with the spirit of a woman, the form will tell all there is to tell. Your painted hair and painted eyes,—that is *the* meretricious. It is not necessary that a reformer should be a theologian. Can we justly estimate the immense influence of Shakspeare in poetry, or Michelangelo in art? They do not belong to a nation: they belong to humanity at large. Dante's Divine Comedy with its imaginings of Heaven and Hell; his *Virgil* expiating his Heathen notions in Purgatory, and finally entering Heaven, thus reconciling the heathen and the Christian. All these influences worked to produce these Renaissance ornaments, like so many songs in stone and metal. In the days of Inigo Jones men really spent money, and spent it tastefully. Our corporations spend more in what they eat than what they spend in art. They ought to send you out to the countries where the finest art-collections of the world are preserved. We can do it. We have something scarce among other nations: we have a perseverance and a certain measure of accuracy which will be valuable to us when our art-education is more thorough. The great masters of former days had whole schools to help them; now you make it a reproach to an artist if he does not do all himself. We must be content to recognise that some can be composers in art, and others the performers. Raffaelle, Correggio, Titian, and Rubens, all had many helpers whom they directed and taught. They told all they knew. Your modern painter will tell nothing. His peculiar mixture of red and green for fine effects are his trade secret. The various epochs of the Renaissance,—the *Tre-cento*, with its exquisite foliage and delicate arabesque; the *Quadro-cento*, more stiff, with animals and cartouches introduced; the *Cinque-cento*, the finest and most finished Leonardo da Vinci (by whom whatever we know of colour is already laid down as a law), and Michelangelo. Do not attempt to copy Michelangelo unless you have his genius. You do not attempt to copy Shakspeare. Modern art imitations of Michelangelo cause indescribable confusion. We take photographs of his works on ceilings that are 120 ft. high, and hang the photographs here on the wall. Then we say of those heavy shadows and rope-like sinews, that is Michelangelo's style. Yes, his style 120 ft. from the eye, but not here on the wall beside you. We must never forget that art has its principles, which, if neglected, what you produce can never be artistic. What you copy from nature must be conventionally treated. Compare these two capitals; that miserable concoction of reality, with this, conventionally twisted up so beautifully for the purpose of the artist: we make the mistake of wanting to cover the whole space. You must leave plain space to give repose to your ornament. Get some examples of the works of Dürer and Holbein. Try to decorate with the forms they used,—not copying. Try to use the single line twisted artistically like the damascened work of the Moors, to decorate a panel or border. None of the great painters named refused to be a decorator. Ask an R.A. to decorate your house. He is insulted. He cannot do it. He does not know how. You must know a great deal to be a decorator. You must know metals, stones, and marbles. You must know botany, not the Latin names, but the forms and colours, their symbolic meaning. You must know the animal kingdom; anatomy; the different passions and how to represent them; you must understand grouping, keeping the mean and coarse at the bottom, the fine and delicate at the top. It is a disgrace to us that our best books are illustrated by foreigners, our historical pictures painted by foreigners. Our party spirit will not allow us to accept a universal art. You are Whig, and will not have that picture because the painter has introduced Charles I. into it; or you are a Tory, and you will not have that picture with Cromwell in it. So your artist paints something that will not offend. A fine lady giving a piece of sugar to a canary bird, or a brown woman, and calls it by a foreign name. There is no Whig or Tory in art. You must know ethics and æsthetics. You cannot separate these two. The man who thinks beautiful will act beautiful. Your genuine artist will be a fine character. I defy you to find in all history a real genuine artist in the criminal dock. It is against all the harmony that a genuine artist brings into his work. Harmony of colour and design is only produced by harmony of thought and action. In conclusion, do not go home and think you have learned all about art. All I have said is to show you there is something to be studied and to indicate what you want to study. After a lifetime devoted to art you may find that you are still only a student.

After a cordial vote of thanks to the lecturer, Mr. W. F. London, replying to a similar vote to the Master and Court of the Painters' Company, said he was very pleased to see the numerous and attentive audience which had attended each of the lectures. He might claim for the Painters' Company that they had inaugurated technical education. So far back as 1867 they had established exhibitions and given prizes for works of merit in the various branches of house decoration. Their limited means had prevented the continuance of these exhibitions. They had applied in vain to the more wealthy City companies for help. They had, therefore, to be content with giving special prizes and medals to some of the art schools. This year, at the suggestion of Past-master Mr. J. G. Crace, they had arranged for these lectures to be given, and he hoped all would be able to carry away something which would be of life-long benefit to them.

A. B.

ELECTRICAL TRANSMISSION AND STORAGE OF POWER.

THE INSTITUTION OF CIVIL ENGINEERS.

In the third of the series of six lectures on the Applications of Electricity, delivered by Dr. C. William Siemens, F.R.S., the lecturer said,—Thus far electricity had been introduced as the swift and subtle agency by which signals were produced either by mechanical means or by the human voice, and flashed almost instantaneously to distances which were limited, with regard to the former, by restrictions imposed by the globe. To him had been assigned the task of introducing to their notice electric energy in a different aspect. Although still giving evidence of swiftness and precision, the effects he should dwell upon were no longer such as could be perceived only through the most delicate instruments human ingenuity could contrive, but were capable of rivalling the steam-engine, compressed air, and the hydraulic accumulator in the accomplishment of actual work.

In the early attempts at magneto-electric machines, it was shown that, so long as their effect depended upon the oxidation of zinc in a battery, no commercially useful results could have been anticipated. The thermo-battery, the discovery of Seebeck in 1882, was alluded to as a means of converting heat into electric energy in the most direct manner; but this conversion could not be an entire one, because the second law of thermo-dynamics, which prevented the realisation as mechanical force of more than one-seventh part of the heat energy produced in combustion under the boiler, applied equally to the thermo-electric battery, in which the heat, conducted from the hot points of juncture to the cold, constituted a formidable loss. The electro-motive force of each thermo-electric element did not exceed 0·036 of a Volt, and 1,800 elements were therefore necessary to work an incandescense-lamp.

Faraday's great discovery of magneto induction was noticed, and the original instrument by which he had elicited the first electric spark before the members of the Royal Institution in 1831 was shown in operation. It was proved that although the individual current produced by magneto-induction was exceedingly small and momentary in action, it was capable of unlimited multiplication by mechanical arrangements of a simple kind, and that by such multiplication the powerful effects of the dynamo-machine of the present day were built up. One of the means for accomplishing such multiplication was the Siemens armature of 1856. Another step of importance was that involved in the Pacinotti ring, known in its practical application as the machine of Gramme. A third step, that of the self-exciting principle, was first communicated by Dr. Werner Siemens to the Berlin Academy on the 17th of January, 1867, and by the lecturer to the Royal Society on the 4th of the following month. This was read on the 14th of February, when the late Sir Charles Wheatstone also brought forward a paper embodying the same principle. The lecturer's machine, which was then exhibited, and which might be looked upon as the first of its kind, was shown in operation; it had done useful work for many years as a means of exciting steel magnets. A suggestion, contained in Sir Charles Wheatstone's paper, that "a very remarkable increase of all the effects, accompanied by a diminution in the resistance of the machine is observed when a cross wire is placed so as to divert a great portion of the current from the electro-magnet," had led the lecturer to an investigation read before the Royal Society on the 4th of March, 1880, in which it was shown that by augmenting the resistance upon the electro-magnets one hundred fold, valuable effects would be realised, as illustrated graphically by means of a diagram.

The most important of these results consisted in this, that the electro motive force produced in a "shunt-wound machine," as it was called, increased with the external resistance, whereby the great fluctuations formerly inseparable from electric arc-lighting could be obviated, and that, by the double means of exciting the electro-magnets, still greater uniformity of current was attainable.

The possibility of transmitting power electrically was so obvious that suggestions to that effect had been frequently made since the days of Volta, by Ritchie, Jacobi, Henry, Page, Hjorth, and others; but it was only in recent years that such transmission had been rendered practically feasible.

Just six years ago, when delivering his presidential address to the Iron and Steel Institute, the lecturer had ventured to suggest that "time will probably reveal to us effectual means of carrying power to great distances, but I cannot refrain from alluding to one which is, in my opinion, worthy of consideration, namely, the electrical conductor. Suppose water-power to be employed to give motion to a dynamo-electrical machine, a very powerful electrical current will be the result, which may be carried to a great distance, through a large metallic conductor, and then be made to impart motion to electro-magnetic engines, to ignite the carbon points of electric lamps, or to effect the separation of metals from their combinations. A copper rod 3 in. in diameter would be capable of transmitting 1,000 horse-power a distance of say thirty miles, an amount sufficient to supply one quarter of a million candle-power, which would suffice to illuminate a moderately-sized town." This suggestion had been much criticised at the time, when it was still thought that electricity was incapable of being massed so as to deal with many horse-power of effect, and the size of conductor he had proposed was also considered wholly inadequate. It would be interesting to test this very calculation by recent experience. Mr. Marcel Deprez had, it was well known, lately succeeded in transmitting as much as 3-h.p. to a distance of 40 kilomètres (25 miles) through a pair of ordinary telegraph wires of 4mm. diameter. The results so obtained had been carefully noted by M. Tresca, and had been communicated a fortnight ago to the French Academy of Sciences. Taking the relative conductivity of iron wire employed by Deprez, and the 3-in. rod proposed by the lecturer, the amount of power that could be transmitted through the latter would be about 4,000 h.p. But Deprez had employed a motor-dynamo of 2,000 Volts, and was contented with a yield of 32 per cent. only of the power imparted to the primary machine, whereas he had calculated at the time upon an electro-motive force of 500 Volts, and upon a return of at least 40 per cent. of the energy imparted. He had been anxious, indeed, not to overstate the case, and if he were now asked what size of conductor he would recommend, he would say a 3-in. copper rod. In March, 1878, when delivering one of the Science Lectures at Glasgow, he said that a 2-in. rod could be made to accomplish the object proposed, because he had by that time conceived the possibility of employing a current of at least 1,000 Volts. Sir William Thomson had at once accepted these views, and with the conceptive ingenuity peculiar to himself, had gone far beyond him, in showing before the Parliamentary Electric Light Committee of 1879, that through a copper wire of only ½-in. diameter, 21,000 h.p. might be conveyed to a distance of 300 miles with a current of an intensity of 80,000 Volts. The time might come when such a current could be dealt with, having a striking distance of about 1·2 ft. in the air, but then, probably, a very practical law enunciated by Sir William Thomson would be infringed. This was to the effect that electricity was conveyed at the cheapest rate through a conductor, the cost of which was such that the annual interest upon the money expended equalled the annual expenditure for lost effect in the conductor in producing the power to be conveyed. It appeared that Mr. Deprez had not followed this law in making his recent installations.

Sir William Armstrong was probably first to take practical advantage of these suggestions in lighting his house at Cragside during night-time, and working his lathe and saw-bench during the day, by power transmitted through a wire from a waterfall nearly a mile distant from his mansion. The lecturer had also accomplished the several objects of pumping water, cutting wood, hay, and swedes, of lighting his house, and of carrying on experiments in electro-horticulture from a common centre of steam-power. The results had been most satisfactory; the whole of the management had been in the hands of a gardener and of labourers, who were without previous knowledge of electricity, and the only repairs that had been found necessary were one renewal of the commutators and an occasional change of metallic contact brushes.

An interesting application of electric transmission to cranes, by Dr. Hopkinson, was shown in operation.

Amongst the numerous other applications of the electrical transmission of power, that to electrical railways, first exhibited by Dr. Werner Siemens, at the Berlin Exhibition of 1879, had created more than ordinary public attention. In it the current produced by a dynamo-machine, fixed at a convenient station and driven by a steam-engine or other motor, was conveyed to a dynamo placed upon the moving car, through a central rail supported upon insulating-blocks of wood, the two working-rails serving to convey the return current. The line was 900 yards long, of 2-ft. gauge, and the moving car served its purpose of carrying twenty visitors through the Exhibition each trip. The success of this experiment soon led to the laying of the Lichterfelde line, in which both rails were placed upon insulating sleepers, so that the one served for the conveyance of the current from the power station to the moving car, and the other for completing the return circuit. This line had a gauge of 3 ft. 3 in., was 2,500 yards in length, and was worked by two dynamo-machines, developing an aggregate current of 9,000 Watts, equal to 12 h.p. It had now been in constant operation since the 16th of May, 1881, and had never failed in accomplishing its daily traffic. A line one-half a kilomètre in length, but of 4 ft. 8½-in. gauge, was established by the lecturer at Paris in connexion with the Electric Exhibition of 1881. In this case, two suspended conductors in the form of hollow tubes with a longitudinal slit were adopted, the contact being made by metallic bolts drawn through these slit tubes, and connected with the dynamo-machine on the moving car by copper ropes passing through the roof. On this line 95,000 passengers were conveyed within the short period of seven weeks.

An electric tramway, six miles in length, had just been completed, connecting Portrush with Bush Mills, in the north of Ireland, in the installation of which the lecturer was aided by Mr. Traill, as engineer of the company, by Mr. Alexander Siemens, and by Dr. E. Hopkinson, representing his firm. In this instance the two rails, 3 ft. apart, were not insulated from the ground, but were joined electrically by means of copper staples and formed the return circuit, the current being conveyed to the car through a T iron placed upon short standards, and insulated by means of insulite caps. For the present the power was produced by a steam-engine at Portrush, giving motion to a shunt-wound dynamo of 15,000 Watts = 20 h.p., but arrangements were in progress to utilise a waterfall of ample power near Bush Mills, by means of three turbines of 80 h.p. each, now in course of erection. The working-speed of this line was restricted by the Board of Trade to ten miles an hour, which was readily obtained, although the gradients of the line were decidedly unfavourable, including an incline of two miles in length at a gradient of 1 in 38. It was intended to extend the line six miles beyond Bush Mills, in order to join it at Dervock station with the North of Ireland narrow-gauge railway system.

The electric system of propulsion was, in the lecturer's opinion, sufficiently advanced to assure practical success under suitable circumstances,—such as for suburban tramways, elevated lines, and above all lines through tunnels, such as the Metropolitan and District Railways. The advantages were that the weight of the engine, so destructive of power and of the plant itself in starting and stopping, would be saved, and that perfect immunity from products of combustion would be insured. The limited experience at Lichterfelde, at Paris, and with another electric line of 765 yards in length, and 2 ft. 2 in. gauge, worked in connexion with the Zaukerode Colliery since October, 1882, were extremely favourable to this mode of propulsion. The lecturer, however, did not advocate its prospective application in competition with the locomotive engine for main lines of railway. For tramways within populous districts, the insulated conductor involved a serious difficulty. It would be more advantageous under these circumstances to resort to secondary batteries, forming a store of electrical energy carried under the seats of the car itself, and working a dynamo-machine connected with the moving wheels by means of belts and chains.

The secondary battery was the only available means of propelling vessels by electrical power, and considering that these batteries might be made to serve the purpose of keel ballast, their weight, which was still considerable, would not be objectionable. The secondary battery was not an entirely new conception. The hydrogen gas battery suggested by Sir Wm. Grove in 1841, and which was shown in operation, realised in the most perfect manner the conception of storage, only that the power obtained from it was exceedingly slight. The lecturer, in working upon Sir William Grove's conception, had twenty-five years ago constructed a battery of considerable power in substituting porous carbon for platinum, impregnating the same with a precipitate of lead peroxidised by a charging current. At that time little practical importance attached however to the subject, and even when Planté, in 1860, produced his secondary battery, composed of lead plates peroxidised by a charging current, little more than scientific curiosity was excited. It was only since the dynamo-machine had become an accomplished fact, that the importance of this mode of storing energy had become of practical importance, and great credit was due to Faure, to Sellon, and to Volckmar, for putting this valuable addition to practical science into available forms.

COMPARISON OF DWELLING-HOUSES IN THE VARIOUS EUROPEAN CAPITALS.

AT a recent meeting of the Hamburg Architectural Society, Herr Asmus gave an interesting comparative description of the sorts of dwellings adopted in the various capitals of Europe. In Paris, he remarked, houses for letting off are the rule, with such commodious arrangements of the various *suites* of rooms as may allow the owner to cover the usually heavy cost of the site. The general disposition of the rooms is almost stereotyped, and is influenced by the fact that the French value domestic life far less than the English or the Germans. The dwelling is reached by a door from the corridor, and contains an ante-room, which in smaller households serves as a dining-room. The other rooms are in more or less direct connexion with this ante-room. The apartments of the servants are usually all in the top story, and in addition to the stone steps, wooden staircases for the servants are usually constructed between each story. The rooms are generally small and richly fitted up. The façades of the houses are usually much ornamented with work in limestone. There being no official regulations as to the thickness of walls, they are comparatively thin. Main-walls are in the lower portions about 1 ft. 6 in. and side-walls 10 in. thick.

In Vienna the development of modern house-building has, it would seem, been much facilitated by the constructive skill of several local architects. During the last twenty years large houses have been built, the grouping of which has been designed to produce striking architectural effects. As a rule, the owners of the house occupy the extensive apartments on the first floor, while the upper stories are divided into smaller dwellings. In contradistinction to the state of things in France, a stringent building law is in operation. Although the height of houses is limited to 80 ft. 4½ in. from the street, and only four upper stories are allowed, the thickness of the main walls in the foundation is fixed at 2 ft. 7½ in. The cost of building sites varies from 25*l.* to 70*l.* per square yard, and the building of a four-storied house costs about 25*l.* to 42*l.* per square yard.

In Berlin, narrow sites of relatively considerable depth are the rule. The courtyards (which are often to be found) must measure about 17 ft. 6 in. in every direction. The height of the houses is supposed to correspond with the width of the streets, but this is not the case in the wider streets.

In Hamburg the dwellings are, to a certain extent, of a cosmopolitan description, this fact being ascribed to the frequent travelling abroad of its mercantile men. The English style of family dwelling-house is frequently met with, as well as houses arranged in flats. In the

latter cases, it is a peculiarity of Hamburg domestic architecture that all the various apartments are directly accessible from the corridor.

NOTTINGHAM SCHOOL OF ART.

THE annual distribution of prizes in connexion with the Nottingham School of Art took place on the 21st inst., in the Mechanics' Institute.

Lord Belper, who presided, said it was evident that the School of Art in Nottingham was not merely established for the amusement of a certain number of the young people of Nottingham, but was also put to real practical use. He referred to the special prizes for lace designs. He was sure that anybody who knew Nottingham must know how important an industry was that of lace-making in Nottingham. He thought that the result of giving these prizes for lace designs had been most satisfactory. At one time the lace manufacturers of Nottingham had to go abroad,—to France,—for designs; now a large number of Nottingham men were designing for the lace manufacturers of the town, and although there were a few foreigners still, he thought Nottingham would hardly rest satisfied until she could do her own designs sufficiently well that it would not be necessary to employ foreigners any longer. It had often been remarked by those promoting art manufactures that all real good work was hand work. That was no doubt true in olden times, and all hand work no doubt in many ways must be able to compete with machinery, so far as artistic merit went. But in the lace trade of Nottingham they knew that they could make by machinery sufficiently good artistic work; that they produced not only curtains, but other articles of beautiful design and workmanship. The more art knowledge increased throughout the country the more would it be necessary for the manufacturers of Nottingham to employ the best designers they could possibly get in order to supply the demand for artistic work. He was sure that in that respect such a school as that must prove most valuable to assist them in that object.

The Right Hon. Sir R. P. Collier, who had been invited to distribute the prizes, prefaced the performance of that duty by giving an interesting address to the students. In the course of it he said that though almost all industrial art was to some extent decorative, yet some decorative art, such as certain paintings on walls and ceilings, rose rather above the level of mere industrial art. By the term industrial art, he understood the art of making every manufactured article which we use as useful and as beautiful as possible. It dealt with everything that surrounded them, with their furniture, fireplace, coal-scuttles, candlesticks, pottery, and so forth. And, undoubtedly, to be surrounded by a number of beautiful articles, all of which properly answered the purposes for which they were intended, not only added to their comfort, but to their delights, and educated their sense of beauty,—one of the highest faculties given to man. It would be simply to indulge in platitudes if he were to dwell upon the advantages of this kind of art. They knew how it employed labour, how it employed female labour, which he regarded as of great importance. For in this description of art, as in others, women were as well qualified to excel as men. The women were, indeed, treading upon the men's heels, and men must look to their laurels. Further, the branch of art touched upon gave opportunities of discovering genius which might otherwise remain undetected. The matter was one of national importance, for if they were to sustain the daily increasing competition of foreign nations in the markets of the world, they must improve in industrial art, or they would be left behind by the French and Germans, and by other Continental nations. So far as decorative art was concerned, he knew there were some who thought that our houses were better decorated in the early part of the last century than they were now. There were those who looked back with "longing, lingering look" upon the golden days, as they were called, of Queen Anne, days which, he thought, derived part of their enchantment from the distance at which they were viewed. It might be admitted that some parts of house decoration might have been better done in the reign of Anne and the first George than was the case fifty years ago. But he suspected that about fifty years ago decorative art in this country was perhaps at its lowest. There had been since, however, as they knew, an immense revival. The Great Exhibition of 1851 gave an enormous impetus to this kind of art. From it arose that department of the Privy Council which had now to do with art, and which had various ramifications throughout the country; so that the whole country was, as it were, enveloped in an artistic network. They would do well to recollect to whom they mainly owed that organisation, viz., to the late Prince Consort, who, he believed, had done more for art, certainly for this description of art, than any man who had ever lived amongst them. That industrial art had enormously increased and improved under this impetus was, he thought, patent from what they saw around them in every direction. He was not only referring to the houses of the rich, but the improvement was also, to some extent, evidenced in the cottages of the poor. He understood the Nottingham School of Art to have been founded in 1843, chiefly for the benefit of the artisan class,—for their instruction in industrial art. The school appeared to him to have answered that purpose well. But it appeared also to have extended itself far beyond that purpose, and to have embraced many other, and as they were sometimes called higher, branches of art. He was not surprised at this, for there was an intimate connexion between every kind of art, from the highest to the lowest. It might be said of Art as Virgil said of Fame:—

"*Her feet are on the earth, her head is in the clouds.*"

The clever and industrious youth who now found his foot on the first step of the artistic ladder might mount and mount to the regions of the highest art. It gave him great satisfaction to find that the Nottingham School of Art came second to that of Birmingham in the national competition for medals and for Queen's prizes. It gave him great satisfaction further to find that last year the gold medal was obtained by a young lady [Miss L. A. Levers]. Also that the same young lady had obtained the Princess of Wales's scholarship. He had also heard that students in the school had obtained the scholarship in two successive years. But when he cast his eye down the list he found that not only had they carried off a gold medal, they had obtained silver medals for designs chiefly in lace. The production of lace was one he was sure they would cultivate, as it well deserved to be cultivated. It was certainly one of the most beautiful manufactures in England. Then he found medals for figures from the antique, medals for groups in oil, medals for landscapes, medals for all kinds of decorative designs, numerous medals for lace designs: and he found that the genius of Nottingham did not confine itself to designing lace, that it designed cathedrals. There was a prize for the design of a cathedral [taken by Mr. Hedley J. Price]. The prize list showed very great activity in many very different branches of art. Upon this state of things they were heartily to be congratulated. He confessed that when he saw the list of prizes before him, when he saw so many energetic art students, when he observed the extent to which they had been supported not only by the State but by contributions in the shape of prize studentships and otherwise by a vast number of munificent people, and when he saw so many persons attending to witness the distribution of prizes, all anxious to encourage and stimulate every description of art; and when he recollected that this Nottingham School, although one of the first in the kingdom, was still but one of a great many, he began to think that after all we are something more than a nation of shopkeepers. He began to think that we might aspire to call ourselves an artistic nation.

The Head Master (Mr. Dalgleish) said he should like to say something about Nottingham being second to Birmingham. Birmingham had obtained a larger number of prizes, but while Nottingham had obtained a gold medal Birmingham had obtained nothing higher than a silver medal, so he did not think Birmingham with its 1,000 students had much the best of them. During the past year altogether very satisfactory progress had been made in the school. Much good had been done by the establishment of two scholarships, of the value of 25*l.* each, but there was still room for generosity, there being no library in connexion with the institution, and but two illustrated books on lace.

The prizes were then distributed. The list of them occupies more than a column of small type in the Nottingham *Express*.

THE NEW RAILWAY STATION AT STRASBURG.

PROFESSOR KNACKFUSS, of Cassel (a promising artist of the modern German school) is executing two large fresco paintings as part of the ornamentation of the new railway station at Strasburg. The subjects chosen are from the history of Germany as especially connected with Alsace. The picture on the left of the central hall represents the transportation of the imperial jewels to Hagenau, in the year 1167, by the Emperor Frederick I. The costumes and other incidental features of the work are reproduced from authentic sources. There is an appropriate inscription, "In the old Empire, 1167," intended to contrast with the motto on the other picture, "In the new Empire, 1877." This second picture, on the right of the hall, depicts the festal reception of the Emperor William by the Alsatian peasantry in 1877 at Niederhausbergen. It is expected, according to the *Strasburg Post*, that the first picture will be completed by April 15, and the second by June 15.

MAINTENANCE OF MAIN ROADS.

THE Highways and Locomotives (Amendment) Act, 1878, enacts that one-half of the expenses incurred in the maintenance of main roads should be paid to the local authorities who maintained them by the county authorities, on the certificate of the county surveyor that such roads had been maintained to his satisfaction, provided that the accounts were kept by the local authorities in the form and manner prescribed by the county authority. This provision was made in the interests of parishes of a small rateable value that had a main arterial road passing through them. Around this simple provision has gathered a mass of difficulties that form a monument to the ingenuity of county authorities in endeavouring to evade what seems to be the obvious meaning of the Act. Upon the construction of the word "maintenance" a wonderful diversity of opinion and practice exists. Some county authorities hold that it does not include watering the roads, and they refused to pay those parts of the accounts of local authorities relating to this head, although the same may have been audited by the Local Government Board. We believe that the Brentford Local Board intend to raise this question with the Middlesex County Authority, and will no doubt endeavour to show that the "maintenance" of a road includes everything that is necessary to maintaining it in a condition fit for persons and vehicles to travel over it. It seems reasonable to contend that laying clouds of dust by watering is a proper item in the maintenance of any road. The vexed question of whether the removal of snow in order to maintain the roads in a passable condition is part of their maintenance has been settled by the decision of the Court of Queen's Bench on the 14th inst. in *Amesbury Union* v. *County of Wilts*.

In this instance an expense of 150*l.* was admittedly incurred in making the main roads passable by removing a very heavy fall of snow, and the county authority refused to pay any contribution towards that expense. The Court unanimously held that it was part of the maintenance of the road, and gave judgment for the local authority. Another word on which county authorities take different views is "road." The county authorities of Derby and Stafford treat it as including the carriage-way and foot-ways, while the Middlesex county authority read it as including the carriage-way only, and on the form of accounts prescribed by them the local surveyor has to solemnly declare that his account does not include any of the cost of maintaining the footways. If the County Boards Bill of the Government brings into being authorities who will take a rational view of the statutory obligations, they will confer a benefit upon the country at large if the general business of the existing bodies is done in the same manner as that relating to main roads.

The Flooding of Strood.—Strood has been again invaded by the tide, and sad accounts reach us of the sufferings endured there, especially by the poor. There must be some great dereliction of duty on the part of the Corporation. That this injury is preventible no one doubts; it is simply a question of money. Could not the Local Government Board usefully interfere?

MONUMENTS OF ARABIAN ART IN EGYPT.

A COMMITTEE has been nominated by the Khedive for the purpose of preserving the remains of Arabian art in Egypt. The president is the Egyptian Wakuf Minister, and there are ten native members, including the Ministers of Foreign Affairs and Public Works, and four Europeans, among whom is M. Jules Bourgoin, author of the well-known work, "Les Arts Arabes," the English numismatist, Rogers Bey, and a German, Franz Bey, who holds the office of Conservator of Arabian Monuments. This chief committee has to nominate two commissions. The first of these will be charged with the task of making a complete inventory of Arabian monuments, while the second will have to ascertain what remains require to be preserved in museums in order to prevent their complete destruction. All decisions as to what is to be done in either class of cases rest with the chief committee, which is assisted by two secretaries and a keeper of archives. The technical department of the Wakuf Ministry will be instructed to furnish all plans required, and to execute the work of restoration in all cases ordered by the committee. For this purpose a special department, with a staff of draughtsmen, has been established. The funds at present at the disposal of the committee are only 195,000 francs. The members of the committee are unpaid. It meets once a month, seven forming a quorum, but no decision can be taken unless the president or his official secretary is present. There is every prospect that under this body a long-neglected and much needed work will at length be efficiently performed.

COPENHAGEN.

IT is somewhat singular that it is chiefly since Denmark lost the rich and populous provinces of Holstein and Schleswig that the capital of the little kingdom has attained a degree of prosperity never equalled in former times. Within the past quarter of a century Copenhagen has nearly doubled its population, having risen from 150,000 to close upon 300,000 souls. The great progress that has been made dates, in fact, from the period twenty-five years ago, when the city obtained greater powers of self-government. Twenty-five years back the place was surrounded by a wall, outside which stretched the glacis of the fortifications. The suburbs, which were thus entirely separated or cut off by a broad belt from the heart of the city proper, were comparatively small and straggling, consisting of here and there a few streets or groups of houses, standing among cornfields and gardens. There were few policemen to be seen in the streets, and at night the watchmen kept up the custom of calling out the hours as the clock struck, and passing the intervals in dozing in the doorways. The precautions against fire were very primitive, and when there was a conflagration the whole city was aroused by the beating of drums, the ringing of bells, and the blowing of whistles. Gas-lamps, to illuminate the streets, were not introduced until the year 1857. The means of locomotion were very limited, being almost confined to the lumbering omnibus which ran a few times every day each way between Copenhagen and Frederickaburg. There was no trace of a tramway at that period. In the last two and a half decades all this has been altered. The streets are now full of life, and the city has expanded in all directions. One million and a half kronen (a krone or Danish crown is equal to about 1s. 1d.) have been spent since 1864 in carrying out a main drainage system. The municipal budget which, twenty-five years back, amounted to little more than 1,000,000 kronen (1,080,000 exactly), is now 6,000,000. The school system, in 1857, cost only 184,000 kronen; now it costs 900,000. The police then cost 120,000 kronen; now they cost 600,000. While the city has been increasing 100 per cent. in size and population, it has fortunately also seen the general prosperity of the inhabitants likewise increasing. This is shown by the Poor-law returns, which state that in 1858 there were nearly 7 per cent. of the population dependent on the public poor-houses for their subsistence, the poor-rates then amounting to 5·9 kronen per head of the inhabitants. Now, on the other hand, the number of the poor is only 3·7 per cent. of the population, a reduction of nearly 50 per cent., and the rates have at the same time fallen to 5·3 kronen per head of the citizens. Altogether the condition of Copenhagen is very satisfactory, and there is reason to believe that its prosperity in the immediate future will be still further increased, owing to the mistaken protective legislation of the great neighbouring empire of Germany.

GERMAN SANITARY CONGRESS.

THE German Society for the Promotion of Public Health which was to have met last year, but whose meeting had to be postponed through the burning down of the Hygienic Exhibition, will assemble in Whitsun Week this year from the 16th to the 19th of May. The principal address will be delivered by the physiologist, Professor Virchow, on the 17th of May, his subject being, "What Use should be made of the Sewage or Refuse of Cities?" Immediately after the discussion on this paper, the members of the Congress will proceed in a body to visit the estates on which the sewage of Berlin is employed. Another question which will be dealt with by the Congress is the quality of drinking-water and water used for domestic purposes, and how to test scientifically whether it is wholesome or deleterious to health. On this subject Dr. Wolfhügel and Dr. Tiemann will be the most important speakers. The question of different systems of artificial illumination and their bearings on health will also engage the attention of the Congress.

MONASTERY OF SAN JUAN DE LOS REYES, TOLEDO.

ENTRANCE DOOR OF CHAPEL.

IN the month of May, 1475, King Alfonso V. (el Africano) of Portugal invaded Estremadura at the head of an army consisting of 6,000 cavalry and 14,000 infantry, in his war against Isabel and Ferdinand, undertaken with a view of defending the supposed rights of his niece Isabel (la Beltraneja), whom he had married, although she was scarcely thirteen years of age, on the 12th of the same month, at Plasencia, proclaiming himself, with due solemnity and the customary festivities, king of Castile. His pretensions were supported by many grandees of Castile; but his success was of but short duration. In the battle of Toro (March 1, 1476), King Ferdinand, at the head of 10,000 troops, routed King Alfonso of Portugal completely, who lost in the sanguinary battle most of his cavalry and 4,000 infantry, killed, wounded, and prisoners. When Queen Isabel received the agreeable news from her husband at Tordesillas, she repaired at the head of a grand procession, dressed in rude garments and with bare feet, to the church of San Pablo, to render thanks to God for the triumph of the Castilian arms, and there made the solemn vow to erect the monastery of San Juan de los Reyes at Toledo. This is the reported origin of that building, which was constructed under the direction of the architect Juan Guass, as appears from an inscription and a mural painting recently discovered in the Church of San Justo y Pastor in the same city.

Mr. Fergusson says of the church or chapel attached to the building, and of the entrance-door of which we give an illustration in this week's *Builder*, that, among the minor chapels of the age, it is, perhaps, the most remarkable, and that it was built by Ferdinand and Isabel as a sepulchral chapel for themselves. "It is thus," he continues, "the exact counterpart of our Henry VII.'s Chapel, and of the church at Bron en Bresse. As its founders were at the time of its erection among the richest and most prosperous sovereigns in Europe, all that wealth could do was lavished on its ornamentation. It is as rich as our example, and richer than the French one. But, on the whole, the palm must be awarded to the English architect. There is more constructive skill, and the construction is better expressed, at Westminster than either at Toledo or Bron; though it is difficult not to feel that the money in all these cases might have been better expended on a building of a purer style of art."

The Spanish building is in the florid ogival style. The principal portal, which we illustrate, is on the north façade. It was erected from the plans and under the direction of Señor Alonso de Covarrubias, but was not finished until the year 1610. In the arches of the wall of this door there hang numerous rusty iron chains. They are those which oppressed the captive Christians of Almansa, Loja, Malaga, and Baza, liberated by the victorious arms of the Catholic kings. The best portion of San Juan de los Reyes was its monumental monastery, admired by all who visited it. This was destroyed by Bonaparte's soldiers, who set fire to it on December 14, 1809. The building, or what remains of it, is to be converted into a school of industrial and decorative art.

SKETCHES IN ITALY.

TRIFORIUM TRACERIES, LUCCA CATHEDRAL.

THE sketches we have illustrated were executed by Mr. Roger T. Conder, in the course of a trip, as Soane Medallist for 1881, through Italy.

The Cathedral at Lucca was originally a Romanesque building, but has been so often altered and restored that inside it presents a decidedly Gothic appearance. The triforium traceries here represented attract the visitors' attention immediately on entering the church, and a charming effect is gained by continuing these traceries, — supported, of course, on columns and arches, across the transepts, and longitudinally over the centre of the same. The vaulting is covered with frescos, which were restored in 1858. The capitals supporting the arches of the vault are extremely bold and effective, though to many minds the acanthus-leaf in juxtaposition to Gothic tracery will always be an abomination.

THE PALAZZO CONTARINI FASAN, VENICE.

This small palace, on the Grand Canal at Venice, almost immediately opposite the Church of Sta. Maria della Salute, is apparently of the fourteenth century. It is of brick and stone, the lower story being covered with plaster. The brickwork has been coloured by time. Though small, this palace is one of the most charming in Venice, owing to the good proportions of every detail, and to the richness of the carving both on the arches and to the tracery of the balconies. In the rage for fixing upon residences for all celebrities, this house has been called the house of Desdemona.

FINCHLEY BOARD SCHOOLS COMPETITION.

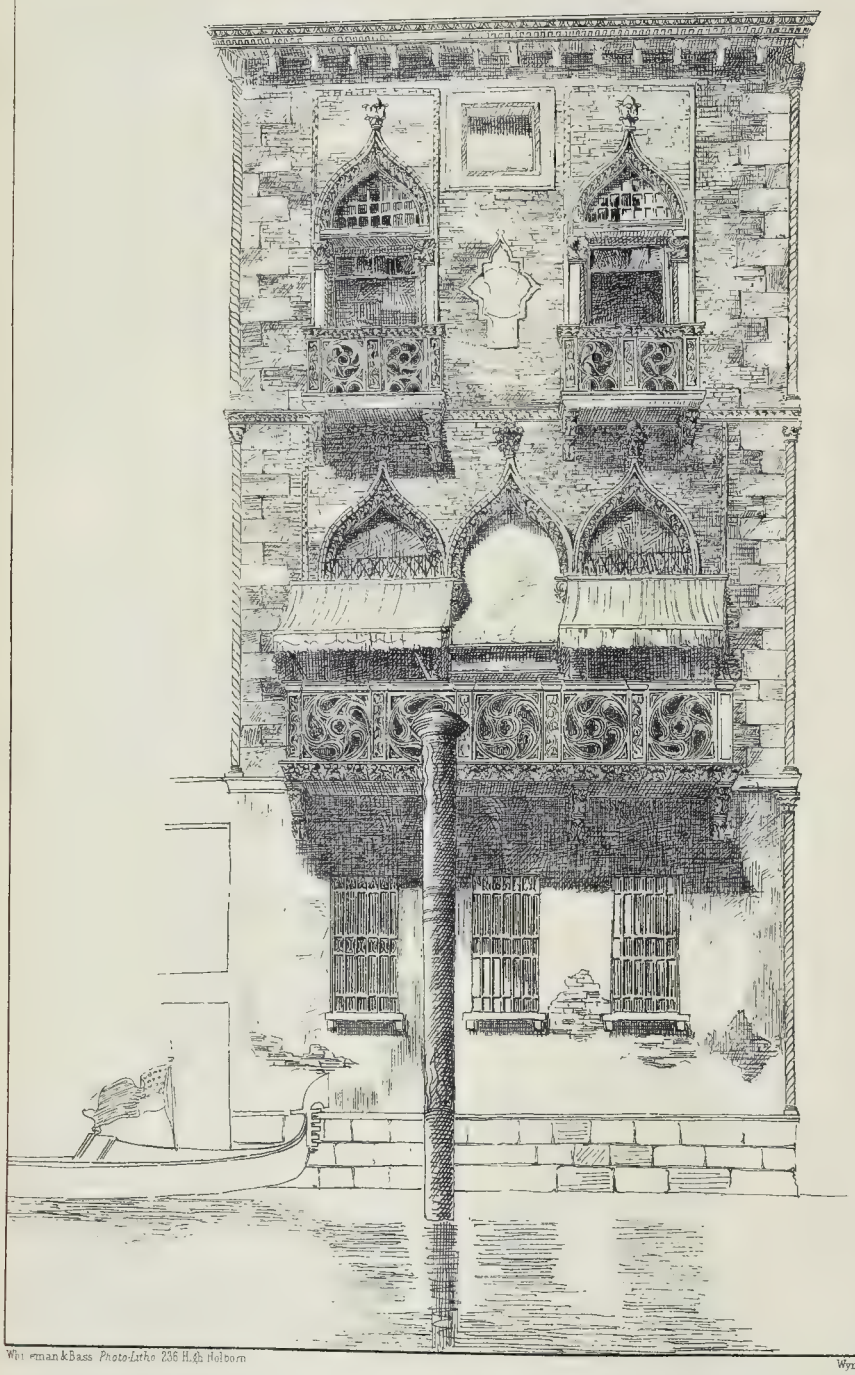
WE illustrate in our present number Messrs. Dunk & Geden's designs which gained the first premium in the late competition. Professor T. Roger Smith was the professional referee.

The requirements, as stated in the instructions to architects, were a graded school for 840 boys and girls, and an infants' school for 600 apart from the graded school. The graded school to consist of central hall and fourteen class-rooms communicating therewith, each class-room to hold a minimum of sixty children; an allowance of 10 square feet of floor-space in the class-rooms to each child; designs to be arranged so that half the accommodation only can be provided for at present; central hall and class-rooms to be erected wholly as ground-floor; partitions dividing the class-rooms from the central hall to be movable, and of glass from a height of 10 ft. from the floor; a laboratory, kitchen for cookery instruction, masters' and mistresses' rooms to be provided; economy of construction to be specially studied.

In the design illustrated, picked stock bricks will be used with red brick and stone dressings. The roofs to be open inside as high as the collar, and boarded and felted on back of rafters, and the timber left clean from the tool, without paint or varnish. The floors, laid with Wharam's wood blocks on concrete bed; heating by low-pressure hot-water system; ventilation by Tobin's shafts opening over hot-water pipes and extract-ventilators; pivot casements in all the windows.

We are informed that the Board having now altered their requirements on economical grounds, the present plans will have to be modified and reduced before being carried into execution.

The Sanatorium, Virginia Water.—Messrs. J. W. Bird & Co. have just now supplied polished vein and St. Ann's marble seats and wall-linings for the Turkish-baths at the Holloway Sanatorium, Virginia Water; also a solid polished Sicilian marble basin and pedestal for the shampooing-room.

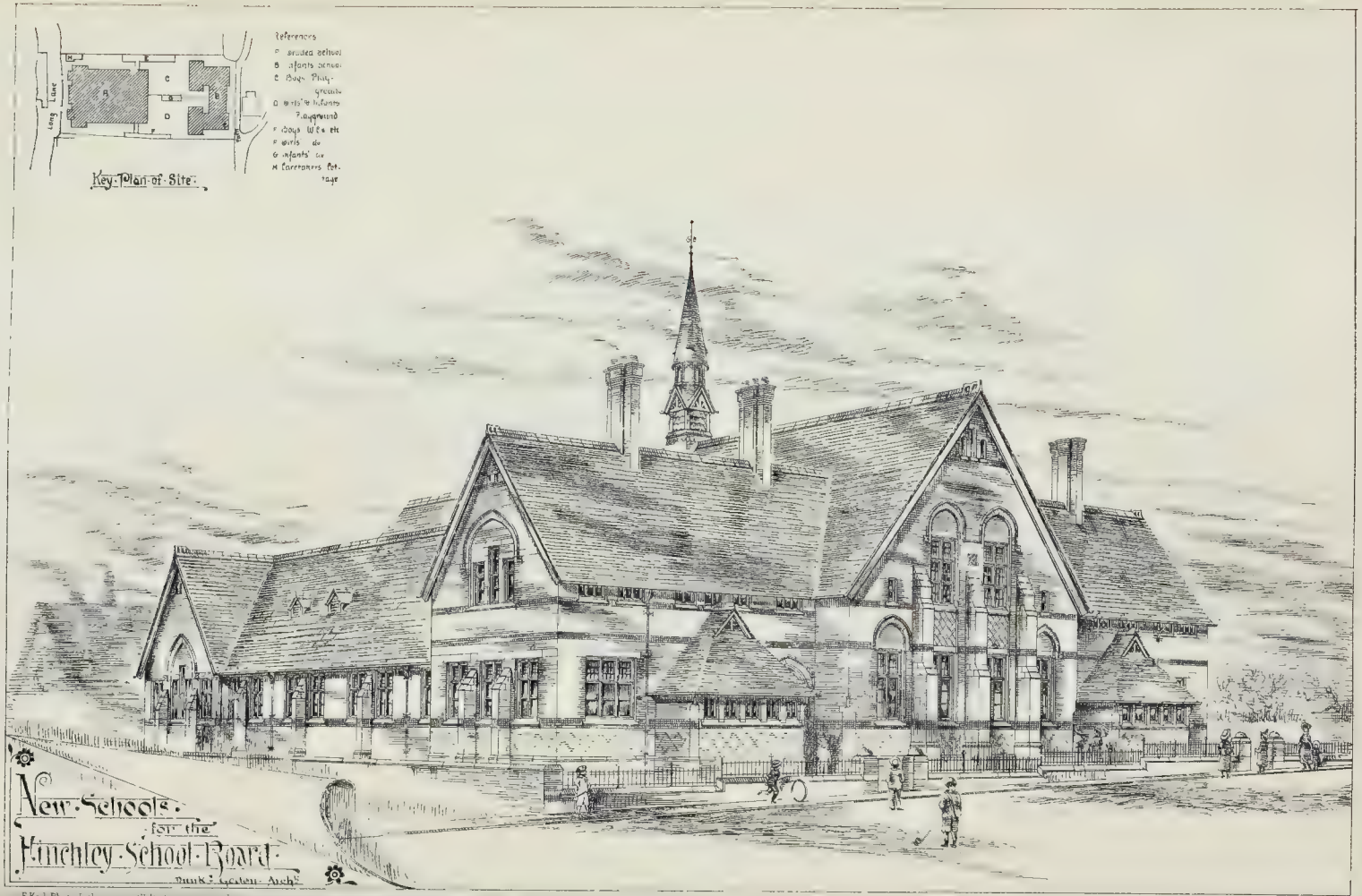


Wyman & Bass *Photo-Litho* 236 H. Holborn

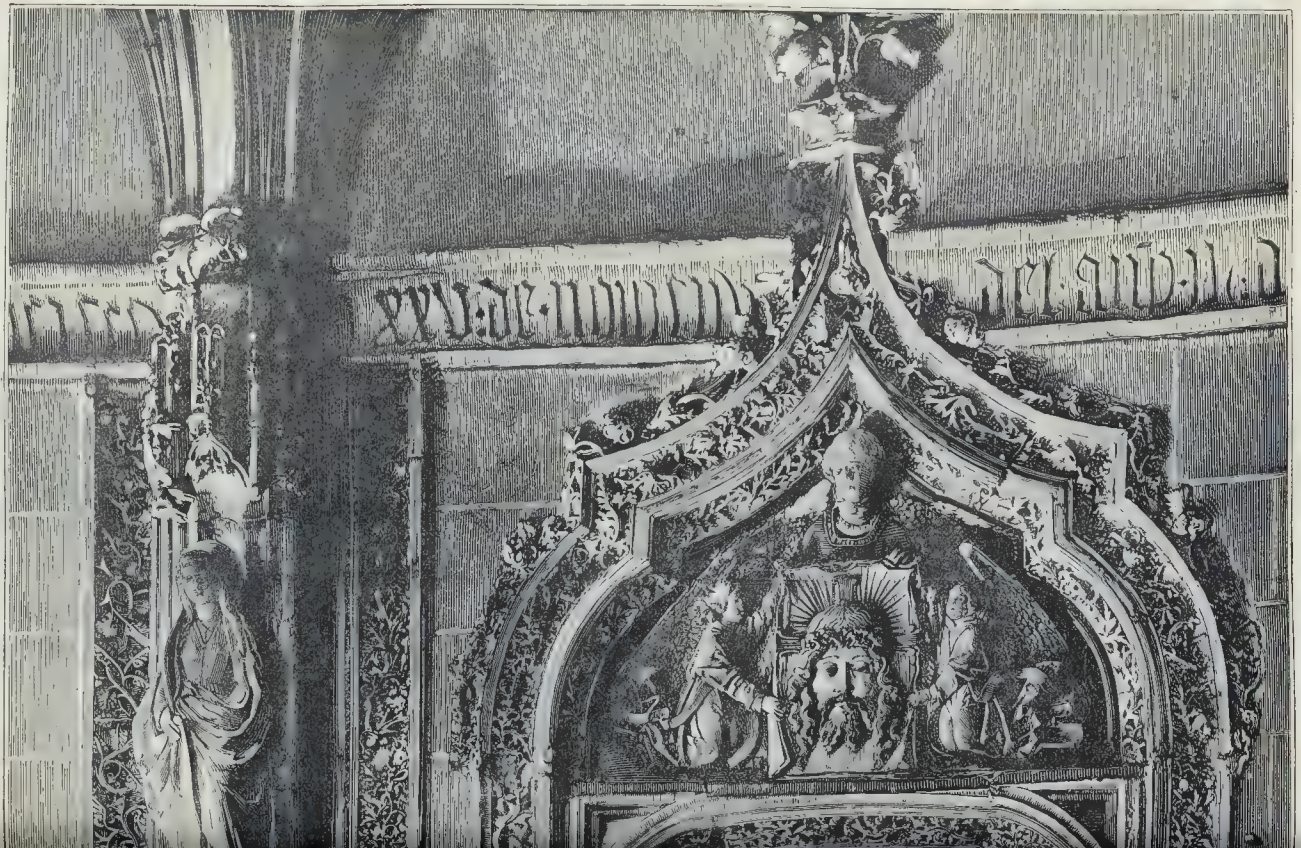
Wyman & Sons Printers 74 Queen St.

Palazzo Contarini Fasan Venice

Sketched by R T Conder 1882

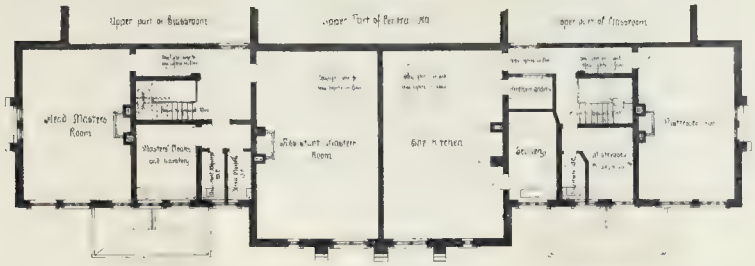


Wyman & Sons Printers Fetter





ENTRANCE-DOOR, SAN JUAN DE LOS REYES, TOLEDO.——Señor Alonso de Covarrubias, Architect.



First Floor Plan

The Graded School



Ground Plan

Note

All the Classrooms have ranged Moveable partitions at the sides next to the Central Hall to enable Partitions to fold back when necessary, shutters into boxes provided for them, and are of glass from a height of four feet from the floor.

Note

One Classroom [illegible] temporary Classrooms might be erected now. A temporary Classroom being built between the Central Hall as shown.

Or Six Classrooms only might be built now

Kell, Photo-Litho Castle St Holborn

Wyman & Sons Printers Great Queen St

NEW SCHOOLS FOR THE FINCHLEY SCHOOL BOARD.



Whiteman & Bass *Photo Litho* 236 High Holborn

Wyman & Sons Printers

Triforium Traceries Lucca Cathedral

Sketched by R T Conder 1882

PRIZE COMPETITION FOR A NEW "NORTHERN MUSEUM" IN STOCKHOLM.

THE Swedish authorities have issued to the architects of all countries an invitation to send in designs and plans for a new building for the "Northern Museum" of Stockholm. The drawings are to be in the hands of the Museum Committee before the 1st of June. They are to be anonymous, but capable of identification by help of a motto in the usual way. The judges will be the Museum Committee, assisted by two eminent architects. The authors of the five best designs will receive premiums of the value of 1,500 kronen (84*l.* 7s.) for the first, 600 kronen (33*l.* 15s.) for the second, and 300 kronen each for the third, fourth, and fifth. The five prize drawings will be the property of the committee. The building is to be erected in the Royal Park at Stockholm. The problem which the programme puts for solution by the competitors is one of considerable interest. The committee does not mention the sum it is prepared to expend on the new building.

UNDERGROUND PARIS.

"ARCHÆOLOGICAL discoveries," says a French journal, "have their destinies as books have. Some, coming at an opportune moment, achieve success at once; some, at an inopportune moment, but half the success they merit." Such, up to the present, has been the fate of the discovery of the famous Amphitheatre of Lutetia.

Thanks to the courtesy of Monsieur Meygret, the contractor for the demolitions necessary for the formation of the new Rue des Arènes, interesting researches have been possible in the vast plot of ground at the top of the Rue de Navarre (once Rue Rollin), and bordering on the Rue Monge, across which the new street, going from the Rue Monge to the Rue Linné, is to be laid down.

These researches have already brought to light this celebrated amphitheatre, which is found to be in the very spot secular tradition had always asserted it to be; that is, in the "Inclosure of the Arenas," one of the numerous plots of ground inclosed by walls, which succeeded on the inclines of Mount Leucotitius to the Parisian villa of the Gallo-Roman epoch. The line traced for the Rue Monge encountered in 1869 these curious substructures nearly at the top of the Rue Rollin. Researches were immediately instituted by the delegates of the city for archæological service, and they were not long in disinterring nearly the half of the edifice. The rest was, and is still, buried under the garden of a convent, once belonging to a Sisterhood of Jesus Christ. Unfortunately for science, the Rue Monge had been opened by a private company, in which the city had no rights, and the spot where the arena is now found to be was sold to the General Omnibus Company, who established a station there, though with the understanding that the buildings were to be light and without deep foundations. The question then was how to re-purchase the plot of ground from this rich company, and negotiations were entered into which might have succeeded, had it not been for the declaration of war with Germany. The events of the moment caused the matter to be put on one side. Meanwhile, the company built its stables, offices, &c., and the first substructures all Paris went to see are nearly destroyed.

But the happy incident of the new discoveries has once more drawn public attention to the subject. This street to be opened between the Rues Linné and Navarre (*ci-devant* Rollin) would cut through the convent garden (the Sisterhood are no longer there, having retired to Orleans, and the ground was bought by the late Madame Blanc, who had made it into a depository for valuables to the amount of six or seven millions of francs), underneath which is still buried the half of the amphitheatre. The Institute is impressed with the importance of a probably still more extended discovery, and the question was brought a few days ago before the Academy of Inscriptions and Belles Lettres, by Monsieur Leon Renier, and is to be further submitted to the Prefect of the Seine and the Municipal Council. The issue, of course, is still doubtful, but what one can affirm is that there are few archæological causes more worthy of being pleaded. Paris has lost nearly all her old monuments. The Thermes is the only one remaining of the Gallo-Roman town, and the arenas were of equal importance. Julian, as well as Constantine Chlo'rus, held their court there. In them the Merovingian chiefs gave gorgeous spectacles. The Parisian dignitaries held their assemblies there also, and later the site was made a necropolis. In the North of France, says Leon Renier, the Gallo-Roman Amphitheatre of Lutetia has perhaps no rival in antiquity other than the Gate of Mars at Rheims.

Let us hope the Institute may succeed in saving what remains of it. Furnished with a very curious and very exact map of the Amphitheatre of Lutetia, the delegates of the city for archæological service, Messieurs Cousin and Vacquer, are actively prosecuting their researches, and we may hope that before long the amphitheatre will be completely exposed to view.

THE DISINFECTION AND DRYING OF INUNDATED HOUSES.

THE Prussian Government lately issued a comprehensive series of regulations for the guidance of sanitary authorities in the measures which are rendered necessary by inundations. An extract to the following effect is published by the *Deutsche Bauzeitung* as being of special interest fo the building trade, from a technical point of view.

After the water has receded, a thorough cleaning of the dwelling-houses in all their parts is necessary. As the water has often been mixed with dirt and the overflow of sewers, the walls and floors of the rooms and offices of such dwellings are rendered in an unsanitary condition. In such cases the removal of the surfaces thus affected is not always practicable, and therefore recourse must be had to disinfection. The doubts which have of late been currently expressed as to the efficacy for that purpose of carbolic acid and vitriol need not prevent the use of these substances, as it is not here a question of killing specific germs of disease, but merely of preventing the decomposition of organic substances. Of course, the surfaces only are subjected to the influences of the acids referred to, and further operations are necessary when the boards are in any way defective, and when the filling underneath has been wetted or has received deposits of a noxious character. Even in the former case, if the material has not been perfectly clean from the beginning, a slow process of decomposition is liable to set in, and the material must in such cases be replaced by a dry and suitable filling substance. A thorough disinfeetion is hardly possible. The removal of damp filling is also rendered advisable by the fact that the boards would become rotten if left in proximity to it.

As to the water which may be in cellars, the opinion has been expressed in some quarters that the pumping out of it need not take place when an influx of underground water prevents the drying of the cellar. This theory may be correct when the water comes entirely from below. When, however, water has been flowing in from above, it is to be supposed that it is not free from impurities, and in such cases it is recommended to pump out as much as possible and to disinfect what remains. Cellars which are used for storing provisions are more conveniently disinfected with green vitriol than with carbolic acid, inasmuch as the odour of the latter would be imparted to the provisions which might afterwards be placed in it, thus rendering them unfit for consumption and for sale. The underground water can be left standing in the cellars until the general sinking of it allows of its being thoroughly pumped out, and of the removal of the sediment which has been deposited.

The removal of the plaster from the walls is serviceable because the drying of them is thereby much accelerated, and because the removal of impurities is in this way better insured than by washing the walls with disinfecting substances. The drying of the walls is best effected by the use of iron baskets containing coke. Danger of fire is averted by the flooring being covered with a layer of sand an inch or two in height. The sand also becomes heated in a marked degree, and the drying of the flooring is thereby facilitated. Precautions are necessary against any person being poisoned by the fumes which are generated.

The question has often been raised whether it is preferable to use this method with the windows and doors closed or opened. The former system is in itself desirable because the heat in the rooms is thereby increased, and the introduction of natural ventilation through the pores of the brickwork is promoted. It is, however, only practicable to employ this method of drying when a proper means of escape is provided for the heated air, which is saturated with aqueous vapour. This is best effected by an opening into a heated chimney. Otherwise the necessary changing of the air is to be effected by keeping the doors and windows open.

THE SUN AS A SOURCE OF POWER.

OF the enormous power of the sun's rays few readers have any adequate conception, but as the time appears now to be approaching when they will be capable of being made directly available in place of coal and steam for the production of power and light, the question is beginning to assume something more than a theoretical interest. The French electrician M. Deprez, in a recent work, makes some calculations which illustrate the enormous fund of force which the sun's heat is capable of supplying. France, he says, possesses an area of about half a million square kilomètres. In one hour the sun's heat will absorb or dry up 2 lb. of water per square mètre, and so on a fine summer day the quantity of water the sun is capable of absorbing in one hour over the entire area of France is not less than a thousand milliards, or a million millions of pounds avoirdupois. If we had to raise this quantity of water to boiling point in boilers, we should require no less than sixty million tons of coal, which is one-fifth of the entire annual production of coal throughout the world. The sun's rays falling on France would be able to turn so much water into steam as would keep going eighty million locomotive engines of collectively forty milliards of horse-powers.

PANCLASITE.

A NEW explosive agent has been invented by a French chemist, M. Turpin, to which the name "Panclasite" has been given. In addition to being much more powerful than any hitherto existing material, Panclasite has the advantage of not being liable to explode through a mere knock or percussion. In fact, its principal feature is that it consists of two fluids, each of which can be conveyed separately by rail or on shipboard with perfect safety. The explosive quality only arises from their mixture, and the two fluids can be kept separate until the moment when they are wanted for use. The mixed fluid can be employed either directly in the fluid form, or, like the nitro-glycerine in dynamite, it may be first absorbed into some porous kind of earth, and so applied in an apparently solid form. Panclasite does not freeze at any ordinary temperature, so that the dangerous operation of melting, which is necessary in the case of dynamite, at +8° centigrade, is avoided.

Experiments have been made with panclasite at Cherbourg on old cement work and on a quartzose slate rock. The result was such that the engineers, in their report, stated that "the mixture prepared by M. Turpin bears, as regards its effects, the same proportion to dynamite as dynamite does to ordinary gunpowder." All these details, however, require further corroboration before they can be accepted as final.

LUNATICS IN A PRIZE COMPETITION.

THE results of the Italian prize competition for a monument to Victor Emanuel, last year, were not a little surprising to all who took an interest in the matter. Out of the 296 designs that were sent in, the judges found that only about two dozen were of sufficient merit to be admitted to the narrower competition, all the rest being rejected at the first inspection as unsuitable. Recently, an Italian physician, Dr. Dossi, who is well known for his labours in the psychiatric field, has published in the "Archives de Psychiatria" a statement which has caused considerable astonishment in and out of the Italian kingdom. He announces that of the 296 designs sent in no fewer than thirty-nine were the production of notorious lunatics. It would be interesting to learn whether any of these thirty-nine were included by the judges in the twenty designs admitted to the narrower competition, but on this point the learned doctor leaves us in ignorance.

FIREPROOF SCENERY.

A TRIAL of Herr Pafen's system of rendering theatrical scenery fireproof was recently held at Frankfurt, in presence of the theatrical officials, the Municipal Building Committee, and the Fire Brigade authorities. According to the *Hamburger Nachrichten*, the experiments (which took place at the Opera-house) were conclusive in demonstrating the efficacy of Herr Pafen's method, which, it states, has been adopted in the Court theatres at Berlin, Hanover, Cassel, Wiesbaden, Carlsruhe, and Mannheim. The Erfurt and Stettin theatres have also decided on introducing it.

EDINBURGH ARCHITECTURAL ASSOCIATION.

AT the last fortnightly meeting of the above association, the President, Mr. MacGibbon, in the chair, after the preliminary business was disposed of, Mr. D. W. Stevenson, A.R.S.A., read a paper entitled "System and no System in Art Education," in the course of which a comparison was made between the opportunities for obtaining education in their art, at the disposal of students of architecture in Edinburgh, London, Paris, and Rome; details being given of the architectural section of the schools of the fine arts in each of these cities, that of Paris being the most complete. Out of seventeen professions in the National School there, ten were more or less directly connected with architecture. The progress of pupils was tested, and their zeal stimulated by frequent competitions, while prizes to the amount of 150*l.* a year, the income of legacies left to this department of the school, were at the disposal of the directors; and in addition the grand prize of Rome, each year granted by the Government, enables the winner to spend three years in Rome; where recently a pupil of this school,—M. Nenot,—gained the premium of 2,000*l.* offered by the Italian Government for the best design for a memorial to King Victor Emmanuel. This fact was considered a practical comment on the neglect of the study of architecture in the schools of art at Rome at present. The Royal Academy of London had, since 1870, well-equipped classes for architecture; and classes also existed at Kensington, but nothing to be compared with the complete organisation of the French School was to be found in this country, while in Edinburgh the student of architecture was left to fight his way single-handed through difficulties which only the most enthusiastic could overcome. Provision for affording the students of architecture in Edinburgh a more systematic course of study was urged, not only on the attention of the profession, but the public.

At the conclusion of the paper, a hearty vote of thanks was accorded.

On Saturday afternoon the members of the association, to the number of sixty-five, travelled to Dalkeith for the purpose of visiting the old Collegiate Church, which stands on the north side of the High-street of the burgh. The company were met at the entrance gate to the church by Mr. Inglis, the clerk of works, and directed through the building. In the course of their examination, Mr. M'Gibbon, president of the association, read a few notes which had been prepared by Mr. Stewart, chamberlain to the Duke of Buccleuch, respecting the edifice. The first structure on that site was erected in 1368, and was dedicated to St. Nicholas. It was 78 ft. long, 53 ft. wide, and 35 ft. high. The tower was 85 ft. high. In 1406, Sir James Douglas rebuilt the chapel, and it was formed into a collegiate church in 1477, under the deanery of Restalrig and diocese of St. Andrews. That deanery was dissolved in 1592. The church was rebuilt in 1767, and upon one of its two bells there is a Latin inscription, "Decora domine tuæ sanctitas O Jehova Dierum in Longitudinem; John Milne, facet., Edinr., 1768." In 1854, the Duke of Buccleuch caused extensive repairs to be made on the western division of the building, and it was then rendered more comfortable for a place of worship. The walls of the choir, however, are roofless, and nothing of the internal furnishings remain; even the stones of the floor have been removed. On the north side of the choir is the vault belonging to the Duke of Buccleuch family. It contains many ancestral remains, beginning with the second Earl, who died in 1651, down to the late Duke of Buccleuch, who was interred there. The recumbent sculptured figures of the first Earl of Morton and his Countess, much defaced by the action of the elements and broken, are lying in the choir. The company then adjourned to Dalkeith Park, where, after looking into the elegant little chapel erected within the grounds, they proceeded to the mansion-house of his Grace the Duke of Buccleuch, where they were shown through the principal apartments.

SALE OF FRESCOS.

SEVERAL Italian newspapers allude to the purchase, at a high figure, for the Louvre at Paris, of the celebrated fresco, "Christ on the Cross," by Fra Beato Angelico, which has been in the refectory of the Dominican monastery at Fiesola. Another fresco, by the same master, is said to have been bought by the Grand Duke Sergius of Russia for 1,800*l.* The confiscation of the building referred to seems to have recently taken place.

"AN ARCHITECT ON LAWYERS."

SIR,—Your second legal correspondent on this subject (last week) appears to be chiefly bent upon making us merry; but he contributes one remark that may be said to afford us material for reflection. I observe that he does not know what a false issue is, unless it be "a false fact," which is a pity. Then he seems to be quite inclined to doubt whether brick is an incombustible material after all, which is surely a joke. He takes wood-bricks to be "blocks used for wood paving," which again is to be regretted. He is of opinion next that an arbitrator on a carpenter's bill deserves our sympathy rather than our ridicule when he speaks gravely of a "*ledged door-lock*," because there is no comma in his copy of the account. Once more, he tells us with all simplicity that the task of an architectural arbitrator (an "architect and surveyor" of course), in dealing with a builder's bill, is "to decide between the *price asked* and the *price offered*, and this he does *upon evidence*,"—just as if he also were "only a lawyer." Lastly, he refers with approval to the well-known "false fact" that a lawsuit is cheaper and more expeditious than an arbitration; and this is the point upon which I will ask leave to say a word or two. I admit that a reference to a barrister is neither cheap nor expeditious. I admit that a reference to an architect, with counsel and solicitors on each side, and "advocates on oath" to assist them all round in making the worse appear the better reason, is neither cheap nor expeditious, however much better it may be in both respects than the former process. But I assert that a lawsuit, when so conducted that it may, with whatever grim irony, be called cheap, is dear at any price, being no better than a toss up, which is the cheapest and most expeditious of all processes; and I further assert that, in the hands of a conscientious and experienced architect or surveyor, who is permitted to dispense with lawyers and expert witnesses, an arbitration is always found to be as much more cheap and expeditious than a lawsuit, as it is unquestionably more satisfactory in every other way. No amount of jocose legal raillery and pleasant legal mystification will alter the universal opinion of the building world that litigation, when applied to building disputes, is a failure; and I repeat that I think the time has come for architects who are inclined that way to learn the practice of arbitration academically, as part of their business. I will add, for the satisfaction of your legal readers, that I include, of course, the necessary "law" in the curriculum; but how much more there must be besides law I need not say. May I take the opportunity of adding an expression of my individual opinion as to the best form for a building arbitration? Let there be (1) the delivery of statements in writing by the parties and their witnesses; (2), the delivery of replies; (3), examination *viva voce* by the arbitrator alone; (4), in many cases, an attempt on his part to adjust terms of friendly settlement; and (5), the delivery of an award, which in some cases shall be open to appeal, and which in no case shall be dictated by that consideration of the arbitrator's own interest, or want of interest, which is sometimes so exasperating to both sides. All this may be perfectly cheap and expeditious. I am not in favour, I ought to add, of much appealing, nor even of too much explanation; but I cannot help approving the process of a lawsuit, so far as the absence of judicial secrecy is concerned, as well as the recognition of the possibility of judicial error. ROBERT KERR.

"WRIGHT, OF DERBY."

THE idea of exhibiting in Derby as complete and representative a collection of Wright's pictures as it was possible to gather under one roof has at length been successfully carried out, thanks mainly to the energy of Mr. William Bemrose. The Corporation Art Gallery was chosen as the repository of the loan collection, and here, for some weeks past, Mr. Bemrose, assisted by Mr. Alderman Sowter and Mr. Thos. Heath, has been busily at work in receiving and hanging the pictures. The Mayor of Derby (Mr. Councillor Russell) marked the opening of the exhibition by issuing invitations to a *conversazione* on the 21st inst. The Mayor made an interesting speech on the occasion, detailing some of the particulars of Wright's career, calling upon "another Derbyshire worthy," Mr. Seymour Haden, to say a few words on the collection now brought together. Mr. Haden, however, said it was not necessary for him to say anything, as Wright, fortunately, spoke for himself in his pictures.

The following brief account of the artist's life is culled from the pen of his appreciative kinsman, Mr. William Bemrose.

Joseph Wright was born at Derby, in the house, No. 28, Iron-gate (better known as Simmonds's Eating-house), on September 3rd, 1734, being the third son of Mr. John Wright, attorney-at-law, who filled the office of town clerk of Derby from 1758 to 1765. In the town of Derby Wright was born and made his "name and fame," and it is not surprising, therefore, that he has become universally known as "Wright, of Derby." He was educated at Derby School, under the Rev. Mr. Almond, and, at an early age, was passionately devoted to the pursuit of drawing. In 1751, being seventeen years of age, he was placed by his father with Hudson, the master of Reynolds and Mortimer, where he remained for two years. On his return to his native town, he painted many portraits,—his father, and mother, and other members of his family amongst them. In 1756, he returned to study with Hudson for a further period of fifteen months, and in 1765 first exhibited paintings at the Incorporated Society of Artists, and at the Royal Academy in 1778. In 1781, Wright was elected an Associate of the Academy, and a full member in 1784, but declined the latter honour, for reasons which have been variously stated. In 1773, he married and went to Italy, where, during his studies, he saw a memorable eruption of Mount Vesuvius,—a scene which is said to have inspired him to follow the painting of strong effects of light and shade, in which he afterwards became so pre-eminently successful. In 1776, Wright left Derby for Bath, but, not meeting at that fashionable resort with the support which was his due, he returned to his native place, where he was honoured with an exceptionally large number of commissions direct from the easel. In 1779, the artist removed to Old St. Helen's House, opposite the present Derby School, then almost outside the town. In May, 1797, Wright became so ill that he took to his bed, from which he never rose again, but succumbed to a complication of diseases on the 29th of August, 1797, at a house in Queen-street, and was buried on the 1st of September following, in St. Alkmund's Church. Here a tablet still exists to his memory with the following inscription:—

> In the middle aisle, opposite to this pillar, are deposited the Remains of
> JOSEPH WRIGHT, Esq.,
> Painter.
> He died Aug. 29th, 1797, in the
> 63rd year of his age.
> His well earn'd merit in his works is shown,
> Where taste and genius mark him for their own.

The catalogue of the exhibition, on which Mr. Bemrose has expended well-nigh two months of patient labour, contains an amount of detail personal to the artist and his works that will make it useful as a book of reference. The exact size of each painting is given, its chief features and characteristics are noted, and attendant circumstances are related in a concise but attractive manner. The catalogue also contains an engraving from the portrait of Wright, by himself, in the National Portrait Gallery, London.

SOUTHPORT.

One of the most remarkable features of the present day is the continual growth of watering-places. Whether it is on the east or south coasts, we have developments at Saltburn and Scarborough, Hastings and Brighton, whilst on the west Blackpool and others make great headway, but not the least progressive is Southport. A hundred years ago it was composed of only a "few straggling cottages, half buried in the sandhills surrounding them." But before half the century had passed it had taken the first step towards its present fame, and was for that time a "fashionable bathing-place." It is true that its hotel accommodation was limited to four hotels; that the population of the whole of its parish,—2,763 in the year 1821,—had risen to 5,132 in the following decade; that it had fair baths and a fine assembly and news room; but the place was far from being what it now is. It depended upon coaches,—two daily in the season to Liverpool, and four to Manchester, and others to Preston. There was one episcopal church and three places of worship for Nonconformists; there were no banks, but some thirty lodging-houses added to the accommodation that the inns afforded, and the town was then in the state of slow growth that some of the much younger health resorts of to-day are now. In the fifty years that have passed the town did not so greatly increase in the early part of that period, but latterly it has shot ahead with greater rapidity, and its population ten years ago was nearly fourfold what it was at the last date for which we have given the figures, whilst at the time of the last census it had the remarkable increase to record to 42,000, and it is estimated that a considerable further enlargement has since taken place. Much of this growth is due to the excellent railway facilities that it has, which, however, are still to be increased. The Southport and Cheshire Lines Extension Railway Company proposes to tap the great towns that are served by the Cheshire lines and the three great railway companies that form them, and a very considerable progress has been made with the works, though it is not three years since the passing of the Act that authorised the formation of the new company.

In the later period to which we have referred, spurred on by the increase of the population, by the enlarged number of visitors to the town and by the competition that prevails amongst the West Coast watering-places, Southport has not only made great strides, but it may be said that the town has known a large amount of physical change. The beach presents a long stretch of noble buildings, prominent among which are the Pavilion and Winter-gardens, the Baths, and the Convalescent Hospital. Places of worship for all denominations now abound in the town; a free library and museum, botanic gardens, and other like institutions add to the attractions that it offers; and in the glaciarum, baths, gardens, promenades, and other features that attract to health resorts of the country, Southport has much to offer to residents and visitors; nor has the effect of the works that have been carried out, and of an efficient system of local self-government, been in vain, for the town boasts now of a very low death-rate. At a recent meeting of the Town Council the mayor was able to state that the death-rate was 16·42, and that "excluding the moribund visitors brought into the town to die, the death-rate for Southport was 13·72." It is to be expected that a town of its character should be healthier than great manufacturing centres; but the fact that one with so large a population as it has should have a death-rate that is so low must be said to be a fact that is creditable to the governing authorities. It is largely on the repute of the health resorts for the possession of that,—as shown in low death-rates,—that their prosperity depends, and hence it may be concluded that there is still greater growth before the West Coast watering-place. It has what may be called a very rich gathering-ground near it,—great centres of population, to give to it residents and visitors; and on these and on a wider area it will increasingly draw when the railway works now in progress are completed. To the visitors it can offer varied accommodation, from hotels that may be called palatial, down to much less costly homes. For these visitors it increasingly caters, and that with apparent success, and it is almost certain that, with better trade, there will be greatly-increased numbers of visitors, who long for a look at the sea, and an experience of the life-giving properties of its breezes. All our watering-places feel more or less the influence of the condition of commerce, and in the past few years that condition has been such that there has been with many temporary dulness. Southport, by continued additions to its attractions, seems to have suffered as little as any, and hence it may be believed that the rate of its future progress will seem the more surprising.

EXTENSION WORKS AT FENCHURCH STREET RAILWAY STATION.

The constantly-increasing traffic at the Fenchurch Railway Station, which is alike the metropolitan terminus of the Great Eastern, the London, Tilbury, and Southend, and the London and Blackwall companies, has necessitated the enlargement of the station to more than double its former area. The works, which have been in progress for upwards of two years, embrace the lengthening of the station eastward as far as the Minories, and it is now upwards of 1,000 ft. long from the entrance to the offices in London-street to its eastern boundary. Simultaneously with the lengthening of the station it has likewise been widened to the extent of 50 ft., and now covers an area of nearly seven acres. In order to carry out the extensions it was necessary to purchase a considerable amount of property, and the whole of Gould-square and a part of Cooper's-row and John-street, have been absorbed into the station. One of the heaviest portions of the work was the removal of the old bridge crossing over Cooper's-row, and the erection of an entirely new bridge, in carrying out the widening of the station area. This bridge is of unusually great strength. It is composed of massive iron girders, and outside box girders, an immense main girder of 118 ft. in length, which forms the strongest part of the bridge crossing over Crutched Friars and Cooper's-row at the junction of those thoroughfares. The difficulties in carrying out this portion of the works were added to by the necessity which the engineer and contractors were under of prosecuting the undertaking without interfering with the traffic. From this bridge to the eastern boundary of the station at the Minories, the station is continued on a series of arches. With the view of relieving the booking arrangements at the entrance in London-street, an entirely new and distinct set of booking and general offices have been erected in John-street, from which the railway platforms above are reached by flights of stairs. These offices admit of passengers in the locality around the Minories availing themselves of the railway without going to the old Fenchurch-street entrance. Additional lines of rails have been laid down, and several new platforms constructed, one of these, which is approached from the new booking-offices and waiting-rooms in John-street, being 850 ft. in length.

In connexion with the works a new and spacious signal-box has been erected at the Minories approach to the station, and was opened last week. The structure, which runs parallel with the line, and at a considerable elevation over it, is supported by strong wrought-iron girders crossing the line, a circular staircase, and a gallery on the north side (also crossing over the line) serving as an approach to the interior. The signal-box contains 120 levers, supplied by Messrs. Saxby & Farmer. A short distance eastward beyond the signal-box a turn-table, 50 ft. in diameter, is at present in course of construction. It is being erected under the south-east angle of what, until recently, were the London and St. Katharine Dock warehouses, but which now belong to the railway company. As the turn-table will occupy a space under the warehouses, and on the railway level, its erection involves the removal, and what may be described as the underpinning of the lower portion of the walls of the warehouses at this point, the superstructure above, when the brickwork of the walls is removed, resting upon massive iron girders. Langley's patent hydraulic buffer-stops for the protection of the trains have been fixed at the station. They are the invention of Mr. Langley, the Company's engineer, under whose superintendence the whole of the works have been carried out. With these buffers there is no recoil or rebound as with the ordinary spring buffers. Five sets of the buffers have been introduced.

The whole of the frontage of the station at Fenchurch-street has been re-faced, and an ornamental covered approach erected. New and greatly enlarged booking-offices are also now in course of erection on the ground-floor, whilst above, on the railway level, spacious waiting-rooms and refreshment-rooms are likewise being constructed.

The contractors for the new station buildings in John-street were Messrs. Perry, of the Tredegar Works, Bow; whilst for the new bridge, already referred to, the works eastward to the Minories, and the new booking-offices and waiting-rooms now in progress, Messrs. Bangs & Co. are the contractors.

PROGRESS OF THE MERSEY TUNNEL RAILWAY.

At the half-yearly meeting of the shareholders in the Mersey Railway, which has just been held at the Westminster Palace Hotel, the chairman (the Right Hon. Cecil Raikes, M.P.), made some very encouraging statements as to the progress which was being made with the works. He said that the drainage heading of the tunnel had, since August, been advanced 726 yards, taking both ends of it. He added that the heading was a circular one, and 7 ft. in diameter. The amount of it which was under the river on both sides was equal to 200 yards, as against 11 yards in August last. He further stated that the main tunnel, which was 26 ft. wide, and 21 ft. high, had also made very considerable progress both at the Liverpool and at the Birkenhead ends. At Liverpool 498 yards had been effected, and at Birkenhead 574 yards, making together 1,072 yards. This, he observed included the underground stations, which were each of them 400 ft. long, 51 ft. wide, and 32 ft. high. Although, of course, the main tunnel had not made quite the same progress between the shafts that the drainage heading had, it was only about 100 yards behind it, and that whereas the drainage heading had now been made between the shafts for 726 yards, out of the total of 1,769 yards, the main tunnel had progressed within those limits, to the amount of about 620 yards, and was well under the river at both ends. Respecting operations he remarked that arrangements had been made by the contractors with Colonel Beaumont for the use of his machinery, which was expected to be at work at the Birkenhead end about the commencement of April, and Colonel Beaumont was satisfied, from the result of recent trials which he had made on the spot upon the rock through which he would have to bore, that he would be able to complete 40 or 50 yards weekly, and should he be successful in carrying out this expectation they might anticipate that in little more than six months he would have effected a junction between the drainage-heading on the Birkenhead and that on the Liverpool side, and that there would be by that time a passage under the river. It was further stated that the tunnel and the drainage-heading were both being lined with brickwork, 2 ft. 3 in. in thickness, laid in cement. The chairman concluded by expressing his confident belief, founded on the opinion of Messrs. Brunlees & Fox, the engineers, that the railway will be completed and opened about the middle of next year.

A junction with the Great Western Railway at Birkenhead will give that company direct access to Liverpool, whilst similar junctions on the Liverpool side will place the Midland, Great Northern, and Lancashire and Yorkshire companies in communication with Birkenhead.

Sydney.—A technological, industrial, and sanitary museum is being formed in Sydney, the management of it being in the hands of an influential committee. Fresh premises since the fire have now been secured, and active efforts are being made to form an entirely new museum. This museum is intended to occupy a similar position and fulfil the same purpose in this colony which the South Kensington Museum, the Bethnal Green Museum, the Museum of Practical Geology, the Patent Office Museum, and the Parkes Museum of Hygiene do in London. To this end it is intended to collect together typical collections of all materials of economic value belonging to the animal, vegetable, and mineral kingdoms, from the raw material through the various stages of manufacture, to the final product or finished article ready for use.

PRUSSIAN CHURCH-BUILDING STATISTICS.

A RETURN lately issued at Berlin gives the following details relating to public edifices built in several parts of the country during the ten years 1871—1880 :—

	Churches.	Cost
East Prussia	8	£28,500
West Prussia	9	33,600
Brandenburg	33	101,500
Pomerania	15	32,800
Posen	5	8,600
Silesia	4	14,600
Prussian Saxony	16	40,600
Hanover	1	4,400
Westphalia	3	10,300
Rhineland	2	11,800
Total	95	£286,700

The above figures indicate the cost of building, but do not include the acquisition of the sites nor any special incidental expenses. It is also remarked that this list only embraces churches which have been erected by the State, and that restorations and rebuildings, as well as structures costing less than 500*l.*, have been omitted, as their being included would not be of any distinct statistical value. An analysis of the other details furnished indicates a somewhat extensive divergence of the cost per sitting,—this figure varying from 2*l.* 10s. to 15*l.* Plans of the various churches are also published as a part of this comprehensive report, the scale being 1 to 1,000. It is proposed to issue similar returns as to hospitals, schools, Government buildings, &c.

THE GROSVENOR BRIDGE, TUNBRIDGE WELLS.

THIS bridge, opened on the 7th inst. by Mrs. J. Stone Wigg, wife of the Chairman of the Tunbridge Wells Improvement Commissioners, commences at the northern end of Quarry-road, at a junction with St. James's-road, and extends over the South-Eastern Railway to Upper Grosvenor-road to a junction with Dunstan-road. It has been carried out from the plans and under the superintendence of Mr. W. Brentnall, engineer.

The work was let in two contracts,—Mr. Henry Potter, of London, being the contractor for the brickwork, roadway, and paths; and the Tank and Boiler Company, Wolverhampton, the contractors for the ironwork. The work was commenced on January 5th, 1881. The total length of the bridge, including the approaches, is 195 yards, and the width between the parapet-walls is 34 ft. The footpaths, which are laid with tar pavement and lined with iron kerb, are 8 ft. wide; and the carriage-way, which is made of native gravel and Sevenoaks stone, is 18 ft. wide; and the carriage-way over the girders is laid with creosoted red wood blocks with mastic joints resting on cement concrete. The parapet-walls are built with red bricks, with Bramley Fall stone coping, and the abutments and piers are built with red bricks, with Staffordshire blue brick facings and Bramley Fall stone pier caps. At each of the approaches there are three arches of 12 ft. span, extending the whole width of the roadway, which are intended to be let as store-rooms. A good roadway has been made to the entrance of the arches at the southern approach, which are also within easy access of the South-Eastern Railway Company's sidings.

The bridge is divided into three spans of 50 ft., 98 ft., and 78 ft. respectively, and the ironwork is supported on abutments and two piers, 6 ft. thick, the whole width of the roadway. The piers have a good concrete foundation, the depth of concrete at No. 1 pier being 10 ft. 6 in., and at pier No. 2 18 ft. 6 in. The greatest depth from the railway metals to the foundation is 25 ft., and the greatest depth from the centre of the carriage-way on the bridge to the foundation is 43 ft. 6 in., the clear height between the railway metals and the under-side of the girders being 16 ft. 10 in. The length of ironwork is 81½ yards, and consists of two continuous box-girders, 8 ft. high, with flanges 2 ft. wide. At the abutments and pier No. 1 the girders rest on rollers, to allow for contraction and expansion. The girder over the 98 ft. span has a camber of 3 in., and the other girders have a camber in the same proportion. There are also fifty-two cross girders 34 ft. long each, being hung to the main girders with sixteen 1-in. bolts. To the cross girders are riveted buckled plates, having a layer of cement concrete for the reception of the red wood blocks. The whole of the ironwork will be painted with four coats of the Torbay anti-corrosive paint.

BUILDING PATENT RECORD.*

APPLICATIONS FOR LETTERS PATENT.

1,265. T. C. Olney, Manchester. Hot-water apparatus for heating buildings. March 9, 1883.

1,268. R. Corner, Dresden. Adjustable window flower-stands. March 9, 1883.

1,271. C. K. Lawton, Manchester. Sanitary closets. March 9, 1883.

1,282. G. E. Mincard and T. Crapper, London. Ventilating house-drains and warming houses. March 10, 1883.

1,302. R. Whiston, Wolverhampton. Fastenings for doors, windows, and shutters. March 12, 1883.

1,317. J. Harsant, London. Apparatus connected with the handle of a closet for preventing waste of water. March 13, 1883.

1,337. T. J. Saunders and H. W. Allan, Glasgow. Baths, &c. March 13, 1883.

1,363. J. Imray, London. Compound applicable in cement or bricks, tiles, slabs, &c. (Com. by E. Pick, Paris.) March 14, 1883.

1,372. J. E. Rendle and F. B. Rendle, London. Glazed structures for horticultural and other purposes. March 14, 1883.

1,406. W. Jones, Bangor. Flushing apparatus. March 16, 1883.

1,426. G. Gore, Balsall Heath. Domestic stoves, &c. March 17, 1883.

1,451. J. H. Johnson, London. Manufacture of Portland cement. (Com. by E. J. de Smedt, Washington, and R. W. Lesley, Philadelphia, U.S.A.) March 20, 1883.

1,457. E. H. Harris, London. Portable or removable conservatories, greenhouses, &c. March 20, 1883.

1,488. A. M. Clark, London. Construction of stable drains and floors. (Com. by P. A. H. Basserie, Le Mans, France.) March 21, 1883.

1,489. G. F. Deacon, Liverpool. Detection of waste of water from water-mains, &c. March 21, 1883.

1,502. W. P. Buchan, Glasgow. Ventilating, &c. March 22, 1883.

1,505. F. L. Jeyes, London. Fan or ventilator. March 22, 1883.

1,506. E. Verity and J. M. Verity, Leeds. Holding in position swing windows, ventilators, &c. March 22, 1883.

1,513. R. M. Ordish, London. Pavements, &c. March 22, 1883.

1,514. W. Whittle, Whitehaven. Warming "explosive stores" and other buildings. March 22, 1883.

NOTICES TO PROCEED

have been given by the following applicants on the dates named :—

March 13, 1883.

5,760. J. H. Johnson, London. Bricks and blocks for building purposes. (Com. by J. Darrigan, Vagnotte, France.) December 2, 1882.

March 16, 1883.

5,435. C. R. Stevens, Lewisham. Apparatus for heating and ventilating, &c. November 14, 1882.

March 20, 1883.

5,581. E. Hughes, Liverpool. Wood block and other pavements, &c. November 23, 1882.

March 23, 1883.

5,508. L. A. Grotte, London. Producing architectural ornaments, wall and ceiling decorations, &c., from wood and other pulp. (Com. by C. G. Mineur, Stockholm.) November 20, 1882.

712. G. Ermen, Holcombe. Fireplaces, stoves, or grates. February 9, 1883.

ABRIDGMENTS OF SPECIFICATIONS.

Published during the Week ending March 10, 1883.

3,486. J. Leather, Liverpool. Ventilating appliances. July 22, 1882. Price 6d.

These consist of a box fitted outside the wall or window, &c., with apertures to allow the air to pass through into the room, which apertures are fitted with movable doors, actuated from inside.

3,511. W. Wright, Plymouth. Flush-cisterns, &c. July 24, 1882. Price 6d.

The float is used to shut off the supply of water, as in a ball-valve, and the same float can be pulled down into the water, to start the syphonic action which empties the cistern.

3,554. J. L. Thomson, Worcester. Ventilators. July 26, 1882. Price 2d.

This is a corbel, fitted internally with a number of air passages, having an upward inclination, and radiating from the interior to the exterior. (*Pro. Pro.*)

3,573. A. L. Liberty, London. Ornamental windows and other translucent objects. July 27, 1882. Price 2d.

The reticulated lattice-frame, of any ornamental character has V-shaped grooves in its salient angles, in which the pieces of glass are held. (*Pro. Pro.*)

3,702. L. Roth, Wetzlar, Germany. Manufacture of cement. Aug. 3, 1882. Price 4d.

This cement is made by grinding and burning a mixture of Bauxite quartz, hydrated silicic acid, blast-furnace slag and lime.

4,679. J. D. Lampard and F. Croppen, London. Hack cap or cover for protecting bricks from rain. Oct. 2, 1882. Price 6d.

The two parts of the cover are hinged together and kept in position by hinged stays, over the middle joint of which is a telescopic slide, to keep the stay extended.

Published during the week ending March 24, 1883.

3,416. T. J. Baker, Newark. Chimney-tops or ventilators. July 18, 1882. Price 6d.

These are formed of tapering deflecting plates, having openings between their edges, to create the draught.

3,565. H. Morris, Manchester. Apparatus for adjusting ventilators. July 27, 1882. Price 6d.

This consists of a tube, containing oil or glycerine, &c., at one end of which is a plunger. As the oil or glycerine expands under the influence of heat, the plunger is lifted and through levers and rods opens the ventilator.

3,613. A. C. Henderson, London. Stoves for heating by a combination of hot air and water. (Com. by Besson & Co., Paris.) July 31, 1882. Price 6d.

In the lower part of a cylindrical case is the fireplace, to which the coal is fed from the top. Round this feeding-flue are other flues, for air, which are surrounded by water. The water is heated by the fire, and the air passing through the flues is heated by the water.

3,688. W. Thomson, Shaw. Door-knobs. Aug. 2, 1882. Price 6d.

The knob is passed over the spindle, and a cavity is made in the knob, in which a nut screws on the end of the spindle. This cavity is afterwards closed.

3,719. W. H. Avis, Polegate. Folding seats for counter, desk, &c. Aug. 4, 1882. Price 6d.

The seat is fixed on a bracket pivoted against the counter, &c., and supported by a bar secured to the under side of the seat, the lower end of which travels in a guide-plate fixed on the side of the counter, &c., below the bracket.

3,737. B. J. Mill, London. Ceramic composition. (Com. by F. Gillet, Paris.) Aug. 5, 1882. Price 4d.

This is composed of lava and scoriæ, pulverised with fluxes and clays.

3,741. A. Bonquié, Paris. Manufacture of bricks, tiles, pavings, &c. Aug. 5, 1882. Price 4d.

These are made of sand and tar or pitch, boiled into a plastic mass, when they are moulded, and then dipped into a bath of water, saturated with sulphate of iron mixed with red or yellow ochre.

3,796. W. J. Hinde, London. Apparatus for supporting and fixing swing looking-glasses, fanlights, &c. Aug. 9, 1882. Price 6d.

The axis on which the glass turns has a disc-like head, with the central portion cut away, to form a rim round the same. In the standard is a pin, with a strong bow-spring behind it, which engages slots in the rim, and secures the glass, &c, in the desired position.

COUNTRY HOUSES.

WE understand that the drains at Wynnstay, the well-known seat of Sir Watkin Wynne, are to be thoroughly overhauled. There seems reason to suppose that the attack of diphtheria to which Miss Necta Williams Wynne, Sir Watkin's youngest daughter, recently fell a victim, was the result of a bad sanitary condition of the house, and that Sir Watkin's own serious and prostrate illness during the winter was partly, at any rate, due to the same cause. This seems to be another instance of the truth of our recent remarks on the sanitary condition of country houses, which we believe, as a rule, to be thoroughly bad. Wynnstay is a comparatively new house, having been erected after the fire in 1858, which destroyed the old mansion.

Royal Society.—The annual *conversazione* will be held on Wednesday, April 25th. On the 4th prox. the President will hold an informal reception, at which presentations may be made by Fellows.

* Compiled by Hart & Co., Patent Agents, 186, Fleet-street.

ARCHITECTS' ASSISTANTS AS CLERKS OF WORKS.

SIR,—One or two of your recent correspondents seem hardly to view in its true light the question of the employment of architects' assistants as clerks of works. There is no doubt of the necessity for fully-qualified and experienced clerks of works upon large and important buildings. There is no doubt either of the value to an architect of a practical experience upon works in progress. What I maintain, and also stated at the Architectural Association, amounts to this, that an energetic architect's assistant (or even a pupil) may make a very good clerk of works. This statement applies to works of medium size, and presupposes a fair amount of supervision by the architect.

I have seen cases where this course has been adopted with good results; everything, however, depends in this case, as in all others, upon the kind of man selected for the post. No one would think of appointing a manifestly helpless and ignorant novice. I by no means wish to suggest that the distinct calling of a clerk of works should no longer exist.

ARTHUR J. GALE.

THE DECORATION OF THE DOME OF ST. PAUL'S.

SIR,—Mr. Samuel Huggins, if he will turn to my letter in the *Builder* of the 17th inst., and keep close to facts instead of indulging in fancy, will find that that letter was not specially written to rebut his fallacies regarding the above subject, but also those of other correspondents; neither his name nor his initials were referred to. I believe, however, that one of his great points was the insistance on the preservation of the hemisphericity of the dome "intact," "unbroken." But I showed in my previous letter that neither the Roman architect nor Wren considered this to be a principle that should be rigorously observed in designing this architectural feature, as is demonstrated by their admission of openings in the domes of the Pantheon and of St. Paul's. Moreover, I pointed out that deep panelling was, in the first instance, projected, even if it were not carried out, by Wren, similar to that adopted in the dome of the Pantheon, in order to break up the smooth monotony of an intact and unbroken hemisphericity. Mr. Huggins was also opposed to the division of the dome into eight compartments by pilasters or ribs, when there is proof positive, both in the original design as well as in Thornhill's decoration, that Wren approved of this arrangement. The Roman architect, too, admitted "stiles" or ribs into the dome of the Pantheon. Mr. Huggins cannot adduce a single substantiated fact to support his assertion that Wren disapproved of those eight dividing ribs. Neither does your correspondent's poetical figure of speech, "vault of heaven," assist him one iota, for that vault is intangible, and is without known limitation: it is mere darkness visible; secondly, it is "patined" with stars at very varying distances; thirdly, its girdle or springing limits of the world is very irregular; and fourthly, and finally it is ribbed with rays of light, and with clouds, so that neither nature nor art concedes the principle of an unbroken and even hemisphericity as an element of design.

A PAINTER.

*** The correspondence must end here, at least for the present.

THE DECORATIVE ARTS.

SIR,—In an article under the title of "The Twin Arts," in the *Builder* of March 24th, I was surprised to find that the old English fallacy about "Decoration" being of lesser stature than Painting, Sculpture, and Architecture is not even "scotched," much less killed. Why, the two principal of the triad, nay! we might say the triad of arts, are, when at their best, decorative arts. It is most extraordinary that this fallacy should be so frequently reiterated in the face of such facts as the following:—1. That the Phidian sculptures of the Parthenon were decorative works, and the better part of the Parthenon,—that the architecture of the Parthenon was designed expressly as a "setting" for those magnificent works,—that Phidias had all the tektones, even the architektone, placed under his control. 2. That the famous frescos of Michelangelo are decorative works—are the chief glories of the Sistine. 3. That the frescos by Raffaelle in the Vatican,—the "Miracle of Bolsena," the "School of Athens," the "Dispute of the Sacrament," &c.,—are decorative works, and the chief ornaments of the Vatican. Here, then, we have enumerated the three greatest glories of ancient and Mediæval art. Are these, forsooth, to be included in that decorative art which the writer of the article referred to is pleased to call the art of "lesser stature"?

What is the use of lectures on the history of art when we find the fact ignored that painting and sculpture were at their highest when they were decorative arts? Isolated pictures on panel and on canvas were the exception during the great period of Italian art. Easel pictures increased in number with the "Decadence," which was really the decadence of mural painting, and gradually became the rule in Holland, Spain, France, and England.

The modern exhibition of pictures is of comparatively recent growth; it represents the fine arts destitute of any grand, collective, purpose.

It is the modern architect who has degraded decoration to the level of a "lesser art." He has desired to have something subordinate, and under his control: hence the propaganda of a flat treatment of figure subjects; he will persist, in fact, in having something in the way of painting which is imperfect in treatment; he would have his artists degraded to the rank of stencillers. Hence it is that the painter and the sculptor proper are excluded from their grand field of display.

As for the word "plastic," that has been used for years on the Continent as a general term for the formative arts.

METER.

THE SMOKE ABATEMENT COMMITTEE'S EXPERIMENTS.

SIR,—Kindly permit me to add a few words supplementary to the letter from Mr. Coles, the Honorary Secretary to the Committee, which appeared in your issue of last week.

Mr. Frederick Edwards is in error on a few points of detail. The test-houses at South Kensington were thoroughly repaired and reconstructed for the purposes of the tests conducted by me for the Smoke Abatement Committee. They are constructed entirely of concrete, excepting the roof, which is of wood, and there is not a single brick in the whole structure. The chimneys or flues are round, $8\frac{3}{4}$ in. in diameter, and are surmounted by a few feet of 6-in. zinc pipe, and Mr. Edwards does not attempt to produce an atom of proof in support of his assertion that they were too small for properly testing coal-burning grates; except by implication when he states that "all ordinary chimneys measure 14 in. by 9 in." When one reflects that a brick measures 9 in. long, and a brick and a half 14 in. long, it is easy to see that these dimensions are convenient for flues constructed in brickwork; and, whilst they make it possible for a human being to pass through them, they no doubt compensate in a manner for tortuosities of flues in house-walls; although when such flues are lined with $\frac{1}{2}$ in. of cement, their dimensions are reduced to 13 in. by 8 in. But there are many instances of round house-flues 9 in. in diameter. Such things as dimensions of this kind are matter of routine; and Mr. Edwards must be aware that the throats of chimneys and the vents of grates are frequently contracted to have an area much less than the section of an $8\frac{3}{4}$-in. round chimney. The chimneys at South Kensington were, it is true, contracted at the upper part to a diameter of 6 in. But he knows, I suppose, that ordinary chimneys are often contracted in the same way, at the top, by pots, cans, or pipes; and it is a mark of disingenuousness on his part to have ignored the practice of contracting the flue thoroughfare at the top as well as at the bottom.

As a matter of fact, the draught at South Kensington was good at all times, even during the stormiest weather last year. As another matter of fact, corroborated by the results of the tests, the draught in the rooms employed for testing grates at the Manchester Smoke Abatement Exhibition, where the comparatively tortuous chimneys were 14 in. wide by 14 in. in section, was not a bit better than the draught at South Kensington, with the $8\frac{3}{4}$-in. straight chimney. By reference to the official report, it will be seen that, in the grates which happened to have been tested both at South Kensington and at Manchester, the fuel was consumed practically at the same rates per hour. Taking averages, indeed, it was consumed rather more freely at South Kensington than at Manchester. It can be proved in another way that the draughts were equally good. The grates that were tested at both places had an average velocity of upward draught at the rate of 411 ft. per minute, at South Kensington, in the $8\frac{3}{4}$-in. straight chimney; but at Manchester the average upward velocity, in the 14-in. tortuous chimney, was only 130 ft. per minute. These velocities of draught, singular to say, are almost precisely in the inverse ratio of the sectional areas of the chimneys, which are 60 square inches and 196 square inches respectively; and the volumes of draught per minute are resnectively:—

$8\frac{3}{4}$-in. chimney $(60 \div 144 \times 411 =)$ 171 cubic feet per minute.

14-in. chimney $(196 \div 144 \times 130 =)$ 177 cubic feet per minute.

Here it is seen that volumes of draught are very nearly equal. The volume is a trifle the less,—about 3 per cent.,—in the $8\frac{3}{4}$-in. chimney, and this is accounted for by the fact that the average temperature in the smaller chimney was 210°, against 223° in the larger chimney.

I have thus demonstrated that there is not a pin to choose between the smaller and the larger chimney, for the purpose of the tests; and I am of opinion that my ounce of fact outweighs Mr. Edwards's pound of rhodomontade. His baseless insinuations with respect to individual members of the Smoke Abatement Committee needed only to be uttered to be repudiated. I may remind your readers that he, as an exhibitor, did not receive any award from the Committee.

D. K. CLARK, M.Inst.C.E.
Testing Engineer to the Smoke Abatement Committee.

THE STREET MEMORIAL.

SIR,—May I appeal to all who love and honour Street's memory to help towards completing his monument, by Mr. Armstead, in the Great Hall of the Courts of Justice? The complete design includes a statue, with an appropriate and symbolical pedestal. But for the latter our means are still deficient. At the recent Committee meeting, however, we resolved, on the motion of the Prince of Wales, not to acquiesce in a half success, but to make a vigorous push to fulfil our work in its completeness by raising the still needful 600*l*. Our friends' contributions should be sent to the treasurer, A. Waterhouse, esq., 20, New Cavendish-street, W.

A. J. B. BERESFORD HOPE.

THE DURABILITY OF WOOD IN BUILDINGS.

HERR WEISE, Forest-inspector at Eberswalde (Germany), has recently published a summary of his observations bearing on the above subject. He considers that the system now usual for the supply of wood is in some measure to blame for the complaints which are from time to time made by experienced authorities, as to the reduced durability of modern wood-work. He remarks that in the Middle Ages the whole of the wood for any large building was carefully selected from one spot, and after being felled was stored and dried together, a certain homogeneousness in the woodwork being thus obtained. Nowadays wood is used just as it is delivered by the dealer, coming from various districts and having been felled at different seasons; these circumstances causing a more or less marked divergence in quality. He remarks that the first tendency towards decomposition shows the disadvantage of using various qualities of wood together, and calls attention to the fact that microscopic observation of the approach of decomposition is not by any means as much used as it might be. He considers that the development of agriculture and the neglect of the judicious extension of forests, have exercised an unfavourable influence upon the quality of wood in modern times. In illustration of this assertion he cites the fact that trees yielding 35-inch planks (such as are to be found in the castle of Fuessen) can only be exceptionally found even in forests under Government control.

Yarmouth.—The new municipal buildings here are said to be still in a state of subsidence. We understood that remedial measures had been adopted some little time ago.

PATENT TIP VAN FOR VESTRIES.

A DESIDERATUM with surveyors and contractors is a good tip-wagon, which will combine strength with lightness, give a good tip, so as to shoot the stickiest and heaviest mud without hesitation, and generally be handy to work, and not liable to derangement. Many makers have endeavoured to supply this want with more or less success, and amongst them, Messrs. Glover & Sons, of the Eagle Works, Warwick. Their tip-van having been a decided success, this firm have now made a tipping-cart upon the same principle. One of this firm's tip-wagons and a tip-cart were tested last week in the yard of the St. George's (Hanover-square) Committee of Works, Pimlico-road, in the presence of Mr. Livingstone, surveyor to the Committee. The wagon was loaded with ordinary street sweepings, backed to the shoot, and then tipped. In this wagon the tip is gradual, the body being lifted by means of a rack with gearing fitted in the centre, which is put in motion by a winch handle. The action is steady throughout the tip, and there is no jolting motion when the body has passed the vertical, as is to be found in the ordinary chain-gear wagons, a matter of some considerable importance, since it necessarily adds to the life of the wagon. The gearing of Messrs. Glover's wagon is placed well out of the way of dirt, and the more fully to ensure this, the body is boarded lengthwise, the joints being made to come exactly over the timbers of the framework, so that no dirt can get through.

The tip-cart (which is acceptable for road-making or patching) is so arranged that the man in charge of the horse can regulate the tip with ease. Mr. Glover showed how this could be done with a load of stones, the amount of each tip being easily regulated from the front of the cart. Altogether the trials were considered successful by those present. Messrs. Glover's wagon has been adopted by several London Vestries and Boards of Works.

NEW BUILDINGS ON THE SITE OF ST. DIONIS BACKCHURCH.

A FEW years since the ancient ecclesiastical edifice at the corner of Fenchurch-street and Lime-street, known as the Church of St. Dionis Backchurch, was taken down, and the site afterwards sold for 46,000*l*. Upon this site a costly pile of buildings for commercial purposes has for some time past been in course of erection, in Portland stone, and is now almost completed. The principal frontage of the building, which is of a decorative character, is that in Lime-street. The ground-floor of this elevation contains four shops with a mezzanine floor immediately above. The shops are divided by polished grey granite pilasters, resting on red Aberdeen granite bases. The central entrance to the offices in the upper portions of the building is a specially prominent and striking feature in the structure. On each side of the entrance there are double fluted grey granite pilasters on red Aberdeen granite bases, and having capitals in bronze, continued to the top of the mezzanine-floor windows. These pilasters face massive Portland stone piers, which support a carved entablature and pediment. These again are surmounted by a massive overhanging cornice resting on cantilevers, and above this is a balcony, enclosed by balustrade shafts, with vases at each angle. The entire height of the entrance, which is carried up to the floor above the mezzanine, is 24 ft. above the ground-line. Over the balcony the central portion of the elevation is continued by double pilasters and capitals, which are again surmounted by an arched pediment, ornamented by a profusion of carving and foliage. On each side of this pediment are the two three-light windows of the first floor, divided by covered shafts and capitals. Up to the top of the first floor the frontage is 74 ft. in length, but on arriving at the second story the frontage is narrowed to 39 ft. in length, being set back on each side to a depth of 9 ft., with a lead flat, inclosed by ornamental iron railing with bases at each angle. The arrangement of the foliage was rendered necessary in order not to inferfere with some ancient lights in the buildings immediately opposite. The third floor consists of pediment dormers in a mansard roof, and the elevation is finally surmounted by a richly-carved tympanum above the central entrance. The framework of the windows and entrances to the shops, and also the windows of the mezzanine floor, are in richly-carved oak. The Fenchurch-street frontage, overlooking the old churchyard, which is to be retained as an open area, is 64 ft. in length. It is generally uniform with the Lime-street elevation, although somewhat plainer in character. At present, however, it is to a considerable extent obscured by some unsightly one-story shanties immediately fronting Fenchurch-street. The west end portion of the ground-floor of this frontage contains a range of four windows and an entrance, approached from Fenchurch-street. This entrance leads into a spacious apartment on the ground-floor, 65 ft. in length and 32 ft. in width, which is intended to be occupied by Messrs. Huntley & Palmer, the well-known biscuit manufacturers, of Reading. It is about 20 ft. in height, and has a massive coved cornice, with a ceiling specially designed by the architect. This ceiling, which is of diaper work, has been executed by Messrs. Hitchens & Co., under their patent system of fibrous plaster. The apartment is being fitted in oak wainscoting. The construction of the basement formed a difficult portion of the work. In order to get good foundations it was necessary to go to a depth of 27 ft. below the street line. From the basement floor to the ceiling it is 16 ft. in depth. It consists of one large apartment, covering the entire ground area of the building, the walls being faced with white glazed brick, in view of its being ultimately occupied as a restaurant. The ground and first floors of the building are fire-proof, constructed by Messrs. Dennett & Ingle with their fire-proof materials.

Mr. Collins, of Old Broad-street, is the architect, and Messrs. Merritt & Ashby are the contractors. Mr. J. Robinson is clerk of the works. The carving and sculpture have been executed by Mr. Sansom, of Kennington. The cost of the building will be about 40,000*l*., which, with the purchase of the site, amounts to a total cost of 86,000*l*.

COMPENSATION CASES.

ARNOLD AND MORRIS *v.* THE METROPOLITAN AND DISTRICT RAILWAY COMPANIES.

THIS was a case which occupied two days in the Lord Mayor's Court, before the Recorder and a special jury.

The claimants are the occupiers of a portion of the premises 42 and 43, Mark-lane, and 68 and 69, Great Tower-street, a commanding building at the corner of those streets, where they carry on the business of stationers, bookbinders, and printers, holding under a lease for a term of twenty-one years from Michaelmas, 1879, at a rent of 1,100*l*. a year, the landlord paying rates and taxes. The claim for the leasehold interest, trade disturbance, fixtures, removal of stock, &c., was 18,000*l*.

Sir Hardinge Giffard, Q.C., M.P., and Mr. Channell appeared for the claimants; and Mr. Bidder, Q.C., and Mr. Sutton for the railway companies.

The jury having inspected the premises in question, and also some new premises taken by the claimants,

Sir Hardinge Giffard opened the case. He said that the jury having viewed the premises taken from the claimants and those to which they were going, it removed the matter of speculation as to whether new premises could be obtained. The great distinction between the two sets of premises was in the area and the amount of light. A brilliant light was a most essential thing for the proper carrying on of the claimants' business. The old premises were particularly well lighted, having a large frontage, whereas the new premises were not nearly so well lighted, and the frontage was much smaller. The difference was as 90 is to 30. The claimants were removing from the very centre of their business to a position away from their customers. With regard to the leasehold value there were 16¾ years to run.

Mr. W. J. Morris, one of the claimants, having given evidence.

Mr. W. H. Hardy, chartered accountant, said he had examined the claimants' books, and he found the net annual profit to be 5,284*l*. The net profits for 1881 were 7,286*l*. before deducting interest on capital, which would made them about 6,000*l*.

Mr. R. Ellis, surveyor (Messrs. Ellis & Sons), Fenchurch-street, took the letting value of the premises in question at 1,350*l*. a year, which, deducting the head rent of 1,100*l*., left a profit rental of 250*l*., and that he capitalised at ten and one-third years' purchase, giving the value of the sixteen and three-quarter years unexpired at 2,583*l*.; from that he deducted 500*l*. for necessary alterations in order to obtain the increased rental, leaving 2,083*l*., to which he added 10 per cent. for forced sale, 208*l*., bringing the total to 2,291*l*.

Mr. T. Chatfeild Clarke, architect and surveyor, Bishopsgate-street, took the letting value of the premises at 1,400*l*. a year; deducting from that the amount of the head rent, left an improved rent of 300*l*.; which, capitalised at ten and a quarter years' purchase, made 3,075*l*.; but from that he deducted 500*l*. for cost of necessary alterations, leaving 2,575*l*. to which he added the usual 10 per cent. for forced sale, 257*l*., making a total of 2,832*l*. for the valuation of the claimants' interest in the premises.

Several other witnesses were called for the claimants.

For the company, Mr. Edmund Farmer (Debenham, Tewson, Farmer, & Bridgewater), Cheapside, estimated the full letting value of the premises occupied by the claimants at 1,105*l*. a year. He had made no valuation as to the amount of compensation to which the claimants were entitled.

Mr. G. Trist (Norton, Trist, & Watney) estimated the full rental value of the premises at 1,100*l*. a year. That was the sum he estimated them at in 1879, when the claimants applied for a renewal of their lease. He had not been asked what compensation the claimants were entitled to.

Mr. P. St. Quintin agreed with the last witness as to the rental value.

Mr. Robert Ritchie, surveyor to the railway company, said he was the purchaser for the company in all the cases connected with the extension of their line. He had bought the freehold of the whole of these premises, being more than what the claimants occupied, for 37,400*l*. That was based upon the actual net rentals of 1,700*l*. taken at twenty years' purchase.

The jury awarded the sum of 5,456*l*. 14*s*.

RIGHT OF BUILDING TO SUPPORT FROM ADJACENT LAND.

FIELD AND CO. *v.* JONES AND WILLIS.

IN the Chancery Division of the High Court of Justice on the 16th inst., a motion was made *ex parte* on behalf of the plaintiffs, before Mr. Justice Kay, to restrain the defendants from excavating from a piece of land on the east side of the plaintiffs' warehouse, Edmund-street, Birmingham.

Mr. Robinson, Q.C., said he made the motion *ex parte* under the following circumstances:—The plaintiffs were Messrs. Field & Co., of Birmingham, and the defendants Messrs. Jones & Willis. The plaintiffs were the lessees of a piece of land facing Edmund-street, Birmingham, upon which they had erected a large warehouse, 65 ft. high and 90 ft. long. Upon the east side of the warehouse was land of which the defendants were the tenants, which was vacant. The defendants had recently commenced excavating their land for the purpose of erecting some kind of a building upon it, and the plaintiffs accordingly saw the defendants on the 6th of March, and told them that what was being done was endangering the safety of their warehouse. The architects on both sides made an examination, and came to the conclusion that something must be done to support the plaintiffs' warehouse. Accordingly the defendants put up props in the usual way against the plaintiffs' warehouse. The plaintiffs made an examination on the 15th inst., when they found that between the 6th and 15th of March the defendants had excavated earth to a depth of 14 ft. or 15 ft. all over the vacant piece of land, and had also dug a trench 3 ft. deep at one end for the purpose of making the foundations, making the excavation 17 ft. deep in parts. The props which had been put up were not sufficient to support the plaintiffs' warehouse, and therefore the plaintiffs now came and asked for an injunction restraining the defendants and their servants and agents from excavating or removing any more soil.

Mr. Justice Kay.—Has your warehouse stood for more than twenty years?

Mr. Robinson, Q.C., said it had not. Both the plaintiffs and defendants held under the same landlord, and the title of the plaintiffs was earlier than the title of the defendants.

Mr. Justice Kay.—Then you say it is a derogation of the grant to you?

Mr. Robinson, Q.C., said that would be the plaintiffs' contention. In the eleventh paragraph of the affidavit he had stated that, having regard to the character of the plaintiffs' building and the height of the wall, which exceeded 65 ft., and having regard to the depth of the excavations already made by the defendants, it was of vital importance that further precautions should be taken to ensure the safety of the warehouse and the protection of life?

Mr. Justice Kay.—Who makes the affidavit?

Mr. Robinson, Q.C.—Mr. James Narrington, architect and surveyor, of Birmingham.

Mr. Justice Kay.—I suppose he means to say that any further excavations would endanger life, but he does not say so in explicit terms.

Mr. Robinson said that was so.

Mr. Justice Kay granted an interim injunction.

Ventilation.—Messrs. Robert Boyle & Son are at present applying their system of ventilation to Westminster School and Ashburnham House, Westminster; Boys' Home, Regent's Park; new public Offices, Kimberley, Cape Colony; new Somerset Hospital, Cape Town; Wesleyan Garrison Chapel School, Malta; and "Fairhill," Tonbridge, Kent, seat of the Earl of Derby.

"A DOCTOR'S HOUSE, BEDFORD PARK."

SIR,—Our attention having been attracted by the correspondence in your journal under the above heading, in which reference is made to our system of warming and ventilating, we desire, in justice to ourselves, to make a few observations on the subject in question. The leading features of the apparatus erected at Dr. Hogg's residence are clearly identical with those appertaining to our own apparatus, which produces a constant influx of fresh air from the exterior of the building, warmed to an appreciable degree by contact with heating surfaces fixed in a warm air-chamber, and a concurrent abstraction of the vitiated air from the rooms to be operated upon. This combined system of warming and ventilation was devised by our predecessor, Mr. H. C. Price, in the year 1829, more than half a century ago, consequently it cannot be considered a novel introduction, as would appear from the description given in your journal of the 3rd February last; and thus the remarks considerately made by "Architectus" were quite compatible with the circumstances of the case, and not so unjust and unfounded as Mr. May imputes in his letter published in your last issue. Mr. May apparently challenges proof of where our system has been adopted. We may therefore mention that twenty of our apparatus are in operation at Windsor Castle and twelve at Board Schools in London, and many hundreds have been applied to various other important mansions and public buildings throughout the kingdom.

H. C. PRICE, LEA, & CO.

CHURCH-BUILDING NEWS.

Newport (Shropshire).—At a meeting of parishioners held last autumn a committee was appointed to raise subscriptions for the restoration of the parish church, and to obtain the services of a competent architect to advise as to a general scheme of restoration and the probable cost. The committee have engaged Mr. Norton, of London, who has thoroughly investigated the fabric, and the probable cost of the restoration, according to his report, will amount to 3,710*l.* The committee having perused and considered the report and plans, recommend that the structural work be done at once, but decided that certain ornamental work and the removal of the plaster panels and roofs of the aisles should be postponed. The cost of the work proposed to be done now will amount to 2,000*l.* The committee's report was adopted.

Kew.—At the Consistorial Court of Rochester, held on the 24th ult. in the vestry of the parish church of Greenwich, the Chancellor (Dr. Robertson) had before him an application by the vicar and churchwardens of Kew. It is proposed to pull down the Mausoleum, which contains, amongst others, the body of his Royal Highness the Duke of Cambridge, and to re-erect it more to the eastward, to add to the church a chancel and sacrarium, and a north transept and a south porch. Some of the parishioners had opposed the issuing of the faculty, but at the last moment they withdrew their opposition. The estimated cost of the proposed alterations is 5,000*l.* After hearing the arguments, the Chancellor decreed the faculty to issue unconditionally, unless an appeal should be prosecuted within fifteen days. Messrs. Stock are the architects concerned. Some account of the history of the church was recently given in our columns.

Canterbury Diocesan Church Building Society.—At a meeting of the Central Committee of the Canterbury Diocesan Church Building and Endowment Society, held a few days ago at the residence of Earl Sydney, 3, Cleveland-square, St. James's, Earl Sydney in the chair, the following grants were made: 150*l.* towards building a new church at Bromley; 100*l.* towards restoring and enlarging the church of Wateringbury; and 100*l.* towards enlarging the vicarage house at Woodnesborough.

Sproxton.—The Church of St. Bartholomew, Sproxton, has just been thoroughly restored in accordance with the style of the edifice, which is principally Perpendicular, a large portion of it having been rebuilt. The tower, which is a square one and embattled, and terminating at the angles with crocketed pinnacles, has had its roof shored up, and walls taken down and rebuilt to level of bell-floor, iron ties being inserted; a panel stone has been fixed on the south side of the parapet, the whole of the walls thoroughly cleansed and re-pointed, and about 3 ft. 6 in. of its moulded base have been uncovered and exposed to view, adding much to the beauty of the tower. The nave roof (partly new in 1860) has been entirely lined, and the principals strengthened with the moulded ribs springing from the old stone corbels, which originally carried a handsome oak roof; and a moulded string-course has been inserted under the clearstory windows. The aisle oak roof has been renewed, and some good carved spandrels and bosses, which were carefully preserved from the former roof, inserted. Part of the aisle was originally a chapel with a squinch, which has been opened and restored, and 4 ft. of the side walls and both end walls have been rebuilt. The chancel arch and jambs are entirely new, except two old carved caps which have been refixed. The chancel roof is entirely new, and consists of two moulded principals springing from carved corbels; the old roof was of a very inferior description. The south wall has been rebuilt, and an organ-chamber arch, a vestry door, and a two-light window inserted. Under the chancel arch a very rich Riga oak screen has been erected, the tracery having been carefully copied from a portion of the original screen found in the church. This work adds much to the beauty of the building. A pair of wrought-iron gates of good design has also been fitted to the same. The reredos consists of an alabaster shelf, the centre panel and angle shafts above are also of alabaster. The pulpit is of bold design in stone, having a semicircular shaft springing from a cluster of columns, the centre panel of the shaft having a raised cross. The font has been refixed on a new platform. The flooring consists of Minton's tiles in the chancel, and the old stone paving refixed in the nave and aisles. The porch has had to be entirely rebuilt and a new roof added. Combe Down Bath stone, from the quarries of Messrs. Pictor & Sons, has been used in the work. Several stone coffins were found during the work of restoration; also remains of dog-tooth arch stones and strings. The whole of the work has been done at the sole expense of the Rev. A. W. Booker, of Croxton Kerrial, the former vicar of the parish, at a cost of about 2,400*l.*, by Mr. Thomas Woolston, contractor, of Recreation-road, Stamford; the architect being Mr. H. Woodyer, of Grafham, Guildford.

Affpuddle.—The restoration of the Parish Church of Affpuddle was carried out under the direction of the late Mr. T. H. Wyatt some eight or nine years ago. Much of the nave was then reseated after the ancient models existing, but this was not entirely effected. Funds have now been raised for placing carved oaken benches in the nave as far as the western tower. The old benches in the edifice are of somewhat unique construction, exceedingly massive, and of quaint design. There is a strong Flemish feeling about the ornamentation upon them. The new seats recently placed in the church, with their elaborately-carved bench-ends, have been made by Mr. Harry Hems, of Exeter.

STAINED GLASS.

Norwell.—An effective window has recently been inserted in the south aisle of Norwell Church (near Newark-on-Trent) by desire of the late Mr. A. C. Dennistoun, of Carlton Hall, who after requesting that the figure of St. John the Evangelist should occupy the central light, he having been born on St. John's Day, left the subjects to the vicar, who made choice of the following, and entrusted the work to Messrs. Lavers, Barraud, & Westlake, of Endell-street, Bloomsbury, London. In the centre is a full-length figure of St. John. Underneath are the figures of St. Peter and John healing the sick man at the Beautiful Gate of the Temple. On the right at the top is St. John in a caldron of boiling oil at the Porta Latina, from which he miraculously escaped unhurt, being afterwards banished by the tyrant to the island of Patmos. The lower compartment on the left represents the beloved disciple on that lonely isle, beholding the heavenly vision of the multitude which no man can number, who are portrayed in the upper portion. The remaining compartment on the right shows the aged Apostle at Ephesus.

Gloucester Cathedral.—Mr. F. S. Waller has just now issued, under the title "Notes and Sketches for Visitors," some cheap guides, with a view to assist visitors on their tour round the cathedral, and that they may take away with them some useful general memoranda of the building. A plan and numerous details are given in artistical style, and all for 1d., any profits arising from their sale being devoted to the Restoration Fund. The name of Waller in connexion with architecture has long been known, if we mistake not, in Gloucester. We can remember that, when a boy, making a tour of the English cathedrals, we were kindly received there and aided in our views by one of that name.

Books.

Amateur Work. Edited by the author of "Every Man his Own Mechanic." Containing designs, sketches, and working drawings, and 500 wood engravings. Ward, Lock, & Co., Salisbury-square, London.

THIS work will be found eminently serviceable to those who are not above soiling their hands in performing various mechanical works as a source of domestic convenience and comfort. It is extraordinary what any one with a practical mind and disposition towards neatness and order can do with a few tools and a proportional supply of screws, nails, and glue. The breaking-up of furniture and other domestic articles, before becoming quite useless, generally commences with a slight want of repair, and the old adage, "A stitch in time," being forgotten or delayed, they soon reach such a state that a professional,—who generally takes more time in moving about than in executing the job,—is unwillingly called in to do that which the amateur could himself have performed at an earlier stage, and agreeably utilised his spare moments. As the liking advanced so would the skill, and from the early repairs,—which may be called the stoppage of destruction,—useful and ornamental work would be taken in hand, and be found productive of pleasure where care was taken in its execution. Besides, in some cases mechanical knowledge may turn out to be a source of a livelihood. As the editor states in his introduction,—"The clerk, the curate, and the struggling professional man and the man of letters, who in many cases are well up in theory, and know why this, that, and the other are and should be done in the ordinary trades, and who can even offer suggestions worth having to mechanics when at work, finding themselves, of late years, falling to the rear, as far as position, political status, and worldly progress are concerned, are beginning to try to help themselves, and to this end are seeking practical instruction in what may be not inaptly expressed as the how, and when, and in what way to do it." The volume before us, which does not complete the work, is such as will supply much practical instruction. It includes among the many illustrations detail drawings to scale and the various tools required. For the more advanced amateur instructive help is given for the making of a small organ, cabinets, bookshelves, chairs, tables, summer-houses and green-houses, bookbinding, &c. Parts are for readers of a more scientific turn of mind, such as electro-plating at home, modelling in clay and plaster of Paris, violin-making, electric-light, photography, and so on. Short histories of the various subjects precede the details.

Woolrych's Metropolitan Building Acts, with Clauses from the Metropolis Management Acts. With Notes and Terms, by W. H. MACNAMARA, Barrister-at-Law, and Registrar to the Railway Commissioners. Third Edition. London: Stevens & Sons. 1882.

THE pressure of matter on our space has hitherto prevented us from giving a notice of the third edition of this well-known work. It is really so well-established a work that it hardly needs any mention at our hands. The most important addition to the present edition is the Metropolis Management and Building Acts Amendment Act, 1882, which contains several important provisions, with which those who are concerned with buildings in the Metropolis have to make themselves acquainted. The most obvious conclusion to be drawn from this book is, however, that the time has arrived when the several Acts which deal with buildings in the metropolis should be consolidated into one plain and symmetrical statute. It is preposterous that there should exist five Building Acts and four Metropolis Management Acts, which contain the law on this subject, together with a certain number of judicial decisions. The point is so important that we may return to it on another occasion; meanwhile we may safely recommend this new edition to those who have to find their way among these statutes.

Liability of School Boards in Scotland.—The Court of Session has awarded 150*l.* damages, and costs, to the parents of a girl who sustained severe injuries by the fall of a schoolhouse at Pollokshields.

Miscellanea.

Effects of Disruptive Explosions on Glass.—From the grievous piece of wickedness recently perpetrated at Charles-street, Westminster, some interesting particulars are to be gathered as regards the effects of an explosion. Strong and massive objects were shattered to pieces, while delicate and fragile articles were in several instances left untouched. It is stated to have been no uncommon thing in Paris during the siege of 1871, when numbers of tombs were blown up in the cemetery of Père la Chaise, to find that while heavy slabs of stone and marble were riven in pieces, glass vials of immortelles altogether escaped. Many similar instances were noticed amongst the *débris* at the Local Government Board offices. In a bedroom close adjoining the spot where this ligno-dynamite was fired was a substantial clothes press which was split into matchwood, while a toilet bottle and glass on the mantelpiece were left unchanged. The glass face of the clock over the fireplace had been blown off, but the glass of a little picture hanging close by was intact. Similarly, the companion picture to the one just mentioned had been torn from its hook, and been flung it is impossible to say where. We are reminded of the conditions of the explosion of gunpowder in a barge on the north side of Regent's Park early one morning about ten years ago. The window glass was broken up over a very considerable area, and in some cases under circumstances that were at once unusual and curious. We have in our possession a piece of a window of an artist friend. All the windows in his house were blown out, and those in his studio were made of thick glass about five-sixteenths of an inch in thickness. These were blown out also in slabs about 6 in. long and 2¾ in. or 3 in. broad. The piece we refer to is of this size, and is traversed by four cracks which run lengthwise along it about ½ in. or ⅝ in. apart, and extending nearly half through the thickness of the glass. Many questions suggest themselves: why do not they go through the glass; what determines the distances between them; and why are they parallel? We have not heard whether any glass broken at Westminster showed these characteristics, but it would be a matter of great interest to record it.—*The Engineer.*

The Organ at Canterbury Cathedral.—We have received a letter from Dr. Longhurst, the Precincts, Canterbury, the organist of the cathedral, giving a statement of the condition of the organ. The instrument is supposed to have been built in 1661, and rebuilt in 1753 and 1784. Seven pedal pipes were added by James Longhurst in 1825, and the organ was finally rebuilt and a few additions made by W. Hill in 1841. It is considered by musical judges unfit for the performance of much of the music which the improved services of the cathedral require, and as it has none of those mechanical contrivances which add to the ease, and, therefore, to the effect of performance, it is proposed to open a subscription for a new organ embodying the great and important improvements of which organ-building is now capable. During the last quarter of a century almost every cathedral organ of importance has either been rebuilt or superseded. It appears that Dr. Longhurst three years ago, with the sanction of the Dean and Chapter, started a subscription for a new organ. The list is headed by the Dean with 100*l.*, and the total sum subscribed is 650*l.* The cost of an organ of the highest class, built by H. Willis, and cased in accordance with the designs of Sir Gilbert Scott, will be at least 3,150*l.*

The Raffaelle Commemoration. — The fourth centenary of the birth of Raffaelle was celebrated at Rome on Wednesday. Delegates from the municipalities of Rome and Urbino, and from many Italian and foreign artistic associations, including the French Academy, left the Capitol at ten o'clock in the morning for the Pantheon, where the remains of the great painter are interred. Conspicuous among the wreaths laid upon the tomb was one from the Royal Academy in London.

A Partnership.—Mr. Arthur J. Gale, of whose observations in America as holder of the first Godwin Bursary we have had occasion to speak, has joined Professor Roger Smith as his partner in the practice of the profession of an architect and surveyor. We shall be glad to find the association conducive to the welfare of both.

An Artistic Novelty.—Messrs. Wyman & Sons have issued with the *Printing Times and Lithographer* a photo-filigrane portrait of Senefelder, the inventor of lithography. At first sight the paper containing the portrait appears to be blank, but on holding it to the light the likeness is seen in a form which suggests the familiar water-mark. It is explained that the portrait is taken from a very old lithographic print, and that, therefore, it is an inadequate specimen of what can be done by a new process perfected by Messrs. Brown, Barnes, & Bell, of Liverpool. Watermarks are produced by designs in wire work, which are comparatively crude. "Filigrane" is the name given in France to linear paper, and paper with a checkered pattern. In photo-filigrane the result is produced by pressure between hard rollers, one of which is embossed by photographic means. The cost is small compared with water marking, and half tone and gradations are secured. The effects are produced by those parts of the photographically engraved design which are in relief, compressing the paper sufficiently to render the part so compressed more transparent to transmitted light, and darker in colour by reflected light. Among many suggested applications are wall-papers, visiting-cards, and book illustration by means of surface blocks to supersede wood engraving.

Society of Arts.—A course of three Cantor lectures on "The Decorative Treatment of Metal in Architecture," will be delivered by Mr. G. H. Birch, Assoc. R. Inst., B.A., at the Society of Arts, on Mondays, April 2, 9, and 16. The first lecture will deal with the decorative treatment of the precious metals in ancient architecture, and its occasional use in Egyptian, Assyrian, Babylonian, Mede, Persian, and Jewish architecture, as well as in Greece and Rome, and during the Christian dispensation. This will be followed by a reference to the bronze age; the nature and qualities of bronze; its earliest uses in Nineveh, Babylon, Mycenæ, Etruria, and during the Classic period. The subject of bronze will be continued in the second lecture, when its history will be carried to the culminating point during the Renaissance. The art of the blacksmith, and the use of wrought iron in the north of Europe will then be referred to. Iron work will be continued in the third lecture, and an account given of its development at Augsburg and Nuremberg in the 15th and 16th centuries, and in England in the 17th century. The artistic treatment of lead in the Middle Ages will then be considered; and in conclusion the lecturer will make some remarks on the use and abuse of metal work; on modern bronze work, on the decorative treatment of the metals, as applied in these days; and point to our failures and successes. An exhibition of metal work will be arranged in connexion with the lectures.

Coal Staithes at Middlesbrough.—At a recent meeting of the General Purposes Committee of the Middlesbro' Corporation, Ald. Dunning presiding, the Town Clerk reported that the sub-committee had met Mr. Smith and Mr. Cudworth, of the North-Eastern Railway, and discussed the question of further facilities for bunkering coals both in the river and at the dock. Mr. Cudworth showed a plan of larger staithes which the company were disposed to erect, but these were deemed inadequate, and in order that Mr. Cudworth might visit the Tyne to see some staithes there, which were of the exact type required at Middlesbro', the subject was ordered to stand over. Mr. McLachlan said the railway company were only going to make the staithe 12 ft. higher at the dock and 6 ft. higher in the river at the dock point, and that would be utterly useless. The Chairman, Mr. Barritt, and Mr. Rushford said they believed the railway company were disposed to meet the town as far as possible.

Ramsgate.—It is intended to construct some tidal-baths in Ramsgate, close to the new pier. The work will be commenced in a few weeks under the direction of Mr. A. R. Pite, architect. The iron roofs, which are to be semicircular, in one span, and other constructional ironwork, is entrusted to Mr. A. D. Dawnay, A.-M. Inst.C.E., for execution.

Large Blocks of Offices will shortly be erected in Barge-yard, Bucklersbury, from the designs of Mr. Jno. Whichcord, F.R.I.B.A., by Mr. Lawrance, contractor, of Wharf-road. The cast and wrought ironwork, which is of considerable extent, and fireproof corridors and lower floors, will be constructed by Mr. A. Dawnay, C.E.

Liverpool Free Library, Museum, and Art Gallery.—The Library and Museum Committee of the City Council have issued their annual report in regard to the above institutions, in which they state that the efficiency and interest of the institutions continue to be fully maintained. The increased facilities afforded by the completion of the Rotunda Lecture-room have been availed of to a large extent. Encouraged by the popularity of the lectures, it has been determined by the Council, on the motion of Mr. Stewart, to provide courses of similar lectures in other parts of the city. For this purpose a grant has recently been made by the City Council. The building for the extension of the Walker Art Gallery has made considerable progress, and it is expected it will be ready for opening during the current year. Reporting on the Mayer Museum, the committee state that during the past year two catalogues have been issued in this department of the museum, one of the pre-historic antiquities and ethnography, and the other of the Mediæval and later antiquities, including the Mather collection of objects relating to the Bonaparte family. A catalogue of the pottery and porcelain is now in course of preparation. Considerable additions have been made to the ethnographical department, and a permanent gallery for the ethnographical collection is being provided in the extension of the Walker Art Gallery.

A Reredos Dispute.—An excited parish meeting was lately held at Eccles, near Manchester, in reference to a proposal to replace the wooden reredos in the church with an alabaster one. The vicar (the Rev. Canon Pitcairn), who spoke for an hour, disclaimed any intention to introduce ritualistic practices, described himself as an Evangelical, and said that the supposed features of the design that were objected to would not be introduced. The design, he said, had the approval of the Bishop. Mr. Headlam, stipendiary magistrate of Manchester, moved a resolution approving the reredos. A parishioner moved that the application for the faculty be withdrawn. The vicar declined to receive the amendment. Amid great excitement he repeated that he should not put the amendment, and exclaimed, "For once I am master here!" The meeting then became uproarious, and a man hoisted a flag bearing the words, "Vote for the Amendment." A rush was made at him by the vicar's supporters, and he was defended by the opponents of the reredos. Chairs, tables, and seats were overturned, and a hand-to-hand fight ensued, in which several persons were bruised. The vicar and his principal supporters rushed out of the *mêlée* through an ante-room, and the meeting broke up in great disorder. The tattered flag was afterwards carried through the village by an excited crowd of the vicar's opponents.

Timber for the Future.—It is stated that there are no less than 40,000 square miles of almost unbroken forests in North Carolina—pine, chestnut, oak, maple, beech, and hickory timber, in their finest growth. Within the next ten years, it is estimated that the timber alone in North Carolina will exceed in value the present total valuation of all the property in the State, including land. The State grows 19 varieties of oak, and its pine forests are of the heaviest. New railroads are now in course of construction, and this will open up the whole region to the northern and eastern lumber markets.

The Casella-Goolden Doubly Adjustable Electrical Sixe's Thermometer. — This elaborately-christened instrument is particularly adapted for greenhouses, hospital wards, and sick-rooms, breweries, the ventilation of theatres and public buildings, and all cases where it is essential to preserve a uniform temperature. If the temperature either rises above or falls below the set limits, a bell is sounded or some other signal given at any desired distance from the instrument. It is claimed that this is the only accurate thermometer yet devised which can be made to give warning of an excess of both heat and cold.

Select Competition for the Colchester New Corn Exchange. — This has been recently decided, Mr. Chas. Forster Hayward, F.S.A., having been called in by the Committee to advise them as to the best of three selected by themselves, and marked respectively A, B, and C. The one deemed to be the most suitable was the work of Mr. Edward I'Anson, jun., who has accordingly been appointed to carry out the work.

The Hyde Park Changes.—At the meeting of the St. George's Committee of Works on the 20th inst., the surveyor, with reference to this matter, said that a portion of the Park would be thrown into the roadway of Piccadilly and widen it, giving a space of irregular shape about 357 square yards. At the present time it would be necessary to alter the levels of Piccadilly opposite Hamilton-place, and for that purpose the roadway would have to be taken up, the contractors paying the expenses. He thought it would be convenient to do the work in the Easter recess, and he asked for the necessary permission. This was given. The surveyor, with respect to the alterations in the Grosvenor-place roadway in connexion with this improvement, said that this would give an extra 771 square yards to the roadway. He also said that it might be necessary to take up the whole of the wood-paving opposite St. George's Hospital, in order to alter the levels in the proper manner. He requested permission to do the works which were required, stating that the Vestry would not be put to any expense. In answer to a question, the surveyor said that the contractors were bound to have the improvement ready by May Day.

Workmen in Paris.—The distress among the working-classes here is receiving attention. A committee appointed by the Prefect to study the problem of cheap dwellings for the poor has just sent in its report, which the Prefect has submitted to the Municipal Council. It proposes the adoption of a scheme which consists in granting certain advantages to proprietors who will build houses in which the rent of workmen's lodgings shall not exceed 300 francs per annum. Of course these lodgings must be constructed in accord with hygienic principles. The advantages would comprise a reduction of taxation, the reimbursement of the town dues paid on the material used in the building of the houses, the exemption from the highway tax, the gratuitous supply of water to be laid on in each lodging, and the reduction to 15 centimes per cubic mètre of the price of gas. In order to insure the building of a sufficiently large number of new and cheap workmen's houses, and to enable workmen's societies to construct them, it is also proposed that the Municipal Council should guarantee the interest on the money laid out in their construction. This is treading on dangerous ground.

Art in Birmingham.—An opportune addition to the recreative opportunities of holiday folk has been made at Birmingham this week by the opening of the Spring Water-Colour Exhibition of the Royal Society of Artists. Including some 250 oil-paintings, which are restricted to two galleries, and a small room full of etchings and studies in black and white, the collection comprises altogether some 900 works. Of these, the large majority are exhibited now for the first time; but a few of the choicest have been culled from recent Academy and other London exhibitions, or are lent for the purpose of the exhibition by private gallery owners. There are comparatively few works of dominant interest or excellence this time, but the average standard is satisfactory. A special feature of the exhibition is a collection of some 150 sketches and studies of the late Mr. Allen E. Everitt, the former honorary secretary of the exhibition, who was especially happy in interiors and architectural subjects.

The Sewerage of Sheffield.—The Sheffield Town Council have adopted the report presented by Mr. Gott, surveyor, for the completion of the sewering of the borough. About twenty-three acres of land have been obtained three miles below the town, and on this site it is proposed to deal with the sewage on the precipitation system, the effluent to pass into the river Don. The cost of the scheme is estimated at 150,000*l.*

Art Exhibition at Chester.—The Duke of Westminster has this week opened an Art Exhibition in the Town-hall, Chester, and the Duchess afterwards distributed prizes to the successful students in connexion with the Chester School of Art. Among the features of the exhibition is a collection of original sketches and drawings by Mr. John Ruskin.

A Reading Stand.—Mr. William Rees, of the Elthorne-road, Upper Holloway, has sent us a neat little Reading or Music Stand which deserves a word of notice. The upper part is a good specimen of fret-cutting, and the lower part, on which it stands, is so ingeniously hinged that, when folded, it will lie flat in a drawer or elsewhere without fear of damage.

Board Schools, South Shields.—The new Board schools at Laygate-lane, South Shields, have been opened. They are designed upon the class-room system, and will accommodate 762 children. The outlay, which includes caretaker's house, furniture, and heating apparatus, but exclusive of site, amounts to about 4,633*l.* We are informed that, although the foundation, which passed through an old quarry, had to be built up in places for nearly 30 ft., the cost has hardly exceeded 6*l.* per seat. These schools are built in the Queen Anne style, of red Sherburn brick with stone dressings, and owing to their contiguity to the Westoe suburb are a little ornate, and have brick pilasters, stone strings, and stone-pedimented gables. They are covered with green Westmoreland slates, and there is a lofty bell-turret on the summit of the roof. Large covered playgrounds have been provided, and every room has been heated. The contractor was Mr. A. Thompson, Mr. Lindsay being the clerk of the works. Messrs. Mather & Armstrong have fixed the steam heating apparatus. Messrs. Oliver & Leeson, of Newcastle-on-Tyne, were the architects.

Mr. Alfred Clint, late president of the Society of British Artists, died on the 22nd inst. at the age of seventy-six, after having ceased for about five years to exercise his profession owing to failure of sight. He acquired his technical knowledge of painting from his father, Geore Clint, then A.R.A., and he studied the living figure along with other members of a society of students in the Savoy. After trying portrait and landscape, he fixed on marine painting. He was one of the original members of the Society of British Artists, which was formed in consequence of a belief that the Royal Academy did not give sufficient space on its walls to landscape painters. After exhibiting in the Suffolk-street Gallery from its first opening, he succeeded Mr. Hurlstone as president, and on retiring was made honorary president.

The Sunday Society.—The eighth annual meeting of the members of the Sunday Society was held on Wednesday in the gallery, 9, Conduit-street, Professor Corfield in the chair. Mr. Mark H. Judge, hon. secretary, read the annual report. Professor Corfield proposed the adoption of the report, and spoke encouragingly of the work of the society. By confining themselves strictly to the one question of opening museums, art galleries, and libraries on Sundays, they were bringing together a body of opinion that must, before long, obtain for London what Manchester, Birmingham, and other provincial towns enjoyed. The report was seconded by Mr. H. Rutherford, barrister-at-law, and passed unanimously. Sir Coutts Lindsay was unanimously elected president of the society.

Manchester Cathedral.—A largely attended meeting was held on Wednesday in the Manchester Town-hall, under the presidency of the Mayor, for the purpose of considering the best means of completing the restoration of the Manchester Cathedral, and the mode of raising the necessary funds to carry out this object. On the proposition of the Bishop of Manchester, seconded by Lord Egerton, and supported by Mr. Grafton, M.P., a resolution was passed expressing the opinion that measures should be immediately taken to carry into effect the recommendation of the architect (Mr. J. S. Crowther) to restore the cathedral, and it was also resolved to make a public appeal to raise a fund of not less than 30,000*l.* The total amount of subscriptions announced was 13,244*l.*

Defective Iron Columns.—The coroner's inquiry into the circumstances of the lamentable accident at the Kingston Cotton Mills, Stockport, on the 16th inst., by which five men lost their lives, was resumed on Wednesday, and further adjourned to allow of the attendance of one of the injured men, now lying at Stockport Infirmary. Mr. Edward Potts, the architect from whose plans the alterations in the mill were being made at the time the accident happened, said in his opinion the fall of the roof was due to the faulty construction of the iron pillars which were used.

The Destruction of the Berlin Hygienic Exhibition, 1882.—At the recent trial of the workman charged with having caused the destruction last year of the Berlin Hygienic Exhibition, by carelessly throwing down a match, the accused was acquitted, the evidence having failed to establish, with sufficient clearness, the connexion between his careless proceeding and the fire which took place. The costs of his defence were defrayed by the State.

New Liberal Clubhouse at Derby.—When it was decided some time ago to establish a club in connexion with the Derby Liberal Association, the committee visited several premises in the town, but were unable to find any suitable for the purpose. Mr. Woodiwiss consequently consented to erect premises specially adapted for the club, and plans have been prepared by Mr. James Wright.

TENDERS.

For residence, Greta-street, Keswick, for Mr. W. Adair, of Maryport. Mr. T. Hartas, architect. Quantities by Mr. L. Campbell:—

Excavating, Bricklaying, Masonry, Slating, and Plastering.

T. & J. Hodgson	£711 13 0
T. Hodgson	627 0 7
J. Lawson*	567 2 0

Carpentry and Joinery.

J. D. Lancaster	£283 0 0
J. Scott	270 17 7
J. Milburn*	242 15 0

Plumbing, Gasfitting, and Bellhanging.

Mandle	£124 4 6
J. B. Banks	124 10 0
J. Dunbobbin*	113 16 1½

Painting and Glazing.

Wood	£66 6 8
Youdale	52 2 6
Hall*	38 17 2

* Accepted, subject to revision.

For business premises, Popham-street, Nottingham, for Mr. S. F. Armitage. Mr. T. Hartas, architect. Quantities by Mr. J. G. Petherick, B.A.:—

Fisher Bros.	£2,533 10 0
J. Jelley & Co.	2,422 10 0
Dennett & Ingle	2,349 0 0
Ireson, Wade, & Gray	2,407 0 0
J. Shaw	2,397 0 0
G. Bell & Son	2,386 13 0
H. Vickers	2,309 5 6
J. F. Price	2,281 6 0
Lynam & Kidd (accepted)	2,262 0 0
J. Greenwood	2,260 0 0

For the erection of a villa residence, coach house, stables, &c., at Sidcup, Kent, for Mr. E. Eldridge:—

Eldridge & Gee (accepted)	£1,500 0 0

For the erection of boat house at the Oxford and Cambridge Inn, Kew Bridge, for the Royal Brewery, Brentford. Messrs. Smithies & Gladman, architects:—

J. Dorey, Brentford (accepted)	£680 0 0

For new shop front and fitting No 81, Lower Marsh, for the International Tea Co. Messrs. Wylson & Long, architects:—

R. Lamprell (accepted)	£108 0 0

For alterations and fittings, No. 58, Regent-street, W., for Messrs. Phillips. Messrs. Wylson & Long, architects:—

R. Lamprell (accepted)	£182 0 0

For rebuilding the "Crown" Public-house, Old Cavendish-street, W., for Mr. Thomas Cannon. Mr. William Thomas Sams, architect. Quantities supplied by Messrs. J. & A. E. Bull:—

		Granite.*
Martin Wells & Co.	£3,600 0 0	£ 35 0 0
Hall, Beddall & Co.	3,494 0 0	90 0 0
Patman & Fotheringham	3,395 0 0	147 0 0
Gregory	3,320 0 0	185 0 0
Massey & Sons	3,275 0 0	200 0 0
Hook	3,247 0 0	189 0 0
Auley, John	3,230 0 0	220 0 0
Langmead & Way	3,170 0 0	170 0 0
Toms	3,046 0 0	194 0 0

* Add if pilasters are in Aberdeen granite in lieu of Corsehill stone.

For alterations to Warehouse for the City of London Brewery Company, Limited:—

Building.

T. Wontner Smith & Son, Isledon Works, Islington (accepted.)

Ironwork.

Thornewill & Warham, Burton-on-Trent (accepted.)

For Wood-paving, Great Yarmouth, at per yard super. Mr. J. W. Cockrill, Borough Surveyor:—

	With Auger-holes.	Without Auger-holes.
Bell, London	£0 17 5	...
Bray, Yarmouth	0 15 0	...
Beech & Cork, Yarmouth	0 12 9	0 12 1
Carey, London	0 12 6	...
Nudd, Yarmouth	0 12 1	0 11 9
Youngs, Norwich	0 12 0	0 11 6
Batch, Norwich	0 11 10	0 11 5
Hayward, Eastbourne	0 11 3	0 10 6
Griffin & Wilson, Norwich (accepted)	0 10 10	0 9 6

For Drainage Works, Great Yarmouth. Mr. J. W. Cockrill, Borough Surveyor:—

Bell, London	£2,532 0 0
Cook, Bennett, & Thew, Lowestoft	2,065 0 0
Bray, Yarmouth	1,700 0 0
Youngs, Norwich	1,495 0 0
Cowdary & Son, Swindon, Wilts	1,348 0 0
Flaxman, Yarmouth	1,300 0 0
Beech and Cork, Yarmouth	1,299 0 0
T. Howes, Yarmouth	1,275 0 0
E. Howes, Yarmouth	1,225 0 0
Hayward, Eastbourne (accepted)	1,032 0 0

For villa, Crow-hill, Mansfield. Mr. Arthur Marshall, architect, Nottingham:—

J. Bulling, Ollerton	£2,190 0 0
H. Vickers, Nottingham	2,180 0 0
G. Hewitt, Leicester	1,899 0 0
Dudson & Parish, Nottingham	1,851 0 0
H. Alsop, Mansfield	1,800 0 0
A. Eastwood, Warsop (accepted)	1,670 0 0

For the erection of a receiving-house and casual-wards, for the Guardians of the Poor of the St. George's Union. Messrs. H. Saxon Snell & Sons, architects :—

Stones & Sons	£22,970 0 0
Bolding	24,787 0 0
Nightingale	24,580 0 0
Garlick	24,340 0 0
Wall Bros.	24,245 0 0
Adcock	24,000 0 0
Parker	24,000 0 0
Lawes & Son	23,900 0 0
Mowlem (accepted)	23,000 0 0
Peto Bros.	22,570 0 0

For alterations to the Hand-in-Hand paddle-house, New Park-road, Streatham. Mr. R. Crowys, Bank-chambers, 451, Brixton-road, architect :—

Builder's Portion only.

Freight	£380 0 0
Canning & Mullins	360 0 0
Dodds & Reid	311 0 0
Le Grassick & Co.	286 0 0

Ironwork and Pewterer's Work.

J. Wallis (accepted).

Gas Fittings.

Briggs (accepted).

For the erection of [illegible] Bank, Streatham, for the London and [illegible] Banking Company, Limited. Mr. R. C[illegible] architect :—

Peto Bros.	£3,567 0 0
Walker	3,314 0 0
J. Mowlem	3,274 0 0
Mowlem Bros.	3,189 0 0
Cavalier	3,150 0 0
Downs	3,137 0 0
J. Mayes & Sons	2,996 0 0
Smith & Sons	2,896 0 0
Tyerman	2,810 0 0
Johnson (accepted)	2,780 0 0

For the extension of the Churchdown Schools, Leyton, for the Leyton School Board. Mr. J. T. Newman, 2, Fenchurch-court, architect. Quantities supplied by Messrs. R. Curtis & Sons :—

D. Sayer	£1,124 0 0
G. J. Hoskings	1,098 0 0
T. Harris	1,040 0 0
E. L. Nightingale	1,030 0 0
North Bros.	996 0 0
B. J. Wood	995 0 0
Thomerson & Son	979 0 0
J. Morter	963 0 0
J. Webb	939 0 0
A. Reed	935 0 0
C. Cox	920 0 0
W. Gregar	918 0 0
J. Holland	902 0 0
Hearle & Son (accepted)	872 0 0
G. Crabb	860 0 0
S. J. Scott (too late)	—

For the extension of Kirkdale-road Schools, Leyton :—

G. J. Koskings	£2,488 0 0
T. Harris	2,434 0 0
B. J. Wood	2,387 0 0
D. Sayer	2,360 0 0
E. L. Nightingale	2,323 0 0
Thomerson & Son	2,250 0 0
North Bros.	2,223 0 0
J. Morter	2,117 0 0
A. Reed	2,100 0 0
C. Cox	2,077 0 0
Hearle & Son	2,073 0 0
J. Holland	2,026 0 0
J. Webb	1,975 0 0
W. Gregar (accepted)	1,948 0 0
G. Crabb	1,940 0 0
S. J. Scott (too late)	—

For furniture at the Newport-road Schools, Leyton :—

H. & G. Edward	£696 12 8
Spencer & Co.	647 0 0
Wake & Dean	618 1 9
Educational Supply Association	605 0 0
Redmayne, May, & Co. (accepted)	600 0 0

For [illegible] the Grain and Malt Tax Rate-account, Taunton [illegible] Brewery, Taunton. Mr. W. H. Crease, architect, 2, Hammett-street, Taunton :—

Rowsell & Macey	£447 0 0
W. Potter	395 0 0
C. Fox	386 0 0
F. Ware	368 0 0
G. Hammond	329 0 0
Morse & Woolfrey	307 0 0
J. Cure (accepted)	290 0 0
J. Lane	288 0 0

For West-street drainage :—

Ambrose & Co.	£5,230 0 0
J. Crosh & Co.	4,150 0 0
Nosre & Walden	4,142 12 0
G. James	4,100 0 0
J. Yo[illegible]	3,944 0 0
J. Whettam (accepted)	3,447 0 0

For building a house in the Usher-road, Old Ford, for Mr. W. R. Dodson. Mr. Edward Brown, architect, 18, Hamilton-street, Spitalfields :—

Marr	£548 0 0
Salt	478 0 0
Lewin (accepted)	375 0 0
Harper	372 0 0

For alterations at the Duke of Wellington, Three Colts-lane, Bethnal-green, for Mr. R. Clarke. Mr. Edward Brown, architect :—

Shurmur	£540 0 0
Jackson & Todd	520 0 0
Hawkings	514 0 0
Marr (accepted)	500 0 0

Pewterer's Work.

Paddon	£82 10 0
Rogers (accepted)	81 17 0

For painting externally 64, Brook-street, for the Right Hon. Lord Penzance. Mr. John George Carey, architect, Windsor :—

T. Harris & Sons, London	£124 0 0
Havard Bros.	120 0 0
A. & J. W. Bacon	120 0 0
A. J. Arrowsmith & Co.	123 0 0

Noteworthy.]

For road making, sewers, surface water drains, &c., on the Upsands Park Estate, Walthamstow, for Mr. H. Davis :—

Peill & Sons, Bromley, Kent	£1,489 0 0
Woodham & Fry, Greenwich	1,355 0 0
Dunraven, Hackney	1,212 0 0
Bloomfield, Tottenham	1,201 11 0
Pizzey, Hornsey	1,197 0 0
Wilson, Walthamstow	1,163 0 0
Keeble, Regent's Park	1,160 0 0
Harris, Camberwell	1,150 0 0
Bull, Wood Green	1,119 0 0
Jackson, Leyton	1,088 0 0

For finishing two detached villa residences, Myrtle-cross-out Myrtle-road, Acton, for M. C. F. Allison. Mr. Alfred Wright, architect, Belgrave House, Rock, Brompton-road :—

Adamson & Son	£1,550 0 0
Barrett & Sons	1,499 0 0
Furness & Son	1,486 0 0
Marchant	1,415 0 0
D. S. Read	1,364 0 0
F. Higgs	1,280 0 0
Holliday & Greenwood	1,277 0 0
F. Day	1,275 0 0
W. Johnson	1,222 0 0

For residence and stables at Elmstead-lane, Chislehurst, for Mr. W. Vaughan. Mr. George Lethbridge, architect. Quantities by Mr. C. H. Goode :—

Punnett & Son	£5,073 0 0
Patman & Fotheringham	4,993 0 0
Biggs & Hill	4,890 0 0
Harris & Wardrop	4,644 0 0
Adcock	4,583 0 0

For the erection of billiard-room, for Conservative Club, Blackheath :—

Kennard Bros. (accepted).

For the erection of a villa residence in Holmesdale-road, Hampton Wick, for Mr. H. P. Flavell. Messrs. Bray, Webb, & Co., architects :—

Wheatley	£935 0 0
Smith	848 0 0
Travers	847 0 0
Harris (accepted)	800 0 0

For detached house and studio, Chalcot-gardens, South Hampstead, for Mr. H. Ludlow. Messrs. Batterbury & Huxley, architects :—

Nightingale	£2,898 0 0
Holliday & Greenwood	2,799 0 0
Lathey Bros.	2,791 0 0
J. & J. Drew	2,779 0 0
Manley	2,629 0 0
Dixon, Highgate-road (accepted)	2,600 0 0

For furniture at the following schools for the West Ham School Board. Mr. J. T. Newman, architect :—

	North-street.	Clarkson-street.
Wake & Dean	£248 6 9	£245 13 0
H. & G. Edwards	247 14 0	243 13 8
Educational Supply Association	239 0 0	259 0 0
Spencer & Co.*	230 7 0	226 16 0

* Accepted.

For the erection of a detached house at Harold Wood, Essex, for Mr. J. Compton. Mr. J. T. Newman, architect. Quantities supplied by Messrs. R. L. Curtis & Sons :—

H. Wells	£5,100 0 0
A. Reed	4,935 0 0
Wes[illegible]	4,[illegible]77 0 0
J. Morter	4,133 0 0
Hearle & Son (accepted)	4,133 0 0

For alterations and additions to house, Oak Bank, Seal, near Sevenoaks, for Mr. James Alexander. Mr. John M. Hooker, architect. Quantities by Mr. Thomas Lyddes :—

Mansfield	£3,035 0 0
Rider & Son	2,948 0 0
Grover	2,942 0 0
Wallis & Clements	2,864 0 0
Vaughan	2,747 0 0
Wiltshire	2,698 0 0
Ward	2,678 0 0

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The Builder.

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ILLUSTRATIONS.

Church at Graaff-Reinet, South Africa.—Mr. J. R. Nichols, Architect 446
The Chapter house of the Cathedral of St. Mary of Lincoln 448, 453
Monument to Alexandre Dumas, Place Malesherbes, Paris.—M. Gustave Doré, Sculptor 450
Mural Monuments in Breda Cathedral 451
St. Matthew's Church, Bayswater.—Mr. John Johnson, Architect 455

CONTENTS.

Egyptian Art 435
Islington and the Metropolitan Board of Works 437
Provincial British Architecture 438
Use and Abuse of Our Highways 439
The Decoration of the Central Hall, Houses of Parliament 440
The Society of British Artists 440
French and Flemish Exhibitions 441
Tapestries of Petrarch's Triumphs 441
The Restoration of Spalato Cathedral 442
Measures against Scaffold Accidents 443
The Sanitary Condition of Lubeck 443
The Berlin Hygienic Exhibition 443
The Palace of Justice at Hamburg 444
The Munich Art Exhibition 444
St. Matthew's, Bayswater 444
Chapter-house, Lincoln Cathedral 444
Church, Graaff Reinet, South Africa 444
The Opening of the Wellesley Bridge, Limerick 444
Monument to Alexandre Dumas, Paris 451
Monuments at Breda 451
British Archæological Association 457
The Berlin Bourse 457
Foreign Exhibitions 457
Foreign Competitions 457
A Gigantic Tunnel 457
Lighting Street Lamps by Electricity 457
Leadenhall New Market and its Surroundings 457
Lincoln's-inn Chapel 458
A New Prison for Bristol 458
Age of Timber 458
Archæological Societies 458
Parliamentary Jottings 458
From Scotland 458
An Appeal from Art Students 459
Building Patent Record 459
Burnley 459
Leicester 459
Edinburgh Architectural Association 460
Epsom Town-hall 460
Ashbourne 460
Smoke Abatement Committee 460
Action by a Builder against a Solicitor: Curtis v. Rasp 461
Steven v. Richardson 461
"Architectural Improvements in Fore-street" 461
Dissenting Church-Building News 461
Books: Kelly's Directory of the Building Trades; Kelly's Directory of the Engineers; Egers Technologisches Wörterbuch in englischer und deutscher Sprache 461
Various 461
The Building Trades Exhibition at the Agricultural Hall 465
Miscellanea 462

Egyptian Art.

THE history of Egyptian art, its rise and progress, has been so often treated in its breadth and length, and its various details, that the principal novelty on the subject is the array of new facts and examples discovered by the excavations of Mariette Pacha. The text which accompanies the plates of M. Prisse had already pointed out the chief new details in the older monuments of Gizeh. Of the two most ancient nations of the world, whose arts have been handed down from their earliest period,—Babylonia and Egypt,—the valley of the Nile has preserved the grandest and most important remains, those of Babylonia being of smaller size, inferior in art and execution, and of a lower scale of art, and almost destitute of beauty. It is as yet an unsolved problem if the arts commenced in Babylonia or Egypt, but the palm of merit must be conceded to Egypt. There alone was the feeling of art predominant even in the very hieroglyphical inscriptions, while those of Babylon at the earliest period had assumed a form as conventional as Chinese characters.

The introduction of M. Perrot* gives an account of the principal works on the history of art, especially with relation to the rise and development of art in Greece, but an introduction which would have pointed out the stages of development and transition from the arts of the Oriental nations to those of the West would, perhaps, have been more instructive and important. The history of Greek art has been so often written, and by the ablest of Classical scholars and art-critics, that there is hardly anything more to be said upon the subject. But there is a great deal to be said upon the transition of the arts from Egypt to Babylonia, Phœnicia, and Greece. There is a golden thread which binds together the arts of the Oriental nations, and its strands passed into the tangled skein of Western art. The monuments discovered in comparatively recent times in Assyria, Babylonia, Phœnicia, Syria, and Cyprus throw quite a new light on the development of art, especially the blending and fusion that took place between the arts of the Semitic people, the introduction of Egyptian types, modified in their character into Babylonian and Phœnician art; then their transmission into Cypriote and early Greek art, by which the most æsthetic forms were accepted, but the monstrous and disagreeable rejected. The reflex action of Babylonian and Phœnician art into Egypt is not less phenomenal, the earlier types assuming the winged development which glides into the later Egyptian art, and thence into the Greek and Etruscan, after becoming prominent in Phœnician and Persian types and Asiatic Greek currency.

The history of the development of Egyptian art is, of course, preceded by a glance at the physical nature of the country and the ethnographical peculiarities of the race, for the average type must have influenced the eye of the sculptor in his ideal of beauty. The type, indeed, is neither entirely Nigritic, Semitic, nor Caucasian, but a race formed by the blending of different nationalities; for, even at the remotest period of its history, Egypt was surrounded by populated countries on the south, east, and west, and the earliest sculpture shows in the limbs and features proper lines of form not observable in subsequent efforts of art,—massive limbs, broad chests, thick and large noses and lips, that are not entirely Nigritic, but yet show the influence of the blood of the black races, which even now abounds in the country. The intellectual development of the ancient Egyptian, however, as far surpassed that of the Negro as the Negro transcends the anthropoid ape, which exists on the same continent.

It has often been pointed out that the oldest monuments of Egypt lie to the north of Thebes or in the centre of the country, which would not have been the case had the arts started from an Ethiopian people stealthily advancing northwards in the valley of the Nile to the sea. When at a later period Egyptian civilisation advanced nearer to equatorial Africa, the monuments present a totally different type, and far inferior in all respects from the oldest Egyptian, presenting neither the same artistic bearing nor scientific knowledge, and nowhere in the same regions are found traces of a primæval civilisation, for the black races seem to have been incapable of high conceptions in art or that masterly treatment of hardest materials which pre-eminently distinguishes Egyptian art. The epochs of the history of Egypt are the supremacy of Memphis, the conquests of Western Arabia and Nubia, which declined till the rise of the Theban dynasties, when the eighteenth and nineteenth dynasties conquered Syria, Central Asia, Ethiopia, and penetrated to the eastern coast Africa, and enriched Egypt with its astounding architecture. The fall of these dynasties, decay of art, and continued struggle with Assyria and Babylonia, passing into the overthrow of the foreigner and restoration of a native line, with the restoration of the arts, with a more florid development and minuter detail,—the fall of Egypt into the hands of Persia, which had no influence on the art, about the sixth century B.C., the overthrow of the Persian Empire by Alexander the Great, and the influence of Greek art on the national monuments from the third century B.C. to the third century A.D., when the last traces of Egyptian art, as distinct from the contemporaneous arts of Greece and Rome, had disappeared.

The history of the nation has chiefly been preserved by the works of art; for the temples record by their bas-reliefs and official inscriptions the successful results of Egyptian polity while the tombs teach by their paintings and inscriptions the social conditions o the nation and the organisation of the country, all of which is reflected in the sculptures of the sepulchres, which nowhere else show so much of the contemporaneous condition of the people.

But religion exercised a still more decided influence on the arts, for at all periods the religion was idolatrous, figures of the gods appearing in different localities from the earliest period, more sparing at first, but completely developed from the eighteenth century B.C. to the extinction. The distinguishing type of Egypt was the admixture of human and animal forms, fatal, indeed, to the development of the perfect beauty of Greek sculpture. There can be no doubt that the purely human type was the oldest, like the fetichism of Africa, which regarded animals as deities or endowed with divine souls. At the very latest period the union of various animal types with the human form endeavoured to represent the pantheistic idea of divinity. The arts of painting, sculpture, and architecture varied at different periods, both in the conception of the type and the working of the details, and there is no greater mistake than to suppose that the art remained stationary; it changed with the corresponding physical, political, and religious developments of the nation, but was slow as these were tardy in making changes.

The first point of Egyptian architecture is its pyramidal type, all buildings partaking more or less of the section of a pyramid, as evinced by their sloping walls, giving, of course, great area for the base in proportion to the height, and the ground-plans are square or rectangular. The Egyptian ruling idea was the union of the triangle and the rectangle, and the curve only appeared at a later period in the column. The roofs were flat, as there was no necessity for providing against rain. Even the oldest was only a high pyramid, and although truncated after it had attained the height of ten times the broadest side, the top terminated in a pyramidion or small pyramid. The oldest was the next columnar development after the squared column and pilasters seen in the earliest tombs, or the so-called mastabas.

One of the chief causes of the changes which took place in the architecture was the intro-

* Perrot & Chipiez, History of Art in Ancient Egypt. 2 vols. 8vo. Chapman & Hall.

duction of different material, but at the oldest period the slab and the brick were rectangular; the brick being probably, especially the sun-dried, the first used material in Egpyt, for the baked rectangular brick was unknown till the Roman period. The oldest burned bricks in Egypt are the conical stamped ones found in the Western valley, and not earlier than the twelfth dynasty. Next to the brick came the use of the square blocks of limestone from the Mokattam range, of which the earliest pyramids were constructed, and then the blocks of red granite from Syene used as revetments to the Pyramids. Alabaster, the plain and not zoned, was employed for linings and facings at the time of the fourth dynasty.

The use of brick was as ancient as stone in Egypt, two kinds having been employed at the time of the Pyramids, and some of the Pyramids themselves being made of them. Bricks, however, were principally used for houses, walls, and fortresses, and not for temples. Owing to the pressure some of the brick construction became like adobe. The use of the vault was partly known at the earliest age, some of the mastabas, or oldest tombs, having indications of the knowledge of the arch in the ceilings, but the arch was often cut through horizontal layers and not the true arch, which did not come into use till a later period, and then chiefly in substructures. The arch did not enter into Egyptian architecture, but the dome, or egg-shaped roof, was much used for granaries, and made of clay or adobe. Without doubt many of the private houses were made of wood, especially the upper chambers. As regards constructions, there appears to have been an absolute want of sanitary arrangements; sewers were not used, and fœcal matters deposited in the soil, which added to the fecundity of the soil, but not to the health of the inhabitants.

The principal feature of the architecture was the use of polychrome decoration, according to M. Perrot, to make it visible against the too brilliant sky, and all materials were painted, none valued for their own colour. To the modern eye, so much colour does not produce so much impression, the difficulty of vanquishing such a hard and costly material inspiring more reverence than the whitewash and paint bestowed on granite shrines or diorite statues, and from the use of colouring wood an idea is conveyed to the modern mind that the paint disguised a comparatively worthless material; but bright colours were plastered not only on Egyptian but Greek architecture and sculpture, and so accustomed is the modern spectator to the washed-out appearance of works of ancient art that he can scarcely realise that they were formerly coloured, tinted, and gilded. Under the influence of colour they seem to collapse.

Owing to the belief of a future existence after death of the soul or shade, and the necessity of making proper provision for it, the sepulchres in Egypt were considered of primary importance to preserve the body intact, ready for the resurrection, and to be a suitable habitation for the *ka* or manes till that period. To provide against the destruction or loss of the body the statue was always placed in the oldest tombs in the neighbourhood of the pyramids, where the cities of the dead, consisting of subterraneous chambers surmounted by massive rectangular chapels, contain the images of the departed in secret niches behind their walls. These chapels or mastabas are arranged in rows or streets at right angles, and amidst each great necropolis tower the pyramids of the monarchs of the dynasty, of geometric triangular shape, reserved for kings and princes of the royal line. The private tombs are not so carefully constructed as the pyramids, some being constructed of mere rubble faced with regular masonry, which holds the material together. The mastabas exhibit only the rectangular forms, the stones which constructed its doors, columns, chamber, and ceiling all being rectangular, so also is the sarcophagus deposited in the corner of the rectangular chamber beneath the hall or chapel, access to which was originally obtained by a rectangular shaft or wall. The walls of the chamber of these mastabas were ornamented with sculpture, to which most of the knowledge of the condition of society is due. The sculptures of the best tombs are beautifully executed, generally in cavo-relievo, but occasionally in most delicate bas-reliefs, and often the colours retain their original brilliancy. Some of the very earliest tombs are inlaid with a thick red colour, in a kind of the so-called toreutic work of the Greeks, the tomb still retaining the square mortise or plug-holes by which the portions of red colour were attached to the surface.

The author discusses, at considerable length, the mode of constructions of the pyramids, and repudiates the idea that they were built round a pyramidal core, although admitting, at the same time, that the step-shaped pyramid at Sakkarah shows, by its chamber and passages cut in the rock beneath, and by its avoiding all the difficulties of cutting through the brick-work, that the principle of parallel layers had been adopted to enlarge the size of the pyramid. With regard to the Great Pyramid, the construction shows that the central chamber was made, and formed part of the original design, and that the sarcophagus was placed in the chamber and that roofed in, while the galleries and passages leading to it were in the course of construction, for the sarcophagus could not have been afterwards introduced. The author thinks that the size of each pyramid must have been planned before its construction, and that the original design was carried out, and that there are no internal signs of changes of structure from after-thoughts. It is, of course, not possible to do more than divine the original idea, for not a papyrus, plan, scrawl, or working drawing has survived the wreck of ages; and none of the tools, except, perhaps, an iron scraper and a copper nondescript object, found in the air-passages of the chamber of the Great Pyramid have remained out of the thousands which must have been constantly in the hands of the labourers and masons. Each pyramid was a separate work, and differs in size, external shape, and internal construction from its companions, each architect vying to excel his predecessors, or striving to produce a novel mode of construction. One of the most remarkable of the pyramid edifices is the Mastabat-el-Faraun, which resembles a truncated pyramid without an apex, and it has been conjectured that it may have been surmounted at the top by a single obelisk, to which it served as a large base. At all events, one pyramid of this design appears under the Old Empire. There is, however, no evidence from the monuments themselves that any of the pyramids were surmounted by statues. Not less wonderful than the external construction and the wonderful facing of the outside is the ingenious mode by which the entrance of the shaft or gallery which led to the sepulchral chamber was closed by a portcullis, and the pressure of the roof removed by the chambers of construction. But no serdab or niches for statues have as yet been discovered in any of the pyramids, although some *soupçons* of the secret recesses are conjectured to be present in the newly-discovered pyramids of Sakkarah; and the pyramids had either a chapel erected on their northern sides to answer to the mortuary chapel of the mastabas, or were else surmounted by a peribolus of unbaked brick. The bricks of the Old Empire are bonded with fragments of red pottery, while those of the period of Rameses II. are made with straw, in accordance with the Scriptural narrative. Under the Romans a reversion took place to the use of fractured vessels, and at the Christian period fragments of vases with Coptic hymns, letters, and prayers, aid to keep the sun-dried alluvial in the conventional form of a brick.

The tombs of the sixth dynasty at Abydos resemble those of the fourth and fifth dynasties, but under the eleventh, twelfth, and thirteenth dynasties these tombs, made of sun-dried clay, still retain the pyramidal form, being in shape of a pyramid placed on a square base. The pyramids are hollow, and formed inside into a clumsy cupola, with rudely-built offsets; the base has the chamber in its foundations, which shelters the masonry, and the tomb is vaulted, and the pyramid also has an arched door; and some of these tombs have a large portico or rectangular porch, also entered by an arched door; and the funeral masses and prayers were performed there. The other tombs of this period are those cut in the rocks at Beni-Hassan, with their rectangular chambers, cylindrical proto-Doric columns. The tombs of the monarchs of the eleventh dynasty, at the Drah-Aboul-Neggah are hemispherical, partly built, partly hollowed out of the rocks, with obelisks before the façade. The tablets or tomb-stones in all these sepulchres are placed inside. These tombs still remain, notwithstanding their exposure to depredation; but after the country had been overrun by foreign conquerors, a new system was introduced. The tombs are no longer above ground, but are hollowed entirely into the hills, with long rectangular passages, throwing out a series of rectangular rooms or halls, supported by pilasters or rectangular pillars rising to the roofs, with one great chamber for the sarcophagus, and others for the sepulchral jars, figures, furniture, and other objects. So far do these mining shafts or syringes, as the Greeks call them, pierce into the hill, that the tomb of Rameses III. is 416 ft. long, and that of Siptah, another monarch, 370 ft. long. The galleries incline from the rectangular entrance, and the doorway carefully concealed by heaps of rubbish, and are only accidentally discovered. The tombs of the kings of the eighteenth and nineteenth dynasty are of this nature; the walls and chambers are covered with elaborate sculpture, in relief or intaglio, coloured in the dark by masons and decorators, who worked by torch or lamp light. The mummies were there deposited, covered with sepulchral jewelry, which incited the cupidity of the resurrectionists to pierce the sepulchres and spoil them as early as the nineteenth dynasty. M. Perrot has stated that no figures of deceased monarchs have been found in the sepulchres; but he is in error. Three wooden figures of heroic and colossal size having been extracted by Belzoni from the tombs of the Bebar el Molonts, and more placed in the British Museum. Numerous sepulchral figures, jars, dummy vases, and other objects from these tombs exist in all European museums. The fact is that they have been so often stripped that nothing remains to remove worth having; the mouldering bones of the monarchs being too uninteresting to tempt the cupidity of the casual visitor. There is a plan on papyrus still remaining of the tomb of Rameses IV.; but it does not correspond accurately with it, and was, perhaps, drawn up before the tomb itself was hewn in the rock.

The private tombs at Thebes range over a long period, from the eleventh to the twenty-sixth dynasty, and even to the Roman empire, and exhibit great variety of structure, but the leading points were the wall or shaft leading to the sepulchral chamber excavated in the solid rock. The mortuary chapel, as in the mastaba, was erected above rectangular, with sloping walls, higher in proportion than at Abydos, but surmounted by a solid pyramid rising from the gorge or cornice. It was, in fact, like the Greek and Roman mausoleum, the Carian queen having only erected a tomb imitated from an Egyptian sepulchre. These tombs were richly adorned with painted sculptures, and contained statues and sepulchral figures, besides the furniture or models of that in daily use deposited in the tombs. The subjects of the Theban tombs were not less interesting than those of Memphis, but the royal tombs exhibit a new phase of the Egyptian religious hell with its terrors and its demons, the passage of the sun through the hours of the day and night, the march of troops, the spoils of war, the prisoners of Asia and Nubia, figure in the tombs of the eighteenth and nineteenth dynasties. At Sais, in the Delta, owing to the alluvial soil, the tombs could not be carved in the living rocks, and were edifices reared above the ground, and they and their tenants have disappeared, a few sepulchral objects connected with them only remaining in the museums of Europe to attest their former existence. The Serapeium or necropolis of the bull Apis at Sakkarah consists of immense galleries with sepulchral chambers containing the sarcophagus and mummied portion of the bull walled in the outer wall covered with votive tablets. The sepulchral chambers of a few of the bulls of the eighteenth and nineteenth dynasties only are surmounted with mortuary chapels like those at Thebes.

The Egyptian temple dates from the fourth dynasty, up to which period there were no temples but only pyramids, which were tombs. The temples near the pyramids resemble in a great degree the mastabas, and are constructed of huge blocks of stone with square columns all unadorned with paintings or figures, and no statue of any god exists of the period. Mention of foundations of temples made in the time of the fourth and sixth dynasties is, however, found on edifices much more recent. Under the eleventh and twelfth dynasties vestiges of shrines from which the later temples took their development are discovered at Thebes and elsewhere. These gigantic edifices were all surrounded by periboloi or walls of sun-dried bricks, 30 ft. high, and 40 ft. thick, but the walls of the periboloi of the earlier temples have crushed or collapsed by time. Besides the periboloi, a

long avenue of sphinxes or lions led up to the door or gate in which were erected poles with streams, and at each side of the entrance were colossal statues and obelisks, one before each jamb. These last were supposed to avert the effects of storms, the Egyptians having probably discovered that tall pointed columns like the obelisks attracted or diverted the electric fluid. After the propylon came the peristyle hall, then the halls of columns, followed by different chambers, and finally the shrine. The temples, however, differed in their ground-plans; in some, the subsequent additions being made on the long axis from the shrine; in others at oblique angles, and at Abydos on a line *en potence*. The speoi or rock temples are more common in Nubia at the time of the nineteenth dynasty, but after cutting down the rock, the excavation consists of chambers with colossal caryatid figures. It is only at the Deir-el-Bahari that a large courtyard with terraced courts lead up to the speos. Nor less remarkable are the temples constructed under the Ptolemies and Romans, some of which have crypts for holding the apparatus and treasures of the temples. Inside and outside were decorated with coloured sculptures in intaglio or relief, and the work on the column no doubt suggested to the Greeks the sculptured columns of Ephesus and the triumphal columns of the Roman Empire, as the propylons, themselves triumphal gateways, had preceded by centuries the triumphal arches of Rome.

We will find another opportunity for the remainder of our observations.

ISLINGTON AND THE METROPOLITAN BOARD OF WORKS.

"Old Iseldon, though scarce in modern song
Named but in scorn, may boast of honour'd days;
For many a darling child of Science there
Hath trimm'd his lamp and won his laurel crown."

At their meeting on the 21st March last, the Metropolitan Board of Works resolved, in view of the excessive cost and other difficulties involved, to relinquish at present so much of their scheme as relates to the new street through St. James's, Clerkenwell, from Holborn Town-hall to St. John-street-road.* But, besides providing for certain structural improvements in many other parts of London, the Board's Bill comprises a project to widen Upper-street, Islington, in which quarter they are already employed in establishing some blocks of industrial dwellings on the cleared sites of Elder-walk, Paradise-row, and Angler's-gardens, so long the habitat of the working watchmakers of Clerkenwell. The widening of Upper-street, partly on one side and partly on the other, will extend for nearly half a mile from the Green to Barnsbury-street; the clearance at Angler's-gardens covers more than ten acres of ground.

The word Islington affords a puzzle in onomatology. Skinner derives it from *gisel* (a hostage) and *tun* (town), but the parish has never been called either Giselton or Gisleton, and his theory is otherwise untenable. Some recognise in Islington the patronymic *ing* of its namesakes in the neighbourhood of Birmingham and Lynn, in the Islinghem of Artois, in the many villages of cognate style in Wurtemburg. Others, and they, we think, with the better reason, identify in the Isendone of Domesday Book the hill of iron springs.† Variously written as Isendon, Iseldon, Yseldon, and Eyseldon, the name assumed its now shape towards the end of the sixteenth century. It may be convenient to preface our necessarily brief notice of its historical and personal associations with one or two particulars concerning the parish topography, premising that the existing names of sites and places are indicated within brackets.

Traversed along its centre by the *via militaris* or Ermin-street (Upper-street and Holloway-road) from Cripplegate to Lincoln, by the New River in the east and the river of Wells (of Fleet) in the west, Islington is situated in Ossulstone Hundred, and surrounded by the parishes of St. James's Clerkenwell, St. Pancras, Hornsey, Stoke Newington, Hackney, St. Leonard's Shoreditch, and St. Luke's Old-street. It can boast of more than one Roman camp: the summer camp at Highbury, and that of Suetonius Paulinus at Pentonville (Penton-street), whence he encountered with terrific slaughter the "British warrior-queen" of the Iceni in the valley below (Battle Bridge, King's-cross).* The ancient remains which yet stood less than sixty years ago in Somers-town,—a part of whose site has recently been laid bare, and the rest is covered by the Midland Railway Station and approaches,—were confidently considered by Dr. Stukeley to be a camp of Julius Cæsar. In his "Itinerary," vol. ii., of 1758, he gives a circumstantial account of the spot, and, with more of conjecture than good warrant, fixes the prætorium upon the left bank of the Fleet (between Goldington and Charrington streets by Pancras-road) over against the old church of St. Pancras-in-the-Fields. His enthusiasm outruns his judgment; and, though willing to believe in his assignment of precise positions to the prætorium of Mandubrace, King of London, to the Quæstor Antony, the Gaulish princes, the different *portæ castrorum* and the like, we call to mind Edil Ochiltree's ruthless ejaculation to Monkbarns in "The Antiquary." For, whilst not going so far as those who would see in the vallum and ditch standing in Stukeley's time nothing more than the survivals of the earth-works which the citizens threw up in the period 1642-3 for the City Militia Committee,† we incline to Lysons's view. He regarded them as the site of the old rectory house and messuage adjoining, which, in a survey of date 1251 preserved at St. Paul's, is described as consisting of two *areæ*, one *prope ecclesiam*, the other *ad aquilonem ecclesiæ*, in this respect suggesting a comparison with the former moated rectory at Newington Butts. It is difficult to credit Cæsar with choosing for his camp low marshy ground at the foot of a hill, and exposed to inundation by the Fleet and its affluent here, the Brill. The latter stream, whose name points to an ancient derivation, is marked in Dr. Stukeley's plan (which, it is only fair to say, was posthumously published) along the south of the camp, a few yards northwards of the then just completed New- (Euston) road. In the Reed-Moat-field, near the workhouse (western end of Barnsbury-street), there existed at the beginning of this century a trench about a mound said to be of Roman origin, and certainly corresponding with the account of Polybius. Passing, however, to a later and more assured period, a very valuable plan preserved by the vestry shows the parish in the year 1735. In this,—a detailed description exceeds our limits,—the New (Pentonville) and City roads are not defined. The latter, indeed, was not made until 1761 by Dingley, in continuation eastwards of the road from Paddington to Islington which had been opened five years before under an Act of the 29th George II. Dingley's road was cut through the fields to Peerless Pool (north of St. Luke's Hospital), and thence, bending southwards to Dog House Bar (corner of Old-street), where the Corporation kept their packs of fox-hounds and harriers,‡ to the Artillery Ground; whence it was extended into Moorgate-street. But the map shows Madan or Maiden-lane, called by Norden Longwich-lane (York-road running northwards from King's-cross); Hagbush-lane, the course of which ancient tortuous bridle-path cannot be accurately laid down, but may be taken as mainly identical with the present Hornsey-road and in part Caledonian-road; Hopping-lane (St. Paul's-road, Highbury); Copenhagen (New Cattle Market); White Conduit (at the corner of Denmark-street and Barnsbury-road, Pentonville), Back-road (Liverpool-road), Hedge-row (High-street), Lower-street (Essex-road); with the Rosemary Branch, Pied Bull, Ring Cross, Jack Straw's Castle (Highbury Barn), and the like. The approaches northwards to the Angel are barely denoted, and were long notorious for their badness and danger. Angler's-gardens and Elder-walk, by the New River, lie between Lower-street and Frog-lane (Popham-terrace), having Provence Field to the south. The road from Lower-street to Ball's Pond was opened in the year 1800. The parish bounds are ten miles and a half in circuit, and inclose upwards of 3,032 acres.

From a remote period Islington was a highly popular resort of the citizens in their leisure. Fitzstephen, writing in King Henry II.'s reign, chronicles how the city youth would sally forth with their teachers into its fields to play at ball, the elder and more worthy citizens accompanying them on horseback to see the sport, and themselves to contend in military exercises. Stow speaks of the challenges the citizens would send to all in the suburbs "to wrestle, shoot the standard, broad arrow, and fight for games at Clerkenwell and Finsbury Fields." The gardens and retreats without Moorgate had been cleared away in 1498 for a shooting field. Numerous statutes and ordinances from Edward III. downwards provide for compulsory practice with the short and long bows in the open spaces stretching beyond the walls, now covered by Islington, Finsbury, Hoxton, and Shoreditch.* In gratitude for her escape from a random bolt which pierced the crown of her hat (*temp.* Queen Mary), Dame Alice Owen founded her charity in Clerkenwell. Meanwhile the Duke of Shoreditch, the Marquess of Islington, the Earl of Pancridge, and others, archers of renown, had witnessed the triumph of one sovereign and the degradation of another. A fugitive from Hexham, but captured at Cletherwood, King Henry VI. was brought to the capital tied to his stirrup-leathers, and, met here by the Earl of Warwick, was deprived of his gilded spurs.† In Stow's "Annals" we read that King Henry VII., fresh from his defeat of Lambert Simnel and his adherents, was welcomed at Islington by the Lord Mayor and Aldermen. Nor does it lack more painful memories. We need but turn, for instance, to Fox's "Martyrs" to find how John Rough,—the Blackfriars preacher at Stirling who persuaded Knox to enter the ministry,—was apprehended with Simpson at the Saracen's Head by Bonner (third Sunday in Advent, 1557), whence they were carried to West Smithfield to burn for heresy. Powell, a schoolmaster here, suffered for complicity in a plot to assassinate Oliver Cromwell (Heath's "Chronicle," 1676); Colonel Okey, taken in his hiding-place at Barber's Barn, Hackney, to die a regicide's death, began life as a labourer in a brew-house on Islington-green.

Though archery as a diversion continued in esteem until the days of King James I., with the introduction of firearms began the levelling of the butts and boundaries, the hedges and ditches, about Islington. King Henry VIII. had not long ascended the throne when fair summer-houses, with gardens, sprang up around, and here and there the houses of entertainment which earned for it henceforward the cognomen "Merry Islington." In his daughter's reign its farms and dairies had become famous for their produce,—the *lac caseus infans* of the Squier Minstrel of Middlesex's address before Elizabeth at Kenilworth.‡ Of the favourite resorts during the earlier half of the seventeenth century we may instance the Rose and Crown, Saracen's Head, George, Red Bull, and Blue Boar; these being succeeded in popularity by the Angler, in Anglers'-gardens, house of call for those who fished in the New River; the Crown, and the Queen's Head,§ in Lower-street; Frog Hall, in Frog-lane; Colebrooke House; Spotted Dog, near the turnpike; Copenhagen House; and the White Conduit. At the Saracen's Head, Jordan places his comedy (1641), "The Walks of Islington and Hogsdon, with the Humours of the Wood-street Compter," treating of the usual adventures between wild gallants and citizens' wives. This tavern plays a conspicuous part in the episodes Drunken Barnaby introduces into his "Four Journeys to the North of England," and in Davenant's "Long Vacation in London." The "Merry Milkmaid of Islington" is the title of a rollicking farce first acted at Newmarket‖. The less harmless pastimes of bull-baiting and duck-hunting had their followers here. At the Restoration one John Ball, dating his tokens from "The Boarded House, neere Newington Green," kept the Salutation,¶

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* See *Builder*, vol. xliii. p. 792, December 16th, 1882, and the previous number thereto. The houses facing the Inn, in Gray's Inn-road, are now being demolished.

† The springs being mostly chalybeate. Masses of iron sulphuret were found some years since when well-sinking in Back-road and Park-street.

* Sketches of the Prætorium and old well in the fosse, as they then appeared, are in Hone's "Every Day Book," vol. ii., of 1827.

† "Memorable Occurrences," 24—31 October, 1642; and "Perfect Diurnal," *passim*.

‡ The huntsman had a house where the Angel now stands, in St. James's (Clerkenwell) Parish.

* The "distances" ranged from 9 to 19 score, 180 to 380 yards.—Statute 23 Henry VIII. See amongst other curious books on archery, the "Ayme for Finsburie Archers," 1628, and the "Ayme for the Archers of St. George's Fields," 1664. Two butts remained until the end of last century by the Rosemary Branch Tavern.

† Holinshed's "Chronicles," vol. iii.

‡ Nichols's "Queen Elizabeth's Progresses," vol. i. fols. 31-33.

§ The Queen's Head, pulled down in 1820, was a perfect specimen of Elizabethan domestic architecture, and is believed to have been occupied by Burleigh.

‖ See also a tribute to "audacious and unconscionable Islington! . . . . Metropolitan mart of cakes, custards, and stewed prunes," in "A Morning Ramble; or Islington Walks Burlesqu'" (1684).

¶ The New River, on entering Islington from Hornsey Sluice House, was called the Boarded River, from the

where his duck-pond gave its name to the spot. Pepys writes of the Ducking-pond Fields, which he found much "altered since my father used to carry us to Islington to the old man's at the King's Head to eat cakes and ale" (March 27, 1664). So again in the opening scene of "Every Man in his Humour," Ben Jonson makes Master Stephen, the country gull, repudiate the imputation that, though dwelling at Hogsdon, he keeps company with none but the Cockney "archers of Finsbury, or the citizens that come a-ducking to Islington ponds!" The White Conduit had its Wheel Pond, the Back-road its Ducking-pond Field. Howes says the reservoir at New River Head was "in former times an open idell pool, commonly called the ducking-pond." Goldsmith, in his "Citizen of the World," mentions a pond, that on the Green, in the middle of the town.

At the mere mention of Islington our recollection recurs at once to Goldsmith. Who would willingly forget the characteristic story of his treating some ladies at the White Conduit, and then finding he had not the wherewithal to pay the reckoning? And then his shoemaker's holidays,—a cheap and innocent day's pleasure, consisting of breakfast in his chambers, dinner at Highbury Barn, tea at the White Conduit, followed by a supper at the Grecian, the Temple Exchange, or the Globe in Fleet-street, the whole cost being less than 5s. for each of the party? When at Canonbury Tower he would spend the evenings with his fellow-lodgers in the Crown, or enjoy the more elevating company of the Literary Club, turning over the while the stanzas of one of the most perfect poems in our language. Neither Johnson nor Burke nor Reynolds, who all felt his loss so deeply, was with him at the last; but Dr. Hawes, who lies in the parish church, and who, with Cogan, established the Royal Humane Society, wrote the story of his last illness and death. To the home of the reverend Dr. Strahan, vicar, son of his old friend the king's printer, and who published his "Prayers and Meditations," Dr. Johnson would occasionally retire for change of place and air. He there drew up the plan of his will shortly before his decease. The then vicarage stood over the yard and skittle-ground of the Old Parr's Head, Cross-street. Johnson, who always spoke or wrote of Collins with tenderness ("Poor Collins! I have often been near his state"), called on him one day at Islington, and found him with no other book than a Testament such as children carry to school. Curious to see what companion a man of letters had chosen, he took it in his hand. "I have but one book," said Collins, "but that is the best." Addison frequently stayed here. The four initial letters, with either one of which he signs his papers in the "Spectator," are believed to stand for Chelsea, London, Islington, Office. He opens No. 393 of the "Spectator" with a fictitious note dated from Copenhagen. Traditions runs that Sir Walter Raleigh lived at the Pied Bull by the north-western corner of the Green, but his sojourn here is not referred to by either Oldys or Shirley, his biographer. Mrs. Foster, a granddaughter and last descendant of Milton, kept a chandler's shop in Lower Holloway, and died (May 9, 1754) at Islington. Whilst she lived here, "Comus" was performed at Drury Lane (April 5, 1750) for her benefit, at the instigation of Dr. Johnson, who composed the prologue delivered by Garrick. John Bagford, antiquarian and print collector, whose topographical collection is at the British Museum; Joseph White, numismatist and naturalist, who lived next door to the Queen's Head; and Isaac Ritson, contribute their names to the list of Islington worthies. Leaving Charles Lamb's cottage in Colebrooke-row one night, Dyer walked into the New River, which, "rather elderly by this time, runs, if a moderate walking-pace can be so termed, close to the foot of the house" (Charles Lamb to B. Barton). In Camden-place Cruden, author of the Concordance, was found dead upon his knees in the attitude of prayer. John Nichols, the celebrated antiquary and compiler of the "Anecdotes" lived in Highbury-place.

There are some good houses in Cross-street,—notably that of Sir Thomas Fowler, bearing several initials and emblems of Queen Elizabeth's time,—in Upper-street, and in the courts behind; though none out-rival in antiquity or interest Canonbury Tower. Ralph de Berners, from whom Barnsbury takes its name, gave his manor to the prior and convent of St. Bartholomew's the Great. It is enumerated among their possessions in a confirmation grant of King Henry III., dated 1253. The manor took its style from the canons, as did the seat of the Duke of Chandos at Little Stanmore from the same order. Prior Bolton rebuilt the manor-house, in the remains of which, Nos. 5–7, Canonbury-place, may yet be found his well-known rebus and some valuable "bits" of sixteenth-century work. Bolton is commonly described as the last prior of St. Bartholomew's, but he had for successor, Robert Fuller, abbot of Waltham Holy Cross, who was elected in 1532, the year of Bolton's death. Granted at the Dissolution to Thomas, Lord Cromwell, the manor reverted to the Crown upon his attainder and execution, and was charged with an annuity of 20*l.* to Anne of Cleves, whose union with the king Cromwell had promoted.* Assigned by King Edward to John Dudley, Duke of Northumberland, it again returned to the Crown, and was then given by Queen Mary to Thomas, Lord Wentworth. He sold it in 1570 to Sir John Spencer,—"Rich Spencer," the wealthy citizen and clothworker, who kept his mayoralty at Crosby-place, and lies beneath the monument in St. Helen's, Bishopsgate. Spencer rebuilt the tower from which his only child, Elizabeth (her figure appears on the monument), eloped, effecting her escape, as the story runs, in a baker's panyer, with William, second Lord Compton, ancestor of the present Marquis of Northampton, lord of the manor. The incensed father at first disinherited his daughter, but, by a stratagem of Queen Elizabeth, who asked him to adopt the child of one she knew who had run away to be married, became reconciled to the union, and the child eventually succeeded to his mother's property.† Newbery, the bookseller, held the lease for a while. Here he lodged his luckless son-in-law, Kit Smart, and, during the whole of 1763 and part of 1764, Goldsmith, a Mrs. Fleming being their landlady. During this interval the Literary Club was founded, Boswell made the acquaintance of Dr. Johnson, and Goldsmith produced his "History of England," composed "The Traveller," and worked for Newbery's Liliputian Library,—the dear little delectable histories of "Goody Two Shoes," "Giles Gingerbread," "Be Merry and Wise," "Tom Thumb's Folio," and many more, resplendently bound in the flowered and gilt Dutch paper of former days, and inscribed to all young gentlemen and ladies who are good, or intend to be good, by their old friend in St. Paul's-churchyard. Goldsmith occupied the oak-panelled room in the first floor of the tower, and was staying here when Dr. Johnson on one memorable occasion hurried from Streatham and freed him from arrest by selling a tale its author had laid aside, but to which we all turn again and again, and in which, in the words of Sir Walter Scott, he reconciles us with human nature. Much of the site of Canonbury was built over at the end of last century by John Dawes, stockbroker, whose house at Highbury was afterwards occupied by Alexander Aubert, F.R.S., who built and fitted an observatory there with the help of John Smeaton. The old parish church of date 1483 gave way to the present building, designed by Lancelot Dowbiggin, in 1751. The brick tower and stone steeple have a *faux air* of St. Mary-le-Bow in Cheapside. The living was originally appropriated to the nuns of St. Leonard, Bromley-by-Bow, by William, bishop of London, *temp.* the Conqueror. They continued its patrons until the Dissolution, when four-fifths of the parish was in the hands of the clergy. Sadler's Wells, being in the parish of St. James, Clerkenwell, does not properly come within the purview of this article: still, as an example of the manners of the time under review, we may state that, by frequently coming here to take the waters, the Princesses Amelia and her sisters, daughters of King George II., brought the New Tunbridge Wells into fashion.

peculiarity of its construction. It was carried across a branch of the river Lea in a long wooden trough, lined with lead, in which it flowed for some distance. The trough, giving its name to a way (Green Lanes) from Newington to Stroud Green, was removed in 1760.

Buildings at St. Dionis Backchurch.—The name of the clerk of works is Mr. J. Roberts, instead of Robinson, as stated.

* The grant of date, January 20, 1540-1, is printed in Rymer's "Fœdera," xiv. 713.

† This was enormous for those days, if we can judge from a letter of Lady Compton to her husband, arranging for her retinue and household. The letter was first printed in the *European Magazine* for June, 1782.

PRIMÆVAL BRITISH ARCHITECTURE.

The recently-published work by the late Dr. Edwin Guest, Master of Gonville and Caius College, Cambridge,* contains,—although modestly professing to be only of a fragmentary nature,—in reality a considerable number of carefully-written essays upon a large number of subjects both scientific and historical, connected with the multiplicity of questions which arise in reference to the origin of the primæval inhabitants of the British islands. But in drawing the attention of the readers of the *Builder* to a critical work which will richly repay close perusal,—being, as it really is, well worth, not only reading, but digesting and studying,—we do not propose to review, nor even to enunciate, the theories advanced by the learned author with whom probably the majority of his fellow-workers will, in the main, agree, although, no doubt, there are those who are unwilling to accept some of his deductions. Still, every one will admit that for breadth of information, extensive reading, and fairness of argument, no fault is to be found with these remarkable essays. But in one part of the work an important chapter is devoted to an examination of British buildings, and it will be advantageous to archæologists if a summary of Dr. Guest's researches can be laid before them. The Italian Gauls appear to have lived in the time of Polybius in unwalled villages; but a century later Cæsar found the Transalpine Gauls already making progress in mural architecture, their towns being walled, and even furnished with market-places. Some of these towns, extremely rare, the author thinks, prior to the first century before the Christian era, were strongly fortified, and regarded with much pride and affection by their inhabitants. The walls were of amazing thickness, and their construction was simple, ingenious, and in the highest degree protective and substantial. In fact, they appear to have resembled, in some degree, the groins and sea-walls which we so frequently see constructed in the present day. Trunks of trees, reaching to the great length of 40 ft., were laid on the ground side by side, at regular distances of 2 ft. apart. The ends pointing inwards towards the town were connected together, and the spaces between the timbers filled in with earth and faced with stone. Another tier of timber succeeded the first, arranged in such a way that the timber and stone sections alternated with the stone and timber sections of the lower row, and thus, when the wall had risen to the intended elevation, the outer ends of the trunks were shown on the external facing in a chequered or quincunx pattern. The requisite materials for this remarkably powerful kind of defence would not be difficult to procure in a country so richly wooded as Britain is known to have been in the time of Cæsar, and, for power of resisting fire and the battering-ram, it would be impossible, even in these days of scientific defences, to devise a more serviceable wall. Still, as Dr. Guest admits, we have no authority for asserting that the Britons constructed their walls on this plan, as used by the Transalpine Gauls, and any remains of walls half constructed of timber have probably long since perished. Into the vexed question of vitrified sites the author enters largely, and adduces the old Shropshire building, called Gataere Hall, as causing him to hesitate in adopting the conclusion of some antiquaries that vitrified walls were the result of accident. In this Hall the remarkable walls are recorded to have been built of a dark-grey free-stone, coated with a green vitrified substance "about the thickness of a crown-piece, a most effectual preservative against all bad weather." It is strange that the peculiarities of this building, which has been pulled down within the last ninety years, have excited so little interest, and, although Dr. Guest does not endeavour in the least to assign a date to so peculiar a building as this must have been, with its nine immense oak trees inverted so that the roots formed a complete arched roof, its floor of 3-in. oaken boards, hewn with the axe, and its vitrified walls, it is evident that a very hoary antiquity belongs to it. It may be compared with the Berkshire hut mentioned by the author, and the curious timber structures described in detail in the work before us, and discovered by Captain W. Mudge in Drumkelin Bog, county Donegal, in 1833,

* "Origines Celticæ (a fragment), and other Contributions to the History of Britain." By Edwin Guest, LL.D., D.C.L., F.R.S. In two volumes. London: Macmillan & Co., 1883.

which had been preserved from decay by the growth of the bog-weed into every crevice of the work. It is difficult, however, to follow Dr. Guest when he adduces a now-exploded derivation of the ancient name of Glastonbury, or "Glestingabyrig," as tending to strengthen the conclusion that the inhabitants of this island really had at one time some means of vitrifying the surface of their walls, but we agree with him when he says that, though he knows of no well-authenticated instance, it is certainly possible that remains of such vitrified walls may still be extant. But there are still existing buildings which indicate the methods employed among the Britons for remedying the want of bond which is the inherent defect of walls constructed without mortar. One important feature of the system was to build the wall very carefully in the faces, filling the spaces between them so as to form one solid mass, the stones having a sufficient incline in order to just shed the rain-water, and a wall, say apparently 15 ft. in thickness, would not unfrequently be constructed of three parallel walls, closely contiguous to each other, each 5 ft. thick. By these means a breach in the outer section would not extend beyond one-third of the whole thickness of the compound wall, and the besieger would still find a perpendicular surface, sometimes 10 ft. or 15 ft. high, opposed to his advance, and behind this another wall. Curious specimens of this Celtic style of masonry are found in the Isle of Arran, and others have been found both in Ireland and Great Britain. With these may be compared the Hiberno-Celtic *cashel*, or unmortared walls, on Oilen-Tsenach, or St. Senach's Island, which lies off the Coast of Kerry, where an ancient settlement of monastic character is enclosed by a wall, oval-shaped in plan, 60 ft. by 40 ft., rudely built of great blocks of limestone, and measuring 18 ft. in thickness at the base, while the original height is undetermined. The plan is figured from Lord Dunraven's "Notes on Irish Architecture," in Mr. J. Anderson's "Scotland in Early Christian Times." Just such another wall is described by Mr. Geo. Tate in his "Account of the old Celtic Town of Greaves Ash, near Linhope, Northumberland, 1861," as built of the local porphyry rock, without lime, or even clay, to cement the stones. Here the facing-stones are carefully fitted to each other, and the width of the wall varies from 10 ft. to 12 ft. Mr. Tate notices some designed peculiarities of structure, such as long and large blocks set up at intervals, with irregular courses of flat stones at their sides, and, in some parts, courses of stone very carefully built across the breadth of the wall at right angles to its face, evidently to give additional stability and minimise the breaching-power of the battering-rams. For other equally interesting peculiarities of Celtic walling, the reader may consult with advantage Mr. Tate's carefully-written account. The employment of huge slabs of unwrought stone forms another distinctive feature of Celtic masonry, where they occur lengthways and standing up throughout the thickness of the wall, or resting on upright props, serve as a shelter, refuge, storehouse, or cenotaph. The style of building known as horizontal vaulting, where layer upon layer of stone laps over each course successively, the enclosed area gradually converging to a point over the centre of the edifice which was finally capped by a covering-stone, was also in use among the earliest inhabitants of this island, and is not without illustration by similar ancient erections in Egypt, Asia, Greece, Sardinia, and elsewhere. In Britain this appears to have been a favourite mode of vaulting, even after the Romans had introduced their own peculiar methods of vaulting. The beehive huts, many of which are still extant in a more or less dilapidated condition, are carefully examined in detail by Dr. Guest, who compares their individual peculiarities and varying features in an extremely interesting manner. In the same manner he describes the hut-circles, the arched passages found connecting two or more of these beehive houses and the recesses in the surrounding walls of cahers, or hut groups, which, he suggests, formed a ready means of shelter to a belated inhabitant, rather than a kennel for a watch-dog which one writer has supposed. Of the dimensions of hut-circles much is recorded, and, while generally varying from 10 ft. to 15 ft. in diameter, the beehive huts, when made of timber, occasionally possessed very large measurements, such as 30 ft. or more in diameter. Nor does it appear to have been absolutely necessary that the edifice should be circular in plan, or, at least, the system was not long in being modified so as to include structures with rectangular or parallelogram plans; for Mr. Anderson, in the work already quoted, points out how closely this latter form belongs to the earlier or circular house. Many of the illustrations with which that interesting book is adorned claim the most careful examination. The construction of houses such as these must have been laborious and expensive; ribs or props of timber, more or less symmetrically disposed, held up wickerwork interior walls, and helped to support the roof, which, from the peculiarity of its construction, must have been very ponderous. A remarkable building, not very dissimilar to the foregoing, was visited by Dr. Guest in Berkshire, and he describes it very technically and with great minuteness, contrasting it with those pointed out in the "History of Newbury," the cottage buildings of the north and the bothies of the Scotch Highlands. Houses of oaken planks, covered from top to bottom with sheets of lead, and supported by props resting on the ground, seem to be the advanced form of those earliest habitations. St. Finan's church at Lindisfarne appears to have had planking resting on the props, parallel to the ridge; but the earlier British church at Glastonbury had the spaces between the props filled in with wattlework, for which Paulinus substituted planks. The house found at Aughamore, near Granard, in 1867, under water in a bay, was constructed of eight very strong beams, measuring between 10 ft. and 13 ft. in length, supported by cross-beams of great length, and firmly jointed, the side beams being mortised securely as if they were intended for uprights. The Drumkelin house, already mentioned, gives proof of the use of the tenon and mortise and rudimentary framing. This building, which consisted of two stories or compartments, each about 4 ft. high, may have been constructed some centuries before the commencement of our era. Of the origin and gradual elaboration of timber-roofs the author has put much that is original and conclusive on record in his work; but we must refer the reader to the work itself for information on this interesting subject, as well as for notices of brushwood roofing, wickerwork, and doorways; while the subsequent essays upon the ancient topography and settlements of Britain will be found quite as attractive in another way to those whose researches lead them to study the remarkable and astonishing results which Dr. Guest's laborious researches have now, for the first time, achieved. It is, after all, only from the records of isolated instances, such as the proceedings of archæological societies teem with, that the master antiquary can construct the sound theories and deduce the tenable assertions with which the present work abounds in a notable degree exceeding all expectation.

USE AND ABUSE OF OUR HIGHWAYS.

It is hardly creditable, either to our administrative skill or to our public intelligence, that the Brentwood Bench of Magistrates should have been occupied for four days in hearing and deciding on a case of damage inflicted on certain parish roads by a traction-engine. That in any such case matters of fact have to be clearly stated in evidence, we fully admit. How long a time could thus be usefully consumed we do not pretend to say. The point to which we refer is the absence, either as matter of primary legislation or as measures of the education of the administrators of the law, of any distinct rules or principles determining the proper relations that should exist between the two corresponding parts of the machinery of locomotion, viz., the fixed and the movable. In a word, what is the weight which may be fairly brought on any kind of road,—including railways and tramways?

The value of establishing some general normal relations of this kind is illustrated, not only by such a case as that recently brought forward by the Billericay Highway Board, but further by the wild projects which are advocated by speculators for such schemes as what are called "Ship Railways." It has been gravely proposed to construct a railway over which a ship weighing 4,000 tons and upwards may be conveyed over land, from one port to another. A 4,000-ton vessel, 415 ft. in length, has a beam of 44 ft., and will thus cover (making no allowance for the taper at stem and stem) 18,260 square feet, or say 2,000 square yards. This would give an equal pressure, if distributed over the whole area, of four-ninths of a ton per square yard, or 497 lb. per square foot. This might well be supported by the ground where it is solid, although the behaviour of an embankment under such a weight is more uncertain. But it is not only by the ground, but by wheels, that such a weight would have to be upborne. And if we limit the insistent weight to five tons per wheel we should require a rigid carriage supported by 800 wheels, and a rigid road that would support, without deflection, all these 800 wheels at once, to say nothing of what would be required extra for the weight of the cradle or truck. We thus at once see that the idea is wholly chimerical. But that there are a great many persons who are destitute of the simple mechanical knowledge necessary for looking at such a plain case as this is evident from the very fact that the scheme has been thought worthy of discussion.

In the powerful engines which are constructed by John Forster & Co., of Leeds, and which, after travelling under steam along the roads, are employed to drive the plough in the fields, a pair of driving-wheels, of 5 or 6 ft. in diameter, have tyres 20 in. wide. But the oblique projections on these tyres are only 14 in. in width, and at least one-third of the bearing surface must be subtracted for the spaces between the projecting ribs, which are intended to take a firm hold of the ground. The very idea of so holding the ground is one that involves destruction to road surface. If we suppose that a length of 6 in. of roadway is pressed upon by the wheels at each moment, we find that almost exactly 112 square inches will be supporting the pair of driving-wheels at any given time. The weight of one of these engines in working order is 17 tons, of which 12 tons is the weight on the driving-wheels. What the effect of this crushing weight of 340 lb. per square inch on any road must be may, to some extent, be realised by considering that, in the case of the steam-roller, contrived for rolling and consolidating the roads alone, the whole weight of 15 tons is thrown upon two smooth wheels of 47 in. diameter and 55 in. width. The bearing area of these wheels, calculated on the same principle as before, is 473 square inches, giving rather less than 70 lb. per square inch for consolidating, against 340 lb. per square inch for "prising" the heavier machine along the road. To this also must be added a further allowance corresponding to the amount of tractive power exerted by the engine.

Gurney's steam-coach, patented in 1831, had a weight of 2 tons 10 cwt. on its 3½ in., and driving-wheels of 60 in. diameter. Hancock's had a weight of 2 tons 12 cwt.; Boydell's road engine, intended for heavy traffic, had 8 tons; Fowler's engine for goods traffic and agricultural purposes, 7 tons. For this engine the driving-wheels are 16 in. in width and 66 in. in diameter. This gives a pressure of 140 lb. per square inch, irrespective, as before, of the pressure due to pull of loads behind the engine.

We think it very important for the maintenance in viable order of the highways of the country that primary facts of this kind should be understood. As to the right of a Highway Board, in the present state of the law, to make any extra charge on any persons using a highway on the score of their disproportionate amount of use, as in the case of a constant traffic, we offer no opinion. But as soon as the question of steam power comes in, the case is altered. The engine used by the Short-horn Dairy Company is called a 9-ton engine. This is an engine made by Charles Barrett, that weighs 9 tons in working order, of which 6 tons 10 cwt. are on the driving-wheels, which are 14-in. in width and 66-in. in diameter. If these wheels are plain, the direct pressure on the road will be only about 86 lb. per inch. But in these cases the longitudinal measure of 6-in. (or less in proportion to diameter of wheel) which we have allowed, presupposes a certain amount of subsidence or sinking of the wheel into the road. In the experiments by Sir John Macneil, which still form the data for our practice as to road construction and maintenance, the weights are reduced and given per inch of width of tyre. By this mode of measurement we have the following results. We take the figures as to ordinary vehicles from Mr. D. R. Clark's little book on "Roads and Streets," p. 144, and take the corresponding facts as to traction engines

from volume 369 of the Minutes of Proceedings of the Institution of Civil Engineers.

Vehicle.	Weight.	Width of tyre.	Pressure per inch.
	Tons.	Inches.	Cwt. of width.
Mail-coach	2	2¼	4·40
Stop-coach	2¼	2	6·25
Van	4½	3½	8·29
Wagon	6	9	2·77
Do.	4½	6	3·75
Do.	3½	4	4·37
a. *Barrett's traction-engine	9	14	4·64
b. Fowler's traction-engine	7½	16	3·12
c. Do. Steam-plough engine	17	22	5·4

The opinion of Sir John MacNeil was that the concentrated load that should be brought on an ordinary road ought not to exceed 5 cwt. per inch of tyre. It will be seen that of the vehicles tabulated above only one exceeds this allowance. But, if the ribbed wheels are used, at least one-third more must be added to the insistent weight per inch. And we have further to remark that if we compare the weight utilised by the steam-roller in compressing and solidifying the road according to the same rule, we only obtain a compressing power of 2·7 cwt. per inch to provide for resisting a crushing or disturbing power amounting in the case of the heaviest engines, to double that pressure. Now, if we compare the surface of an ordinary highway with that of a well-formed macadam road, freshly solidified by the passage of a steam-roller, it will at once strike those who are accustomed to drive, to haul, or to make or make or maintain roads, that such a pressure as $4{\cdot}64 + \frac{4{\cdot}64}{2} = 6{\cdot}18$ cwt. per inch of tyre is a very destructive energy to be brought to play on the surface of a road.

Sir John MacNeil's comparative estimate of the causes of the wear or injury to roads by different agencies are as follows:—

	For coaches. Per cent.	For wagons. Per cent.
Atmospheric action	20	20
Wheels	20	35·5
Horses' feet	60	44·5
	100	100

Now, if we regard the difference in weight at the point of contact when the mechanical fulcrum for traction is exerted, by comparing the area of a horse's shoe with that of the tyre of a ribbed wheel, it will become apparent that the elements of the problem are so changed, when the heavy wheel is made the propelling power, that we are not safe in verging from experiments made on loads propelled by the one method to the results of loads propelled by the other.

A horse weighs, on an average, about 11 cwt. Each of his shoes places on the ground from 48 to 52 square inches of iron. Let us take it at 50 square inches. This will give a pressure of 24·6 lb. to, say, 25 lb. per square inch. If we compare this with the lowest pressure at which we have previously arrived, in the case of Barrett's Engine, the ratio is more than three to one in favour of the horse. Per contra, we have to regard the hammering action of the horse's foot, as compared to the rolling motion of the heavier weight. If we glance back at the figures taken from Sir John Macneil, we find that the difference of speed between three and nine miles an hour (or three to one) corresponds to a difference between 44·5 and 60 per cent. of wear, or nearly as three to four. This leads to the conclusion that the loss due to the hammering action cannot be very much more than one-ninth of the total loss of the iron on the horse's shoes; and this again points to the greater economy, as far as maintainance of roads is concerned, of horse-power as compared to that of traction power.

This same inference is borne out by the accounts of the cost of traction engines given in vol. xxxvi. of the Minutes of Proceedings of the Institution of Civil Engineers. There the cost of an 8-h.p. traction engine is brought out 1·4d. per ton per mile of useful load. A second statement comes to 6d. per ton per mile; a third, to 3·2d. per ton per mile, giving an average cost of 4¼d. per ton per mile. Any horse-master is aware that this is some 50 per cent. more than the price at which he can convey useful load by horses. A horse will pull a ton for twenty-five miles in a day over a fair road, or eight times that weight on a canal (in good order) for the same distance. The horse-power, other things being equal, is thus the cheapest as far as regards propulsion alone. When we come to take into account the cost of maintenance of way, we are of opinion that the economy of horse-power is, in nine cases out of ten, very much greater than that of steam traction. If all our men of inventive genius would make a point of staking out the ground over which they propose to range by the accurate statement of controlling facts, much heartburn and loss of time would be saved to them, and much service would be done to the country by preventing them from wasting their valuable energies. To show what is known is the first step for him who proposes to add to the fund of human knowledge.

* *a.* On driving-wheels, 6½; *b.* ditto, 5; *c.* ditto, 12.

THE DECORATION OF THE CENTRAL HALL, HOUSES OF PARLIAMENT.

THE question of the completion of the decoration of the central hall of the Houses of Parliament was again the subject, last week, of one of those spasmodic outbreaks of art-criticism in the Lower House which serves to show, in a more or less irritating manner, the inability of our legislators to understand the bearing of such questions, and the indifference with which subjects of that kind are regarded by the average member of Parliament. Proof of the latter fact was sufficiently afforded by the fact that the House was so thin that an attempt was made to count it out during the progress of the little discussion.

On first noticing the report of the conversation (for it could hardly be dignified by the name of a discussion) we imagined, like the Vicar of Wakefield in hearing Mr. Jenkinson, that we had "heard this learning before," and, on referring to the index of the *Builder*, we found evidence of the fact that history had repeated itself so completely that we felt a doubt whether the conversation in the papers last week was really this one or a former one. For it appears that at a sitting in August, 1881, the same three speakers went through exactly the same little bit of fence. Then did Mr. Schreiber (more power to him!) complain, as he did last week, that the decoration should have been left unfinished for so many years, and urge that the other three compartments should be completed in mosaic. Then, as last week, did Mr. Cavendish Bentinck assert that the state of art was so hopeless that no one could do anything, and that the safest and most excellent way of promoting art was to do nothing. Then, as last week, did Mr. Shaw-Lefevre repeat his lesson, which he seems by this time to have got up very well, that there was no hurry about it, that the present mosaic was unsatisfactory, and that the late First Commissioner had been advised by four painters to have the other compartments decorated in fresco. So we are just where we were.

We expressed our opinion at some length on the matter, on the former occasion (see *Builder* for September 17, 1881); we briefly repeat our conclusions now. It is time that the central hall were completed; it is not creditable that it should be left so long unfinished. The existing design by Mr. Poynter deserves far more respect than has been accorded to it. It is urged, as it was before, that the artist himself was disappointed with it, and desired to have it removed. We believe the truth is simply that Mr. Poynter was dissatisfied with the effect of part of the back-ground, in the way of colour, and wished to alter it. To say that the design is a failure, or is not fairly worthy of its position, is to say the thing which is not. The figure of St. George is a fine one, simple and manly in conception, and in keeping, by its severity of style, with the conditions of mosaic and of decorative design in relation to architecture. To sneer at it as a failure is mere ignorance; it is not all we might wish, but a failure it is not. If we regard this opinion, however, as evidence of very erroneous judgment, what are we to say to the recommendation of the late First Commissioner and his committee of artists that the remainder of the spaces should be filled up with fresco; or to the still more absurd suggestion of Mr. Cavendish Bentinck, that they should be filled with paintings in oil? Just what we have said before, and still more decisively we repeat it, that such a judgment shows an utter want of perception of the relation of the proposed pictures to the decorative effect of the whole apartment. In the first place, mosaic alone, of available means of pictorial decoration, has brilliancy enough to cope with the other elements of decoration in the hall already,—the gilding and other colouring, and the stained-glass windows. Secondly, that, even apart from this, one compartment being now filled with mosaic, it is simply ridiculous to talk of filling the others with fresco or any other process. Mosaic is one of the most unyielding methods of decoration; nothing else can be used with it which will not look weak in texture and deficient in brilliancy of colour and richness of tone by the side of it: it is a method of decoration *per se*, and will not bear a rival. It is not, we presume, proposed by any one absolutely to remove Mr. Poynter's mosaic and substitute fresco; but nothing short of that will possibly admit of the introduction of fresco in the other spaces; the effect would be entirely out of keeping, and the mosaic would kill the frescoes. As to oil-painting, it would be waste of time to argue with any one who is so ill-instructed as to propose oil-painting in such a position; a mere school-boy, one would have thought, must have noticed enough of the surface effect of oil-painting to know that it is worse than useless for such a purpose.

The peculiar idea which is promulgated in the course of these art-talks in the House of Commons, that it is no use doing anything now, because artistic power is at such a low ebb, and opinions are so conflicting, is not worth any more respect than the other curious theories that are advanced. If there is no possibility of doing anything good now, by what time do our parliamentary art-critics suppose that there will be such possibility? Do they think it will grow of itself, without effort? What brings out the latent artistic power of a generation is the effort to do something good, which can seldom be entirely fruitless, though it may not lead to all we could wish for. The idea that the power of doing what is best will grow, or be found to be existent in a few years, if we only wait, is one of the most foolish of all the foolish ideas that come to the light on these occasions. Let there be a serious effort made to do something worthy of the place and occasion; that is the shortest way to foster and promote artistic power. To sit down with our hands folded and say "we can do nothing, therefore do not let us try" is, perhaps, the silliest part of all the twaddle which æsthetic members of Parliament are wont to talk whenever an artistic question comes up for discussion. *Ex nihilo nihil fit.*

THE SOCIETY OF BRITISH ARTISTS.

THERE is not much to distinguish the present (sixtieth) annual exhibition of this Society from other recent ones, the usual level of merit being preserved, and the pictures which are of any special interest being the product worthy of the same artists who have been the best contributors (not many of them) for some years past. Among the works in the first room which may be selected as above the general level are "Gloomy Winter," by Miss Flora Reid (12); "Share and Share Alike" (22), by Mr. Hayllar; "A Sunny Afternoon, Brittany" (29), by Mr. Breakspeare; "On the Well" (66), a pretty painting of a girl's head, by Mr. Ludovici; "Clovelly Pier, Morning" (69), a work considerably above the average, by Mr. Canty; and "The End" (73), by Mr. Laupheimer, a good piece of architectural painting of the interior of a Jesuit church bedizened with rococo.

In the large room there is, indeed, but a small numerical proportion of works that can "give us pause," and some of the central posts are occupied by very unjustifiable productions. "Footpads" (132), by Mr. G. A. Holmes, is a clever study of geese; "Shrimpers," by Mr. Cobbett, is a picture somewhat recalling a former school of English landscape of which Callcott was the foremost name; Mr. Meyer's "Wimbledon Common, Moonlight" (187) is effective and refined in feeling; Mr. Meyerheim's "Selected" (189) shows good painting of cattle; Mr. Canty's "Instinct" (194) is a clever and humorous study of a dog expressing disgust at the sight of a case labelled "dog medicines." This painting is specially marked "copyright reserved," an indication, we presume, of the "instinct" of the painter as to the style of

subject which illustrated papers most affect, and might be supposed anxious to purloin. Mr. Grace, as usual, is one of the best of the contributors in landscape, his "Farm on the Common" (195) is a very pleasant painting, like most of his; also, like most of his, rather deficient in force. Mr. W. Bromley's large painting, "The Village Anniversary" (232), which holds the central place at the top of the room, is one of those works which raise the wonder how any one who has acquired so much of artistic power as to deal successfully, in the matter of drawing, with a crowd of figures, should nevertheless be unable to invest his work with any sort of real interest. Like so many other pictures that appear in this exhibition, this is a painting so many square feet in area, containing so many figures, and that is all that can be said. Mr. Noble's horses and geese, the latter "Uninvited Guests" (272) are good, and Mr. Couldery's cats in "Comfortable Quarters" (255) are perfect; but because this is only a painting of cats, we presume, it is hung near the ground. The hanging committee do not seem alive to the fact that cats well painted are worth more than human beings badly painted, or they would have hung this work in a central place. Mr. E. Ellis's "Cornwall" (280) is a fine bold coast scene, especially good in the foreground. Mr. Stuart Lloyd's "Moonrise" (268) is a nice landscape; and Mr. C. Cattermole keeps up, in his "Summons to surrender Cathorn House" (306), the class of subject and some of the spirit associated with the name he bears. Mr. Wyke Bayliss sends a fine and careful study of the "Interior of Coutances Cathedral" (290), but he rather mis-appropriates in the catalogue some lines of Tennyson's written in reference to Milan Cathedral, and, as might be expected, not applicable to Coutances. Among other works that are above the average are "Evening, Sussex" (324) by Mr. Geo. Cole; "Early Morning, Holford Creek" (355) by Mr. W. C. Symons; "A Chimney Corner" (357*), a very spirited and characteristic sketch by Mr. Howard Helmick; "Pevensey Church, Evening" (360), by Sir John Gilbert; "A Foraging Party" (373), by Mr. Cauty; "The Kennel Door" (381) by Mr. Charlton; "Across the Heath" (391) by Mr. Glendening (jun.); "Afternoon on the Yorkshire Coast" (404), by Mr. E. Ellis; "Among the Dolomites" (464), a fine Alpine landscape by Sir R. Collier; "The Children's Door, St. Loup, Bayeux" (464), a charming architectural sketch by Mr. Wyke Bayliss"; "An Idle Afternoon" (488), a seaside study by Mr. Owen Dalziel. We were unable to feel interested in any of the sculpture contributions this year; a disappointment, as we have usually found one or two really clever things on the centre table in the large room. There is a good show of water colours, but we have not space to say more.

FRENCH AND FLEMISH EXHIBITION.

THE exhibition at Mr. Wallis's Gallery this spring contains some very interesting works. It would not, perhaps, be very difficult to classify the pictures to be found here under certain types which recur pretty regularly year after year. There is the type of cabinet paintings of peasant life, usually in low tones of colour, of which Seiler and Knaus are representatives; there is the type of brilliant and rather vulgar realism of, not "high life," but luxurious life; there is the landscape-painting, wherein much beauty of colour and finish is bestowed on low, flat, marshy landscapes, as in the works by Heffner and Windmaier; and other classifications of recurring types might be made; that representing, for instance, what may be called the "Jules Breton" type, repeated by Billet and others with various departures from the manner of the original of this class of painting. One painter, however, who has been much represented there recently,—Professor Müller,—is so far a class in himself, and has not his imitators as yet, though we have no doubt he will have before long, as art, like history, tends to reproduce itself. His leading work this year is "An Arab School" (59), an open-air scene, where copper-coloured scholars in varied and happily-adjusted colours of raiment, are squatted on the hot sand outside some town of clay walls and domes baking in the sun, and going through the rudiments under the command of a tall man with a wand of office, who presides over the motley flock. The realism of the whole scene, vivid as it is, is subordinate to an admirable sense of artistic effect of colour, and of contrast and play of character in the figures. We have the opportunity of seeing this year how these brilliant efforts of Müller are worked up,—on what foundations they are built, for the upstairs room contains two frames of his studies; heads of men and women and bits of Oriental architecture. These are remarkable studies for their union of finished effect with freedom of style and variety of character in the heads; the bits of architecture are also admirably painted.

One of the most interesting of the larger and fuller works is Blaas's "A Wedding during the Carnival, Venice" (53), noticeable both for the individuality of the figures, each of whom we feel able to classify socially, and the success with which the painter has harmonised very strong and apparently conflicting elements of colour. The brilliant Harlequin dress of a masqued figure in the centre of the group dominates the whole, and serves to reduce the remainder of the colour scheme to subordination, and enable us to accept combinations, in the way of coloured gowns, which might otherwise seem rather too pronounced. The wedding is evidently one of the "lower middle-class"; the bridegroom is sheepishly happy, and the bride trying to look unconscious; a very plain hard-featured woman in a wonderful dress, sipping her coffee, is evidently the bride's mother. There is a great deal of humour in the picture, a little broad, but not vulgar.

Among the smaller works Seiler's "Rembrandt in his Studio" (55) is admirable. It is the interior of a room full of light and crowded with studio accessories, in which Rembrandt sits before his easel, but half turned away from it, discussing terms of sitting with an old patriarchal-looking Jew, whom we recognise at once as a well-known and prominent figure in one of Rembrandt's pictures from the life of Christ. A pendant to this is an exceedingly clever little work by H. S. Mowbray, an American artist living and working in Paris, "Elixir Vitæ" (63), an interior where two men, young and old, contemplate with earnestness the contents of a bottle which the elder holds up to the light. The painter of this ought to produce very good work in the future. Among other pictures of the same class, to a certain extent, is a charming specimen of E. Frere, "Le Déjeûner" (35), and a very clever work by O. Piltz, "The Hope of the Family" (7), a cottage interior where a lad is playing the violin, criticised by an old man with an artist's head; the contrast between his connoisseur expression and the conscientious and rather timid carefulness of the young performer is very well given.

Israels is represented by a fine work, though not in his pathetic vein, "The Churchwarden" (37), apparently a play upon the English expression "Churchwarden" for a long clay, since the official in question is smoking one of those implements while turning over his registry or other account-books. He is a dry, hard-featured man; his wife, equally hard-featured, sits opposite him; they are a real pair of villagers, however, and the picture is interesting, moreover, from the admirable treatment of the accessories, the lighting, and the manner in which the outdoor scene is half visible through the semi-transparent blind. The same charming treatment of light gives interest to another little unnamed work by the same hand (36), an interior with one figure. Israels has that power which only belongs to a great painter, of giving real interest to detail of this kind without sinking into mere material and tricky realism. Among other peasant pictures, the principal one of what we have called the Breton school is a large work by Billet, "The Harvest of the Poor" (147), a stubble-field scene with gleaners, very peculiar in effect, from the aspect of the four figures all stooping in different directions with the gleaned stalks of corn standing up like bristles from under their arms; but the incident looks real. The tone of the landscape is disagreeable and deficient in aërial effect. Another peasant picture is a very clever though totally prosaic one by Laugée, "Les Choux" (93), a cottage-garden scene, where a woman is watering cabbages; her hands and face are drawn and modelled to perfection, and equally good in its way is the realism of the stream of water from the rose of the watering-can, running glittering off the cabbage-leaves. It seems a pity, however, that so much fine execution should be expended on paintings totally destitute of intellectual meaning or interest.

Among pictures of the higher-life school are two admirably-executed young-lady studies by Kiesel, "Shall I?" and "Work and Play" (9, 26); each is an interior with one figure; in these also the interest is almost solely manipulative, as the figures have little character and the subjects little meaning; but they are very pretty; in the first the effect of light is admirable, in the second the attitude of the young lady, pulling her ball of worsted away from the cat, is charmingly graceful and natural, and her fine hands are very delicately drawn.

Madrazo is represented by a work, as usual at once clever, *criard*, and vulgar, an interior where two very low-looking Spaniards are listening to the singing of an equally low-looking girl: the *bric-à-brac* and other accessories are brilliantly executed. A small and very clever painting of the same class is Pradilla's "Un Bal Masqué Rome" (169), an interior of a theatre with a very boisterous carnival audience, a number of small figures showing marvellously minute care in drawing and character, though in an apparently free and broad style. Maignan's "Un Reliquaire" (148), a life-size half-length of a woman clad chiefly in deep blue and holding an antique chalice with a silver bird-mouth, is a fine piece of rich effect.

Among landscapes Heffner, who has now taken the first place in landscape among the *habitués* of this Gallery, has two fine works,—"A Silvery Eve" (43), and another landscape with two lines of verse as a title (75); the first is a trifle hard, though it is marvellous how much distance he crowds into an inch of latitude, so to speak, on his canvas; No. 75 is the more poetical work. Lommens's "A Heavy Load" (17) is a fine landscape of rather an ordinary and well-worked type,—the "brown style," one may call it. There is a very lovely Corot, lovely so far as it goes, but it is "impressionist" art, "When the Year is Young" (38), and another, "Under Green Leaves" (22), in which there is nothing green, and the colour is entirely false. Windmaier's "White and Gold" (54) is a fine snow landscape with a sunset behind it; and in the way of "landscape with figures" and "landscape with cattle," we may mention "The Farmer's Daughter," by Chialiva (149), and "The Ferry," by Troyon (155), a rich evening scene, with cattle on the shore, recalling Both, only that it is much better than most Boths. Munthe again makes us think that he has never done anything so good as this year; this may be an illusion, but so is his marvellous little picture "Winter Fishing, Norway" (4), where the moon actually shines on ice that one could go and slide on. It would be impossible to carry success of this kind further in painting.

TAPESTRIES OF PETRARCH'S TRIUMPHS.

IN the new portion of the permanent buildings of the South Kensington Museum which have just been thrown open to the public hang three tapestries of unusual size and importance. They are lent by Monsieur Lowengard, a well-known dealer in Paris, and it is probable that they will be purchased by the South Kensington Museum. Few equally well-preserved and remarkable examples of this textile art, which in a way may be said to be to the northern what fresco and wall-paintings are to the southern countries of Europe, exist in this country. At Coventry, in the St. Katherine's Hall, hangs a great tapestry, which has been very completely described by Mr. George Scharf, in a paper read by him some fifteen years ago before the Society of Antiquaries. And Hampton Court Palace has long been famed for its "arras clothe" and Italian tapestries. The country seats of noblemen frequently contain handsome specimens. But no sort of inventory exists to show the student of this class of art-work how he may readily find and consult the materials to assist him in his inquiries. However, this is a matter not altogether under present consideration.

Five centuries ago Petrarch wrote his Sonnets and Triumphs. For the latter he selected six subjects,—the Triumphs of Fame, Chastity, Time, Love, Divinity, and Death. Some 100 years afterwards, or rather less, Petrarch's works were published in a printed form; and a notable copy of his works, embellished with six metal-plate engravings, perhaps by Filippo Lippi, has recently been purchased for the British Museum for the sum of 2,000*l*. Contemporary with these are some smaller sized woodcuts of Petrarch's Triumphs, also in the

Print Room of the British Museum. Towards the middle of the sixteenth century another edition of Petrarch was issued, with little woodcuts in a freer and more florid style, also of the Triumphs. Titian used the subjects of the Triumphs for a series of paintings, and seventeenth-century engravings have been made from these. The Flemish engraver, George Pencz, engraved the Triumphs in the sixteenth century. Altogether, then, a hasty search shows that there is no inconsiderable series of various compositions illustrative of the Triumphs.

Turning now to Felix Summerly's Handbook for Hampton Court, we find a detailed description of the tapestries in the Withdrawing-room of Wolsey's Great Banqueting-hall; and there is no doubt that amongst these are the "three pieces of arras of the three fatall ladies of Destenye lyned with blue buckeram," as described in Henry VIII.'s inventory. As a matter of fact, however, there are more than three pieces in which the Fates, Clotho, Lachesis, and Atropos, are figured. There are, indeed, four. Felix Summerly rightly divined that the subjects represented in them were "Virtue's Triumph over Sensuality," "The Triumph of the Fates," "Renown summoning the illustrious Dead in opposition to Fate," and "Renown seated at the feet of Father Time, and submitting herself to his slow Influence." But he does not appear to have been acquainted with the analogy between these episodes and those described by Petrarch. Hence, as all subsequent writers of guides to Hampton Court have followed Felix Summerly, the four tapestries in question have not been identified as representing Petrarch's Triumphs. The three tapestries now on view at South Kensington fortunately furnish the proof of this identity. Although the borders of the Hampton Court tapestries, consisting chiefly of panels containing Tudor roses and leaves, differ from those at South Kensington, the subjects of the main portions of the tapestries are in both cases alike. In fact, both sets of tapestries were evidently worked from the same designs. Those at South Kensington are finer in work and in material than those at Hampton Court. In spite of the wretched condition into which those at Hampton Court have fallen,—they are almost unintelligible through the dirt which begrimes them,—enough can be seen to find that two of the four tapestries are alike. These two are of the Triumph of Death, and we find it in one of the South Kensington series. The third is the Triumph of Chastity, also at South Kensington; whilst the fourth is the Triumph of Time. In the Kensington series, the third tapestry is of the Triumph of Fame, so that between Hampton Court and South Kensington we have four of the six Triumphs, namely, those of Chastity, Fame, Death, and Time. A fifth, namely the Triumph of Divinity, is said to be at Rheims Cathedral. It would be interesting to discover where the sixth Triumph, namely, that of Love, can be.

Processional Triumphs often occur in what are sometimes classed as the lesser arts, such as book illustrations and carvings. One recalls to mind the panel of an ivory casket belonging to Mr. John Malcolm, of Poltalloch, carved in low relief, with a Triumph of Death. "Two Tuscan oxen, with more than the solemn seriousness of their race, are slowly dragging the four-square tumbril or chariot of death over the prostrate bodies of prince and simple citizen, matron and maid. The fore-wheel rests upon the low-lying form of the pope himself; whilst the hinder wheel is just passing over the body of a beautiful young girl, who has all but realised womanhood." Then, again, but of a happier, less lugubrious vein, there are the Triumphs depicted in the famous "Dream of Poliphilo," written by the Franciscan friar, Columna, about 1467. It is a question in dispute who was the designer of the illustrations to this curious and ecstatic work. The particular woodcuts to which we are referring are those called the first, second, third, and fourth Triumphs. All are processional in character. Six centaurs in harness, and playing various trumpets, precede the car upon which Europa and the Jovian Bull are placed. Leda and the Swan, drawn by six elephants, come next. Then follows Danae under her legendary shower of gold seated upon a car drawn by six unicorns. Six tigers drag the last car, upon which stands a vase containing a bush; an object of reverence for the Bacchanals and Nymphs who form its escort, bearing in their hands Dionysiac trophies of pine-cones, leaves, branches, &c. These episodes, portrayed with so much life and beauty of ornamental detail, have no savour of Gothic stiffness, and yet they are clearly allied in idea and plan of arrangement with the tapestries of the Petrarch Triumphs. These, there can be little doubt, must have been designed by some Flemish artist strongly imbued with the sumptuousness in colour and form of the costumes and accessaries which belonged to and formed part of the material glories of the fifteenth-century Italian aristocrats.

The tapestry of the Triumph of Chastity is dated 1470. As is usual in many of the episodal compositions painted and drawn at this period, legends upon labels are introduced to describe what is taking place. The Hampton Court legends are almost illegible; but those at Kensington are distinct. Each tapestry bears its title in old French in the centre of the upper border, thus:—"Le (?) triõphe de chasteté," "Le (?) triõphe de boñe renomee," and "Le (?) triõphe de la Mort." In each case the Triumph of the particular virtue or fatality is preceded by the overthrow of some alien fate or antipathetical influence, so that there are two incidents in each tapestry. In the blaze of fine dresses figured with designs of that style which is so frequently seen in the cut velvets and cloths of gold and silk, the damasks and brocades of Lucca, Genoa, and Venice in the fourteenth and fifteenth centuries, and of rich groupings of figures, such as Julius Cæsar, Penelope, Dido, Alexandre, Roi Priam, Chipion, Lafican (Scipio Africanus), Rolant (the famous Orlando de Roncevalles, so sacred to Don Quixote), Salatino (Saladin) Paris, Hercules, Põpee le Grant, Lucretia, and many others, the martial heroes clad in resplendent armour, it is at first sight almost puzzling to discover what all the gorgeousness is intended to represent. But the two classes of incidents,—an overthrow and an apotheosis,—above alluded to soon reveal themselves.

In the Triumph of Fame (*Bonne Renommée*), the first car drawn by four fabulous buffaloes or oxen, Atropos is falling from her seat, impelled therefrom by the blast of the trumpet which a winged figure of Fame blows into her ear. On a stage below is Clotho asleep; while her second sister, Lachesis, also fallen asleep, is being crushed under the wheel of the chariot, which also threatens, among others, a sleeping pope. Then comes a crowd of men and women in handsome costumes and head-dresses, knights fully equipped, jewelled and golden panoplies. An emperor and empress ride near a car upon which is Fame on a pedestal, with Atropos at her feet, drawn in triumph by four splendidly caparisoned elephants. The remainder of the composition is filled up with richly-costumed figures, notable in mythological, classical, and chivalresque history.

Passing to the triumph of Chastity, it will be seen that this composition commences with the dethronement of Cupid (Amour) by Chastity. Cupid, upon a pedestal, is in a chariot drawn by four white horses; but Chastity, riding by on a unicorn, catches Love by the hand and unseats him. It is interesting to observe that the name inscribed near Chastity is "Laura," who, to the mind of the poet, was the incarnation of perfect purity and chasteness. It must always remain a matter of speculation whether he would have wished his adored Laura to have been depicted and labelled as she here is, no matter how much this may be an evidence of the sympathy which the designer had for his subject, or of the reverence for the master mind of the poet. The second incident of this "cloth" is represented by Chastity standing upon her triumphal car, with Love bound at her feet. Her car,—drawn by unicorns, and ridden by Cupids bearing laurel branches,—proceeds amidst a throng of grandees, and passes a triple-arched Decorated Gothic temple, or *retable*, in the background. This temple is dedicated to Diana, who stands under the central canopy. In the further distance, and upon a high-pitched grey roof, may be seen the date, 1470.

The Triumph of Death is symbolised first by the overthrow of Chastity by Atropos, and then by the "three fatal sisters of Destenye" seated in a car in which lies the dead Chastity. Bullocks draw this car over a mass of dead and dying. A mounted knight heralding the extinction of life and bearing two lances, one labelled Fortitude and the other Malheur, cleaves a path through the crowd of illustrious defunct. It is a misfortune that through a strip having been cut off the right side of the Kensington tapestry of the Triumph of Death, the mounted knight and a portion of the dead crowd are lost.

Luckily it exists in the corresponding specimen at Hampton Court, where we must go to gain an idea of the Triumph of Time. This is altogether different in treatment from the previous tapestries. The magnificence of terrestrial glories, historic facts, and ingenious materialisations have been pressed into service for those; but now the designer, for his Triumph of Time, draws upon his imagination of ætherial entities, and presents us, as a salient feature of the upper part of his design, with a semicircular arrangement of figures robed in white flowing folds typical of the hours, and floating before the zodiacal signs Gemini, Cancer, and Leo, into which the sun is entering. The first group on the left indicates Fame threatened by Time, and the second, near the centre of the design, is the triumph of advancing Time, an old winged cripple supporting himself with a crutch; the left crutch he carries in his hand, and he stands in a bent attitude over Fame vanquished. Both figures are on a car dragged by winged horses,—Pegasi.

This, then, is but a brief account of some finely-designed works of art, carried out in a process, tapestry-making,—which is showing signs of revival even in these days of paper-hangings.

A chief point not to be lost sight of is the deplorable condition of the Hampton Court specimens. If they are worth showing to the public, they are, for this elementary purpose, at least, worth cleaning and properly preserving. Unfortunately, other tapestries in the palace want looking to and cleaning, and official custodians may shrink from beginning with one unless they are prepared to go through with the others. A sum under 500*l.* would perhaps be enough to cover the cost of cleaning the dirtiest of the Hampton Court tapestries; and a sum under 200*l.* would suffice to meet the expenses of cleaning and restoring the tapestries of the Triumphs of Petrarch. We commend the matter to the attention of the Lord Chamberlain's Department, as well as to all who are interested in preserving the relics of ancient expressions of art. The proverbial irony of time would be pregnant with significance if time were now lost in preserving the Triumph of Time.

THE RESTORATION OF SPALATO CATHEDRAL.

The cathedral of Spalato or Spalatro (Dalmatia) was originally a part of the large palace erected by the emperor Diocletian at the beginning of the fourth century, near the town of Salona, and it is probably owing to this early change to its later destination that one of the most important Roman monuments of Dalmatia was preserved from destruction and decay. The inhabitants of Salona, driven from their city, destroyed by the Avars, found a refuge in the vast palace, which was protected on the land side by fortified walls, where they settled, adapting the existing buildings to their wants, and thus founding in the middle of the palace the new town of Spalato.

On both sides of the vestibule of the residence of the emperor Diocletian, surmounted by a cupola, there lay, symmetrically arranged, two courtyards, in the centre of each of which a monumental, temple-like building had been erected. Those edifices could be adapted to the services of the Christian Church, which, as recent excavations at Salona have proved, formed a numerous community in that town. The vestibule above mentioned was converted into the atrium of the church; the building in the eastern courtyard, also covered by a dome-shaped roof, probably the mausoleum of Diocletian, became the cathedral; and the building in the courtyard opposite, a small rectangular temple, erected in the form of a so-called Italian prostylos, was made the baptistery. Although by this change, which took place in the seventh century, the Classic buildings were saved and preserved, their history, extending over sixteen centuries, has left unmistakable traces upon it. More than the tooth of time, which has little affected the beautiful stone of which the buildings are erected, the hand of man is responsible for the vandalism which has been perpetrated. The damage done was of such a description as to render a thorough restoration necessary; and the architect, Professor Alois Hauser, was instructed by the Austrian ministry of education to draw up plans for that purpose. From a lecture on his studies, and the present state of the work of restoration, recently delivered in

the Austrian Museum by the Professor, the particulars which follow have been extracted.

Spalato Cathedral is a dome-covered building, the exterior of which is octagon in form, the interior being circular. The edifice rises upon a high basement, which, projecting all round, serves as a stylobate for a peristyle of twenty-four columns with entablature and coffered ceiling. Towards the great atrium, before the entrance to the church, there was formerly a flight of stairs with pediment, serving as a portal to the mausoleum. Over the basement, enclosing crypt-like vaults, rises now the cella of the Roman building, or the present church. The space enclosed had a diameter of 45 ft., and a height of 71 ft., the walls consisting of large ashlar stones, 3 ft. thick. The walls are divided in the interior by eight pairs of isolated columns, placed above each other, which, together with the bends of the beams, divide the wall vertically, and thus show up also in the interior the octagon form of the building. Between the columns of the lower story are eight large niches, four semicircular, and four (with the door niche) rectangular. A frieze 3 ft. wide runs round below the beams of the second story. The whole building, both inside and out, is of stone. The shafts of the lower order, 18 ft. high, are monoliths of Egyptian granite; those of the upper order, 11 ft. high, also monoliths, of a beautiful dark porphyry. Only the entirely closed cupola is of brickwork and concrete. Over the entrance-door, formed of massive stones, richly carved, is placed the only original window, with semicircular head.

The architecture of the building is, so far as regards effect produced by large masses and proportions, still purely Roman; but there are interspersed features which do not occur in Classic works. Thus, we find arches immediately upon isolated columns, or semicircular forms between straight lintels over columns,—all arrangements common in the later Old Christian, Byzantine, and Romanesque styles. It is worthy of note that the treatment of profiles and ornamentation differs from Roman buildings by an absence of bold forms usually found in them; it displays a relationship to the forms of the Hagia Sophia, and renders it probable that the building was the work of masons brought from the East, perhaps from Greece, in support of which assumption it may be cited that all the masons' marks have the form of Greek letters, while the bricks of the cupola have Roman stamps.

The transformation of the monumental building into a church has been accompanied by important changes, caused by the efforts to enlarge it. In the seventeenth century the niche opposite the entrance-door was broken through, without regard to the heavy superincumbent masses of stone; the corresponding columns of the outer colonnade were taken down, and a very plain rectangular choir was added. But this was only the beginning of the vandalism committed in the interior, for shortly afterwards wooden galleries were fixed over the cornices of the two orders, a wooden organ-loft was erected over the entrance-door, and a sacristy was jointed on, which cuts into the peristyle quite haphazard. As late as 1770, the northern niche of the dome was broken through, and a chapel erected, projecting into the colonnade.

But by the side of these alterations without artistic value which disfigure the building, there must be mentioned some additions of great merit, and which will consequently be left undisturbed in the work of restoration which is proceeding, as there is no intention of retransforming the Roman temple or the mausoleum into its original state.

The latter class of additions in the interior of the church includes the pulpit, executed in various-coloured marble, richly carved, one of the most beautiful works in the Romanesque style; next, the Romanesque doors, adorned with figures in relief; and, finally, two Veneto-Gothic altars of white marble. But the most important addition is the tower in the Romanesque style, begun in the thirteenth century. Unfortunately, the original work was placed immediately between the eastern row of columns of the atrium and the church entrance on that projection of the basement which in Roman times supported the pediment-hall and the stairs of the mausoleum. The introduction in this spot of the tower, in the lowest story of which the stairs leading to the cathedral entrance are very picturesquely placed, has caused the interruption of the peristyle, the destruction of the pedimental colonnade, and other disadvantages which it will be difficult to meet in the work of restoration.

As already indicated, the chief aims of the restoration will be the preservation and renovation of the original building, as well as the retention of the artistically valuable additions of later times. The work is divided into three portions,—the restoration of the interior, the tower, and the exterior. At the same time, it will be necessary to clear the cathedral of its excrescences, consisting of a number of small houses, which have been built into the colonnade, and are almost hiding from view the building.

An examination of the interior of the church showed that the latter was in a most dangerous condition, caused by the capitals and mouldings, which must have been injured at an early date, being repaired with stucco on an extensive scale. The wooden galleries pressed upon these stucco coverings, and in many places the latter had parted from the stone, a mere touch with the hand sufficing to send down heavy pieces. As a measure of public safety, the church was closed in 1880 until the completion of the repairs, and shortly afterwards the whole interior was provided with scaffolding. In restoring, the damaged places were not again plastered up with stucco, but repaired with a material found close by, a beautiful marble-like limestone, the original Roman mouldings and capitals, of which a good many are still perfectly preserved, serving as patterns. The wooden galleries and the organ-loft were at once taken down; the only Roman window was reopened, and the damaged parts were cleared away. During the latter work, it was found that the greater portion of the Corinthian capitals, 3 ft. high, of the lower order had burst vertically, owing to the insertion of heavy iron dowels for joining the capitals to the column shafts. Respecting the construction of the outer walls, which appear to have been erected without the use, exteriorly, of mortar, the discovery was made at the same time that interiorly a mortar was largely employed which contained no brick-dust. The work of inserting new stones has been recently commenced, and it is hoped that, under favourable conditions, the works in the interior of the cathedral will be completed in the course of next year.

The first steps have also been taken for restoring the tower. Of the five airy and open-work stories of the same, which support an octagon cupola of Renaissance origin, the two upper stories especially are in a very bad condition, the consequence of a mistaken construction and many faults in the ground story. The plans of restoring the tower will be prepared from a careful survey which has been made. As regards the exterior of the cathedral, it is intended to reinstate all the columns of the peristyle, and to remove all the buildings which have been erected against it, as well as the domical roof, which is not a work of Classic times. With the erection of a new sacristy at the rear of the choir, the works of restoration will be completed.

MEASURES AGAINST SCAFFOLD ACCIDENTS.

New and special instructions have just been issued by the Paris Prefect of Police, so as to reduce the too frequent occurrence of accidents in the building of houses, &c. The local chiefs of the police are ordered to visit every scaffold in their district before work is begun. Suspended scaffolding is to be maintained by three instead of only one rope, and clothes must be so arranged as to prevent dust or fragments from falling into the street. In the event of any workman or pedestrian being wounded, the building contractors are to be at once prosecuted before the police or correctional tribunals. Since Zola depicted the fall of Coupeau from the house-top, and since the reproduction of this scene of *L'Assommoir* on the stage, the public has manifested special concern respecting accidents of this nature. It has even been suggested that masons should be protected in the same manner as acrobats, who perform on the trapèze. A net, it is urged, must be placed round buildings in course of construction to catch the stray workmen who chance to fall off the scaffold! Such extreme solicitude may seem somewhat eccentric and exaggerated; but, among our neighbours, there is a serious question of rendering this precaution compulsory.

THE SANITARY CONDITION OF LÜBECK.

The Medical College of Lübeck recently instituted a thorough examination into the effects of the sewage of the city on the neighbouring waters into which it is conducted, and Herr Schorer has published a comprehensive treatise on the subject which is founded on his personal experience in the technical direction of these researches. From the details furnished, it would seem that samples of the water from the two rivers which flow round Lübeck (the Trave and the Wakenitz) were taken at different localities and periods, and in greater or less proximity to the outflows from the drains. It would seem, however, that the sewage had scarcely any influence on the water. Recently, water-closets have been placed in all the houses in the city and suburbs, and though these communicate with the drains, the character of the sewage does not seem to have been changed in any notable way. According to the *Hamburger Nachrichten*, the quantity of water in the two rivers mentioned is sufficient to produce such a dilution of the sewage as is implied by the facts quoted, and it is estimated that even with double the present number of inhabitants (about 15,000) the existing state of things would not be materially altered. Some English chemists would say very differently.

It is recommended to maintain the actual system of pottery-ware pipes, and to conduct these into the rivers at suitable intervals, as has been the case hitherto. The use of large main drains is disapproved. In order that the pipes may be kept as free as possible, the regular cleaning of the streets is alluded to as being necessary in order to prevent the accumulation of sand, &c., in the drains. This is specially named with respect to the suburbs, where the fall is slight.

THE BERLIN HYGIENIC EXHIBITION.

With the near approach of the date fixed for the opening of the above exhibition, public interest in Germany has become greater in all that appertains to it. From a technical point of view much has been written on the comparative details of the new structure and of that which was destroyed by fire on May 12th, 1882. In a comprehensive article on the subject, the *Deutsche Bauzeitung* lately remarked that the occasion in question was a turning-point in the history of such constructions, as, in future plans, the fact could no longer be ignored that light wooden erections (such as had hitherto been customary) were liable to sudden destruction by fire.

In the construction of the new building, designs were invited from twenty firms in the iron trade; the promoters of the scheme having determined upon stone and iron being the materials. The firm of Dr. Proll and Scharowsky, of Dresden, sent in a design which was accepted, and have carried out the work in association with Herr A. Druckmüller, of Berlin, as well as some other manufacturing firms. As might have been expected, there were various changes found necessary in constructive and artistic details as the work progressed, and the general arrangement of the building also underwent certain modifications.

The general plan of the exhibition is a chessboard arrangement of twenty-five squares of equal size (cells), each of them being 62 ft. 4 in. in length and in breadth. In the centre of four of these are square open courts of about one-third the size. The cells are in five rows of five each, and the central nave is prolonged by three cells. From the two outer naves covered passages lead to the second of the three extra cells just alluded to. The twenty-five main cells are to be devoted to the special purposes of the exhibition, while the extra cells and passages will be used as promenades, refreshment-rooms, &c. The outer cell of the three which adjoin the central nave is the principal vestibule, and has a cupola. It is in this portion of the work that the principal changes in the artistic details have taken place, and for these it is remarked that the credit rests with Messrs. Kyllmann & Heyden, architects.

According to the *Berlin Börsenzeitung*, the thirty-eight arches of the Stadtbahn which enclose the site will be devoted to the reception of various exhibits, and to kindred purposes. Amongst the numerous special displays in the vicinity of the main building are illustrations of the process of cremation, models of filtering-

stations, a miniature theatre, a music pavilion, a school of cookery, a Chinese tea-house, a meteorological pavilion, a diver's basin, &c. The erection of the model dwelling-house is being actively proceeded with, as well as the preparation of a large concert-hall.

The walks in the interior of the building will be laid with small stones and gravel, in a similar manner to the public parks, and will be made a little higher than the spaces around them. All the woodwork will be impregnated with a fire-resisting solution.

THE PALACE OF JUSTICE AT HAMBURG.

THE wealthy and finely-situated Hanseatic capital on the Elbe has hitherto been remarkable for the comparative rarity of large monumental buildings, public or private. The Senate and the Citizens, the Bourse and the Post Office, have all been compelled to make the best of edifices which they had entirely outgrown. Hamburg, in fact, is surpassed by many far smaller cities in Germany in its public buildings. This same defect had been long and acutely felt in the department of justice, and the evil had become so great that it was absolutely necessary to provide a remedy. Accordingly in the year 1877 a committee, composed of members of the Senate and of the Burgerschaft, proposed that a Palace of Justice should at length be erected, suitable in character and dimensions to the requirements of the city. It was proposed that the site of the edifice should be a large vacant piece of ground near the Botanical Garden, and that it should be large enough to accommodate every court from the lowest to the highest instance in the city, as well as a house of detention. The project was adopted; 3,000,000 marks,—that is, 150,000*l.*,—were voted for its realisation, and within a compartively short space of time the present stately pile of buildings called the Palace of Justice has been called into existence.

The style is the German Renaissance. It is simple, but dignified. The principal façade has a length of 374 ft. The height is 117 ft., and the whole effect is decidedly imposing, being, if anything, heightened and brought out more fully by the beauty of the surroundings, especially the gardens on the old ramparts. The material used in the building is the reddish yellow bricks of Silesia; the ornamental parts being executed in Weser sandstone, granite, and dolomite. The roof is constructed of iron, and covered with slate, and inclosed with iron lattice work. Great attention was paid to the interior, and except that the acoustic qualities of some of the larger halls are defective, the internal arrangements are admirable. Altogether the palace contains 102 rooms; the largest is the Court of the Landgericht, which covers 238 square mètres; the next in size being the Schwurgericht, 219 square mètres. The fitting of the audience halls is simple, yet artistic and dignified. The furniture cost 4,000*l.* The airy and vaulted corridors are paved with Mettlach clay tiles. Behind the palace stands the prison, which is built on the same principles as the Central Prison at Fühlsbuttel. The arrangements secure the strict separation of male and female prisoners. The only communication between the two parts of the establishment is by a subterranean passage, accessible only to officers of the establishment. The separate cells, as well as the rooms for the accommodation of a number of prisoners, are all, without exception, well lighted, airy, and spacious. The ventilation and warming are provided for by means of the most modern appliances.

THE MUNICH ART EXHIBITION.

THE Hellenic Government has been displaying a marked interest in the approaching Art Exhibition in Munich. The Minister of the Interior has addressed a circular to the various provincial authorities, instructing them to inform artists of the exhibition, and to stimulate participation in it, it being remarked that the Government will do all in its power to facilitate Greece being worthily represented at the above international display. Appropriate reference is likewise made to the ancient fame of the country as a home of art, and the hope is expressed that the representative works which are to be sent to Munich will show that Hellenic genius and skill have not lost their ancient characteristics.

ST. MATTHEW'S, BAYSWATER.

THE design for St. Matthew's Church (which is situated in St. Petersburgh-place, Moscow-road, Bayswater, very near the Queen's-road Railway Station of the Metropolitan Railway) was selected in a limited competition, being the only one submitted that met the views of the committee, which were to permanently retain the existing vestry, and the old church for divine services as long as possible during the building of the new, thus keeping the congregation and saving the cost of a temporary building elsewhere. The requirements necessitated considerable departure from the usual arrangement of plan, especially as the site was limited and the number of sittings large, viz., 1,450. The nave has a clear width of 49 ft., the length being 99 ft., the width across the transepts is 85 ft., and across the aisles, which are only passages, 67 ft. The vicarage-house was removed early in 1881, and the foundation-stone was laid by Mrs. Allcroft in June of the same year; the outer walls were built just beyond the old walls, and the nave piers were erected in the old church one by one, much to the amazement of the congregation, the seating being removed only to the necessary extent, thus literally building one side of the new church through the old; the top of the nave caps being a few inches above the top of the gallery front; the piers were left to consolidate, and after a time the centres were fixed and the arches turned. The aisle walls were then carried up, the old gallery floor being retained to protect the congregation underneath; the other side and end galleries were left intact. The old roof principals were supported by the new walls on one side, the other resting on the old walls as before. The clearstory was then continued to the height for the new roof; a platform was constructed to protect the old slating and for framing together the heavy principals,—the span from out to out was 53 ft.,—fortunately they were all securely fixed in position without accident, and the slating was executed before disturbing the old roof. The way the works progressed may be understood from the fact that the last sermon was preached in January, 1882, and the old church removed, new seating fixed, and the church consecrated by the Bishop of London on May 20th the same year.

The style of architecture is Geometrical. The entrance porch, aisles, and transepts are vaulted, the baptistery and chancel being executed in stone. The transepts are kept the same height as the nave arcade, so as not to break the line of clearstory windows. The clearstory and the nave roof are the great features of the interior, the principals and the bays being decorated by flowers and scroll work in gold on a dark ground.

The pulpit designed by the architect, and executed by the builders, has shafts of Irish green and red marble, with panels of alabaster. The inscription at the base is "In memoriam, Archdeacon Hunter, the gift of Mary, the wife of John D. Allcroft." The statuettes under the canopies are St. Paul, St Matthew, St. John the Baptist, our Lord, St. John the Evangelist, and St. Peter. They were executed by Messrs. Farmer & Brindley. The supporting angels were carved by Mr. Lawlor.

The baptistery, five stained-glass windows in the church by Messrs. A. L. Moore & Co., font, walnut canopied cover, and the reredos in the chancel, are the gift of Mr. Hunter.

The stained-glass windows in the chancel, executed by Messrs. Clayton & Bell at a cost of 500*l.*, are a memorial by the parishioners and friends to the late vicar, the Venerable Archdeacon Hunter, who had laboured for fourteen years among them, and died whilst the works were in progress. A marble bust of the Archdeacon by Mr. Lawlor is fixed in the south aisle.

The reading-desk is of Caen stone and alabaster richly arcaded and carved.

The lectern and platform are the gifts of Miss Davidson, executed by Messrs. Hart, Peard, & Co.

The exterior is faced with Bargate ragstone, with Box-ground Bath-stone dressings; the sides of the church, being hidden from view, are plain, but the front has all the work richly moulded.

The tower and spire, including the vane, have a total height of 240 ft., so as to be visible above the lofty houses of the neighbourhood. At the angles at the belfry-stage are figures, 6 ft. 6 in. high, of the four evangelists, the symbols being under. The clock-dials, 6 ft. in diameter, are of stone, the numerals being gilt, the clock and chimes being fixed by Messrs. Moore, of Clerkenwell.

The whole of the works have been satisfactorily carried out by Messrs. Dove Brothers from the designs of the architect, Mr. John Johnson, A.R.I.B.A., 9, Queen Victoria-street, Mansion House. The foreman of works was Mr. Buck. The gas-fittings were executed by Messrs. Jones & Willis; the heating-apparatus was fixed by Mr. Grundy; and the general carving was executed by Mr. Baird from the architect's sketches. The organ is placed on a large gallery at the south side of the chancel, the old instrument being enlarged and refixed by Messrs. Bishop & Son.

CHAPTER-HOUSE, LINCOLN CATHEDRAL.

THE fine thirteenth-century arcade is from the vestibule leading to the Chapter-house, and terminates at the west end with a triforium over the entrance which formerly led to the cathedral library upon the north side of the cloisters.

Above the triforium is a clearstory lighted by a large unrelieved round window, which, without doubt, was intended to be ultimately filled in with stained glass.

The arches upon either side of the entrance have subsequently been filled up with rubble plastered, and doors added to the entrance archway.

The whole Chapter-house suffers from a layer of yellow wash.

The drawings from which our illustrations are produced were made by Mr. William Alfred Pite, to whom the Pugin Travelling Studentship has been awarded this year.

CHURCH, GRAAFF-REINET, SOUTH AFRICA.

THE town of Graaff-Reinet, the principal town in the province of that name, is situated on a branch of the Sunday River, which flows into the Indian Ocean a few miles to the eastward of Port Elizabeth. It is a flourishing inland centre of business, boasting several banks, churches, and other public buildings. It is 489 miles from Cape Town, 160 miles north of Port Elizabeth, and 150 miles west of Grahamstown. The population numbers about 8,000.

The materials proposed to be used in the erection of the church will be almost exclusively brick and timber, there being no stone quarried in the neighbourhood. The roof will be covered with corrugated iron, and in order to mitigate the effects of the semi-tropical sun, there will be a space underneath the corrugated iron, so as to allow of a free circulation of air between the iron and the boarding which covers the rafters.

The plan of the church, which is to accommodate 450 persons, is a simple parallelogram in shape, with open benches in the usual manner. There is an organ recess and orchestra at the east end, and a large vestry on the south side. The spacious porch at the west end is designed to afford protection from the sand-drifts and heavy rains.

The church is to be erected for the Rev. J. J. Doke, and Mr. Jno. R. Nichols is the architect.

THE OPENING OF THE WELLESLEY BRIDGE, LIMERICK.

THE above structure, which has been known as a toll-bridge for nearly half a century, was on Monday opened free to the public by the Mayor of the above city, attended by the Corporation, Harbour Board, and leading citizens. The structure was erected at a cost of 80,000*l.*, and, connecting Limerick with Clare county, is one of the handsomest of its kind, resembling the Pont Neuf of Paris. The money for its erection was advanced by the Government, but recently the Clare and Limerick grand juries guaranteed to pay by presentments passed at each assizes the balance still due. An Act of Parliament was passed last session giving effect to this arrangement, and the Board of Works signified that the bridge could be declared open forthwith. The opening was celebrated by Corporation festivities and general rejoicings.



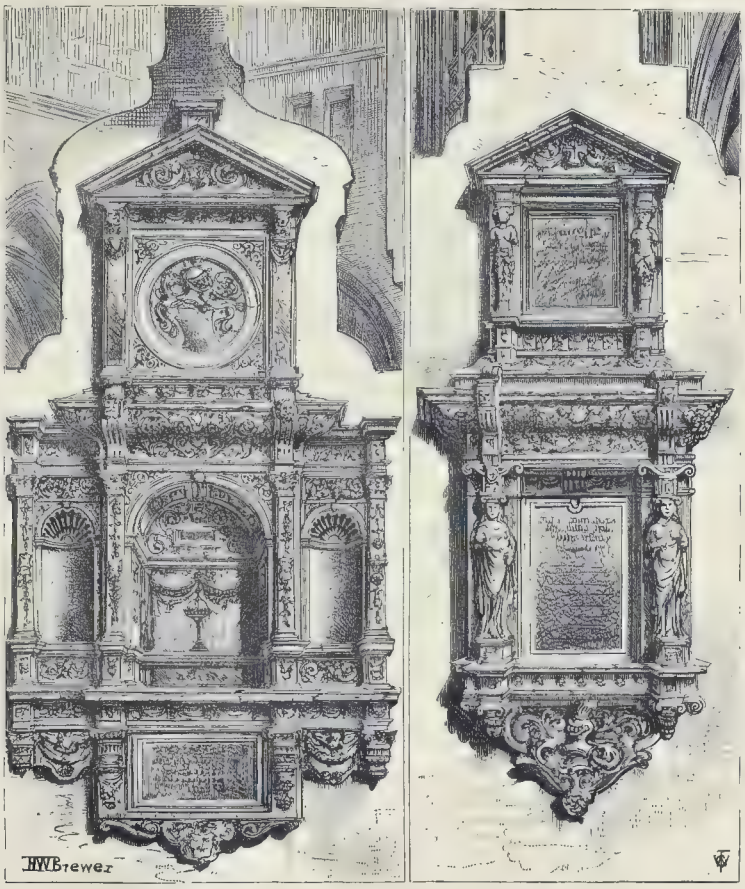
FOR THE REV.D J.J. DOKE. Church at Graaff Reinet South Africa J.R. NICHOLS ARCHITECT ALBERT BUILDINGS QUEEN VICTORIA ST. LONDON E.C.



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MONUMENT TO ALEXANDRE DUMAS, PLACE MALESHERBES, PARIS.—M. Gustave Doré, Sculptor.



MURAL MONUMENTS IN BREDA CATHEDRAL.

MONUMENT TO ALEXANDRE DUMAS IN PARIS.

It was to be expected that the numerous admirers of Alexandre Dumas would erect a monument to his memory, for it is right that posterity should know how that fertile writer was appreciated by his contemporaries. It is a debt of gratitude which they owed to the author of "Trois Mousquetaires," his *chef-d'œuvre*. The monument is now being raised on the Place Malesherbes, Paris, near the residence of Alexandre Dumas Fils, the funds being provided by public subscriptions.

The author of the work is the great artist whose recent demise is deplored by the world of art,—the late Gustave Doré. Much has been written about the genius displayed by him in the various and brilliant manifestations of his talent; but it is not very generally known that during the latter years of his life he applied his gifts also to sculpture. The monument to Alexandre Dumas Père marked a new stage in the life of the late master. It has been said of him with regard to this work that, if Gustave Doré had not during his lifetime proved himself to be a great painter, he would have been stamped by it a great sculptor. It is difficult to say to what heights he might have attained if he had not been cut off so soon. The view which we give of the statue will testify to what has been said, and speaks for itself.

The monument, which is rapidly nearing completion, is to be unveiled during this month (April). In reproducing it in the *Builder*, we cannot do better than quote the closing sentences of the funeral oration pronounced by Alexandre Dumas Fils at the grave of the late Gustave Doré:—"It is not only admiration," said he, "it is not only friendship, which causes me to say a few words at the grave of the great artist. With that enthusiasm and that generosity which formed the base of his nature, Doré, while others hesitated, offered spontaneously and modestly to execute, as an evidence of his admiration for the father and his friendship for the son, the statue of the author of 'Henri III.,' 'Mademoiselle de Belle-Isle,' 'Trois Mousquetaires,' and 'Impressions de Voyage.' He would not accept remuneration; he gave to this all his time, all his talent; he may, perhaps, even have given his life. Who knows but that this monument, which occupied his time from morning till evening, sometimes also his nights, and which he has executed in six months, may not have been the cause of the disease of which he died, and to which the ardent and the passionate are liable?

For six months he has lived face to face with that other great master, whom he resembles in many points by his fertility and inventiveness, by variety and power, by his disinterestedness and kind-heartedness. This heart, which should break so suddenly after the completion of this work, has beaten filially, in unison with mine, for the consecration of the fame which to me is the most sacred. The writer and the artist were so well fitted to understand each other. Thus the whole soul of the artist has passed into and sheds its lustre over the image of the writer and the poetical figures by which it is surrounded. There they are publicly and for ever united in the memory of men; for the statues of poets are, fortunately, not those which are overthrown.

Behold here the sculptor who was arraigned, defying now indifference and injustice, compelling the multitude to look at last at his work, and thrown violently by death into the terrestrial immortality which he has given to another; we, Doré and myself, are descended after all from the same family, by the same love. Thus it is that I come here as one of his brothers to render to his dear memory the homage, which I cannot, unfortunately, cast into bronze, of my sincere admiration and of my profound yet unavailing gratitude."

MONUMENTS AT BREDA.

The fine old cathedral at Breda, in Holland, neglected but still beautiful, is rich in monuments of every description. The brass font, the choir-stalls, and the noble monument of the Nassau family, have been already illustrated in this journal, and we now add a drawing of a very remarkable example of a mural monument. This is interesting as showing the thoroughly Italian character which the Renaissance assumed in some parts of Holland.

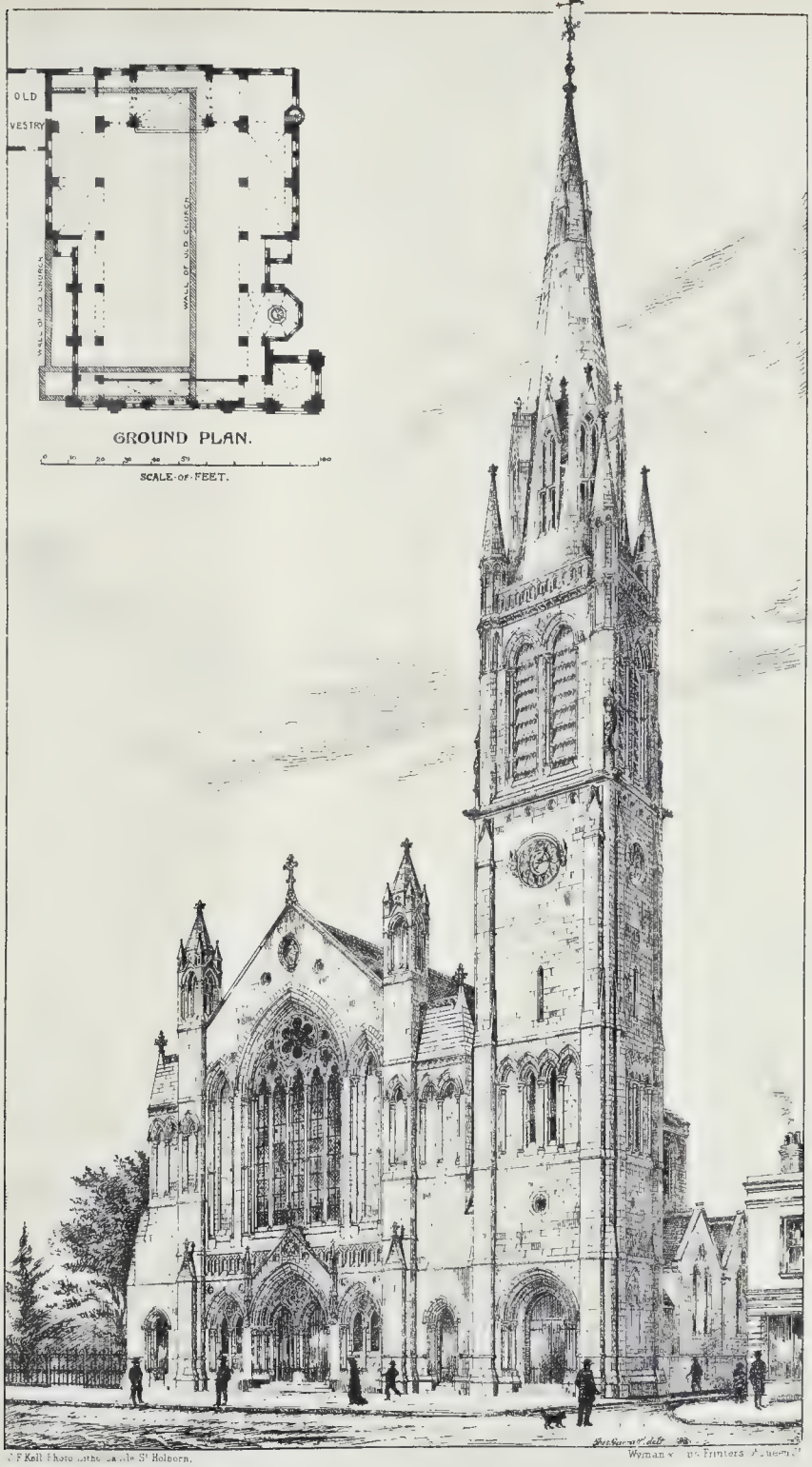
When we say that these monuments are Italian in character, we must not be understood to suggest that they are the work of either Italian architects or workmen. The dates of their erection would preclude the possibility of their being so. The principal monument now given dates from the year 1536, and is to the memory of the Count de Bourneval.*

* This description was accidentally applied to view of a monument in Münster Cathedral, but was set right in the following number.



Whitman & Bass *Photo lith* 236 High Holborn

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ST. MATTHEW'S CHURCH, BAYSWATER.——Mr. John Johnson, Architect.

BRITISH ARCHÆOLOGICAL ASSOCIATION.

AT the eighth meeting of the session it was announced that the course of the intended railway from Portsea to Bristol, designed to pass through the Avenue and the Cursus of Stonehenge, had been modified to avoid these interesting objects of antiquity.

The progress of the arrangements for holding the Congress at Dover were detailed by Mr. Geo. R. Wright, F.S.A.; and the election of Lord Granville as President was reported.

The Rev. Prebendary Scarth rendered a report of his recent visit to inspect the remarkable Gallo-Roman town now being excavated at Sansay, near Poictiers. It is of considerable extent, but no enclosing wall having been found, it would appear that it was a health resort rather than a place of strength. The remains of a large temple, measuring 250 ft. to the façade, have been already laid open to view. It is approached by two flights of steps, and has a triple colonnade, each composed of twenty-two fluted columns. The temple is in the form of a Greek cross, with an octagonal *cella*, and it appears to have been dedicated to the Gallo-Roman Apollo. This building is but one of several, baths of large extent, a hostelry, and a theatre having been already met with. The cost of the excavations is being defrayed by Père de la Croix. The report was read in the author's absence by Mr. W. de Gray Birch, F.S.A.

Mr. A. B. Wyon, F.R.G.S., made an interesting communication in support of his statement that Henry IV. used three *fleurs-de-lys* as the arms of France, and with regard to the period when the change was made by the kings of that country.

A paper was then read by Mr. E. Walford, M.A., on the curious old Flemish glass in Vane House, Hampstead, formerly the residence of Bishop Butler (1740 50) when Dean of St. Paul's. He traced the evidence that it had been placed in the window by the bishop. There is a series of subjects very similar at Oriel College, Oxford, which appear to have been brought from Hampstead. Only a portion of the mansion now remains, incorporated into the Soldiers' Daughters' Home.

The proceedings were brought to a close by a paper on "Recent Archæological Discoveries," by Mr. Loftus Brock, F.S.A. At Westminster Abbey one of the principal windows of the refectory has been met with; and at Old Fish-street-hill the foundations of the old church of St. Leonard, Eastcheap. This building was burned in the Great Fire of London, and never rebuilt. It was one of a remarkable group of churches, there having been no less than eighteen within a circle of only a quarter of a mile in diameter around it.

THE BERLIN BOURSE.

THE enlargement of the Berlin Bourse, which is now in process of being carried out, will be completed next summer, and then the Berlin Bourse will be the largest building of this kind in the world. The length of the great hall will be exactly 100 mètres, or 328 ft., the breadth being 77 ft. and the height 88 ft. The rougher work is already nearly finished, only the floor of the great hall having to be vaulted. The building will be one of the most costly private edifices ever constructed in the city. The reason is that the ground water of the adjoining river Spree stands several inches above the level of the cellars so that the entire edifice had to be built on about ninety sunken caissons. The internal arrangements of the new hall will entirely correspond to those of the old one; and after the removal of the middle wall the great hall will appear as one connected whole. In the arrangement of the subordinate rooms too, the old model has been followed, which is that of the so-called New Bourse, built only twenty years ago, the architect of which was the late Oberbaurath Strack. The brown granite columns he gave are provided with white marble capitals and black socles. In the re-building the subordinate rooms have been well attended to. A ten-windowed public sitting saloon, a large library, a new and roomy wardrobe and refreshment rooms, as well as a variety of spacious rooms for post, telegraphy, &c., and last, not least, of accommodation for the representatives of the press. The new front, looking on the new street,—not yet named, and which it is proposed to call Börsenstrasse,—will be executed in the same style in sandstone, but will be quite independent of the old part as well as of the front looking on Burgstrasse. The architects, Messrs. Moser & Handrieser, have been commissioned to superintend the work of artistic decoration.

FOREIGN EXHIBITIONS.

IN spite of the prolonged frost of the past month, the work of erecting the buildings in which the International Hygienic Exhibition is to be held in the coming summer in Berlin has been making very satisfactory progress. The principal hall is a square, each side being 312 ft. in length, and consists of twenty-five pavilions of equal magnitude constructed of light ironwork somewhat in the form of tents which afford plenty of light from the roof and sides. The chief entrance to the exhibition will be adorned with a fine large group of figures personifying "Hygeia." The interior of the cupola will be embellished with *velaria* by Professor Preller, and in the prominent spot here will be placed the bust of the Empress Augusta, who has shown great interest in the exhibition. An annexe lying along the chief axis of the building will be adorned with a panorama of the noted Austrian health-resort of Gastein, painted by Professor Hertel.

There will be three Fishery Exhibitions in Germany this year at Hamburg, Schwerin, and Ratisbon. They will open at the beginning of May.

FOREIGN COMPETITIONS.

THE French Ministry of Public Works has made a communication to the President of the Paris Academy of Sciences, respecting the conditions of the great Volta prize, which is to be presented in the year 1887. The value of the prize is 50,000 francs, or 2,000*l.* sterling, and it is to be given to the person who shall by that time have made the most important discovery in electricity, applicable in an economical manner to any one of the following objects:—(1) as a source of heat; (2) light; (3) chemical action; (4) mechanical power; (5) the transmission of messages; (6) or the treatment of disease. The last date for receiving applications is June 30, 1887. The prize will be awarded in the December of the same year. Men of science of all nations are invited to compete.

The Brazilian Government has determined to erect a new Imperial Library and Government Buildings in Rio de Janeiro, and has offered two prizes for the best designs for the edifice. With regard to the conditions of the competition, we learn from the programme that it is open to architects of all nations. The building is to contain in addition to an extensive collection of books, separate departments for manuscripts, for numismatics, coins, medals, &c., for engravings, and for the archives. The last day for the reception of designs is June 30th, 1883. The programme leaves the competitors free to treat the problem very much according to their own ideas. The two prizes which are offered are of the value respectively of 1,000*l.* for the best design, and 400*l.* for the second. The judges will be the Brazilian Minister of Public Works, the Librarian, the Chief of the Archives, and three professional men, who are not to be nominated until after the designs have been sent in. The sum which it is intended to spend on the erection of the building is 100,000*l.*

A GIGANTIC TUNNEL.

AN extraordinary project has been suggested in Paris. It is to connect the capital with the city of Rouen by a tunnel. The length of the work would be 117 kilomètres, or over 73 miles, while the cost is calculated at 5 millions sterling. The projectors contend that there are great strategic as well as commercial advantages connected with the scheme, but sober-minded critics regard it as the mere dream of a visionary.

Cardiff.—To meet the demands of this rapidly-advancing town, a new public hall is about to be erected. Messrs. James, Seward, & Thomas are the architects, and Mr. Addawnay, A.-M. Inst. C.E., is to construct the ironwork for the roofs, galleries, columns, &c.

LIGHTING STREET LAMPS BY ELECTRICITY.

HERR VERMEHREN, chief of the Central Office of Engineering at Hamburg, has described, in the *Deutsche Bauzeitung*, an appliance for the above purpose, a drawing of which will be on view at the Berlin Hygienic Exhibition. It was tried with success last year, when a model group of thirteen lights was erected at Hamburg, and will be applied to a permanent group shortly to be placed in a leading position in that city.

The apparatus for ignition consists of a battery in the foot of the candelabra, from which the electric current is led to each light by means of an isolated wire, after passing through an induction apparatus, and through a contact-apparatus, also placed in the foot of the candelabra. The lights are composed of burners with several jets of flame. Each wire terminates in a point of platinum, and a second point of platinum is placed directly at the burner. A single turning of the contact apparatus, therefore, kindles all the jets. The labour of ascending to kindle the thirteen lights is thus obviated.

LEADENHALL NEW MARKET AND ITS SURROUNDINGS.

THE reconstruction of Leadenhall Market ha been accompanied by a complete change in th character of the buildings immediately around the market. Several old structures in Leadenhall-street, and also in Gracechurch-street, have been taken down and replaced by palatial new buildings, which have very materially improved the architectural appearance of the locality. One of the most prominent of these new structures is the massive block called Leadenhall Buildings, having two extensive frontages, the Leadenhall-street elevation extending from the corner of Gracechurch-street to the Whittington-avenue approach to the market, whilst the Gracechurch-street frontage, architecturally uniform with that already named, is about 50 ft. in length. There is also an angular frontage at the corner of the two thoroughfares, the architectural treatment of which is specially elaborate, and forms the chief feature in the entire block. About the time when the rebuilding of the market was under consideration, the Corporation secured a portion of the land on which the old buildings stood, at the corner of the two streets, for the purpose of widening the footway and making it circular at the angle, and this intention has been carried out in the erection of the new buildings now on the point of completion. Within the last few days the hoarding in front of the buildings has been removed, and the greatly-improved footway at the corner of the two streets is seen to advantage. The ground-floor portion of the entire block consists of handsome shops, divided by polished Aberdeen granite piers, the whole of the upper portions of the three frontages being in Portland stone. The angular frontage at the corner of Gracechurch-street is upwards of 70 ft. in height, and is surmounted by a bold and handsome pediment, richly carved. This portion of the buildings, which is carried to a greater height than the two frontages in Leadenhall and Gracechurch streets, contains four lofty stories above the ground-floor. The first-floor has elliptical windows, with rich carving in the spandrels, and there is also a profusion of carving in other parts of the elevation. The Leadenhall-street and Gracechurch-street frontages have three lofty stories above the ground-floor, the two elevations being surmounted by a balustrade. The first-floor has a range of elliptical windows, uniform with those in the angular front. The Leadenhall-street elevation is 250 ft. in length, and at the Whittington-avenue corner is sure mounted by a handsome turret. The whole of the interior of the buildings, with the exception of the shops fronting the two streets, are arranged as suites of offices, of which there are upwards of 300. The architects are Messrs. Edmeston, and the contractor Mr. Shepherd. The estimated cost of the buildings when completed is about 70,000*l.*

In continuation of these buildings, another somewhat similar block is in course of erection on the west side of Whittington-avenue, on the site formerly occupied by the old Leather Market, whilst immediately opposite to them, on the east side of the Avenue, the erection of a third block of like buildings is also in progress. The architects of the last-named build-

ings are Messrs. Edward Ellis & Sons, and Messrs. J. & J. Greenwood, of Arthur-street West, City, are the contractors, their contract being 21,000*l.*

LINCOLN'S INN CHAPEL.

THE works connected with this chapel, which have been in progress since August, 1881, are now approaching completion, and the re-opening for Divine Service is announced to take place on Sunday, the 8th inst., when the sermon will be preached by the Archbishop of York.

Although replete with interesting associations, it formerly presented but few architectural attractions; and externally, even these were all but concealed by the adjoining buildings. The demolition of the old chambers at the west end, through which access was obtained to the chapel, preceded the important alterations which have since been made and which comprise the addition of 27 ft. to the length of the building, besides 19 more of antechapel; an entirely new roof, of higher pitch than the former, and the erection of vestries for the clergy and the choir in the anti-chapel, with double staircases beneath. Externally, the buttresses have been surmounted by pinnacles; the gables by crosses, and turrets added to the corners of the west end. The chief attraction to the connoisseur in architecture will doubtless be the stone groining of the large crypt, which certainly excels the work of the older builders; this, indeed, having never been finished in stone. The interior will strike all who were familiar with the former building as little less than a transformation. The new roof (already referred to) is panelled in moulded frames, the "principals" being supported by massive stone blocks in the form of angels bearing shields, on which are carved the arms of the prelates who have been, during the past two or three centuries, Preachers to the Honourable Society.

Some fears were naturally entertained lest the acoustical properties of the old chapel might be affected by the altered roof and changed proportions; this, however, has not been the case, save in the direction of improvement.

Surprise has often been expressed that the services of this chapel should have failed to attract a larger attendance. The causes may have been two-fold:—1. Very few were acquainted with its exact locality, hemmed in as it was by buildings of anything but an ecclesiastical character; and 2, there seems to have been a general impression that admission was only to be obtained by Benchers' orders. With respect to the latter, we understand that the new portion of the building, containing about a hundred seats, is intended to be open to the public; and as to the former, no one once in the precincts of the Inn can now fail to discover the whereabouts of the chapel.

The hours of service are 11 a.m. and 3 p.m. on Sundays.

A NEW PRISON FOR BRISTOL.

BUILDING operations in Bristol and neighbourhood at the present time are exceedingly brisk, the greatest undertaking in the city being the erection of a new Government gaol. The Home Secretary having appointed the new prison at Horfield (Bristol) a prison under the Prisons Act of 1865 and 1877 for all classes of prisoners from the city and county of Bristol, and a portion of the building,—about 160 cells, &c.,—being ready for the reception of prisoners. The process of removing them from the building on the New Cut commenced on Monday. Before the building is thoroughly completed fully two years will have to elapse. There will be another block built for female prisoners, but until that is done thirty-eight cells of the present building will be temporarily divided off for their accommodation. The boundary-wall was commenced, and about two-thirds completed, by the Bristol Corporation, but they were relieved of the burden of the undertaking by the passing of the Prisons Bill, and building operations, a long delay in the work following. This wall, now entire, is 20 ft. high, and 2 ft. 6 in. thick on the ground-level, and buttresses of greater thickness are continued to the coping-wall. The cells are 168 in number; they are arranged in four stories, down the centre running a corridor open to the roof, which is about 60 ft. high. The upper stories are approached by iron stairs, and the passages in front of each row of cells are supported on iron girders. Each cell is 14 ft. long, 7 ft. wide, and about 9 ft. high, and is provided with a substantial double window near the ceiling, so arranged that there is no iron projection to which a prisoner might tie anything. A similar precaution has been taken in the signalling apparatus, by which a prisoner might call one of the warders to his cell. Electric bells have been erected, and the pressing of a button in the cell will not only ring for the warder, but by moving an indicator outside, inform him of the number of the apartment to which he is to go. The floors are of wood, and the walls of firm Shatwood bricks, closely laid and cemented with the best machine-made mortar, which will defy all attempts to remove it. At a lower level than the ground-floor cells a large space is set apart for the boilers to feed the hot-water apparatus, and the arrangements are excellent for the discharge of the warm air into the various cells. The boiler-house is 16 ft. 6 in. wide and 33 ft. long. The cell-doors are of wood, lined on the inside with iron. Between the fourth story and the roof are placed large tanks which will have a supply of water in case of emergency. A considerable portion of the roof is of glass, and the light is ample. The cells to be erected hereafter will be built at right angles to the first structure; and when the gaol is complete it will be the finest and most complete in the country. The contractors are Messrs. E. C. Howell & Son, Bristol, whose foreman of works was Mr. G. Roe, and clerk of the works, Mr. H. Gardiner.

AGE OF TIMBER.

A FEW miles from San Francisco a tree was recently felled which, as American writers think, is one of the oldest, if not the oldest, tree in the world. It was one of the *Wellingtonia* species, and, according to the rings which were counted, its age was no less than 4,340 years. It was partly hollow, and within the bark three hundred persons could find standing-room. It was only with reluctance that this ancient giant of the forest was cut down, but its removal was imperative, as it threatened to come down of itself during the first violent gale. Another ancient tree which was recently destroyed was a cypress tree near Sparta. It is stated that this was the very tree spoken of more than two thousand years ago by the ancient Greek writer, Pausanias, and was then very old. It was accidentally destroyed by fire, a band of gipsies having lit a fire under it to cook their food, and incautiously allowed the flames to reach it.

ARCHÆOLOGICAL SOCIETIES.

Coventry.—On the 14th ult. a meeting was held in the Mayoress's Parlour, St. Mary's Hall, to consider the desirability of froming an antiquarian and naturalists' society for the city and neighbourhood. The Mayor (Mr. A. S. Tomson) occupied the chair, and there was a fair attendance. The Mayor having briefly opened the meeting, Mr. W. G. Fretton, F.S.A., stated that the objects of the Society were:—(1) To promote an interest in and extend our knowledge of local history and antiquities. (2) To encourage a desire for the preservation of our ancient buildings. (3) To guard and protect our ancient privileges. (4) To familiarise ourselves with the actual lines of our parochial and other boundaries. (5) To bring together the fragments of our local history, as exemplified in our municipal and other records, old traditions, customs, provincialisms, place names, folk lore, heraldry (in archæology), manufactures, art, statistics, local biography, and genealogy. (6) To encourage a respect for and to preserve the memorials of the dead. (7) To promote the study of local natural history, geology, botany, &c. The objects were approved of, and it was decided to form a Society, and a provisional committee was elected for the purpose of drawing up the rules.

Fenchurch-street Station.—This hitherto exceedingly inconvenient station is being considerably improved. The approaches to the platforms are being widened, while refreshment and waiting rooms are being provided. All the floors, joists, and girders of the platform are being renewed and strengthened; indeed, the work comprises the entire renovation and improvement of the station in every particular except the roof. The work has been entrusted to Messrs. Bangs & Co., builders, Bow.

PARLIAMENTARY JOTTINGS.

Labourers' Cottages in Ireland.—In the House of Commons on the 15th ult., Lord J. Manners asked the Chief Secretary to the Lord-Lieutenant of Ireland whether he could state the number of orders made by the Land Commissioners for the erection of labourers' cottages, and the number of cottages which had been erected in consequence of such orders.—Mr. Trevelyan: The Land Commissioners inform me that the number of such orders made is 339, but that they are unable to state how many cottages have been erected in consequence of such orders. By section 4 of the Labourers' Cottages and Allotments Act, a tenant who has been ordered to erect or improve a cottage is liable, on the complaint of any labourer employed on his holding, and in whose favour an order was made, to a penalty, recoverable before justices in petty sessions, of 1*l.* for every week,—after six months from the date of the order,—during which such order remains unobeyed. The enforcement of an order is, therefore, left to the person benefited thereby.

Westminster Hall.—Mr. R. Paget asked the First Commissioner of Works whether he would be good enough to place in the library of the House an architectural elevation showing the proposed treatment of that part of Westminster Hall which would be opened to view by the removal of the old Law Courts.—Mr. Shaw-Lefevre: Until the whole of the buildings of the Royal Law Courts are entirely removed, it is impossible to form any opinion as to what should be done with the west front of Westminster Hall. Whenever a decision is arrived at, I will take an early opportunity of informing the House of any works that are in contemplation.

FROM SCOTLAND.

Edinburgh.—Bailie Cranston's scheme for the utilisation of the Old Infirmary grounds (noticed in the *Builder* a short time ago), came before the Lord Provost's Committee for consideration. The scheme embraces the construction of a viaduct over the Cowgate valley from Drummond-street to High-street; the opening up of the front of the University by setting back the line of houses opposite, the extension of Infirmary-street, and the feuing of a large area for building purposes. In submitting the plans, the Bailie said that the Royal Infirmary having been removed to a healthier locality, the city had bought the old buildings and ground at a large price; and that ground was at present lying waste and unproductive. They had advertised for plans and offers for the ground; but had received none they could entertain. 1,040*l.* represented the interest, at 4 per cent., they were paying on the 26,000*l.* they gave for the ground, and that was being lost annually to the city. About another 26,000*l.* worth of ground belonging to the Improvement Trust was also lying unoccupied in the neighbourhood of the Cowgate, and he asked if they ought not at once to endeavour to utilise this ground, and save the city so serious an annual loss. The value of the ground now in their hands thus represented a capital sum of 52,000*l.*, and the question was, How was this valuable area to be made productive? He thought they should look for a return, first, by feuing the ground for building purposes, and secondly, by making new streets and buildings of such a character as would improve the sanitary condition and amenity of the neighbourhood, and, consequently, the health and business of the city. On the motion of the Lord Provost, the matter was remitted to a small committee, consisting of his Lordship, Bailies Roberts, Anderson, and Cranston, and Mr. Steel.—Under remit on the motion of Mr. M'Lachlan, the Lord Provost's Committee of the Edinburgh Town Council had under consideration a proposal to establish public wash-houses and baths in some of the poorer and more densely-populated localities of the city. The Committee were apparently well disposed towards the establishment of wash-houses, and it was resolved that an experiment should be made on a small scale with one at Lower Calton. A sub-committee was charged with making the necessary arrangements. The question of public baths was deferred for further consideration.

Portobello.—At the last meeting of the Portobello Town Council, a plan of the proposed slaughter-house and stables for the burgh to

be erected in Pipe-street was submitted. The estimated cost was stated at 1,350*l.* The Provost proposed that they should borrow 2,000*l.*, which could be paid off in thirty years by the payments made by butchers and dairymen without levying any assessment upon the public. It was agreed to visit the site, and the matter was remitted to the Provost's Committee, with powers.

AN APPEAL FROM ART STUDENTS.

Sir,—It has occurred to the writer during a few months' sojourn in Paris for the purpose of studying art, that the system of enforced study abroad is not quite satisfactory, and might well be remedied, to the advantage of both students and the art they study. This may serve as apology for this appeal to the art students and artists of England, which only a strong feeling on the subject has induced him to make public.

The position of an art student in Paris may not inaptly be compared to that of an invalid seeking in foreign countries that genial climate which his native land cannot afford. The analogy differs in that the latter cannot be remedied, whilst the former could and ought to be. Taking it as an accepted fact that art students are by no means lacking in patriotism, a fact which the writer's experience certainly goes to prove, it is to most of them a galling reproach that, finding they lack higher instruction in their profession, they can by no means obtain it in England.

The Royal Academy schools are, in consequence of their limited accommodation, necessarily closed to the great majority of students, and are, of course, utterly inadequate to supply the wants of the whole of the country in respect of *advanced* education in art, and if an advanced student does get in (and the chances are largely against his admission), he can seldom afford the time consumed in making the necessary preliminary studies; in addition to which, he must consent to retrace his steps for a considerable period.

The schools of art under the South Kensington department, though professing to teach painting, are, with very few exceptions, singularly deficient in professors of eminence in this branch of art.

There are, of course, private academies, but, like the Departmental schools, they fail to induce the advanced student to remain with them, owing to the absence of well-known names at their head; and in despair he is driven to France, Belgium, or Germany, where he can find not one only, but numerous schools of art, presided over by the most eminent artists of the several countries. Indeed, it is not too much to say, in Paris every artist of the first rank has, or has had, a following of students, to whom he kindly gives instruction and advice.

Whilst dealing with the schools of the present, it may not be inapplicable to refer to schools of the future. It is, of course, well known in the artistic world that arrangements for an advanced school, presided over by an eminent Academician, to be carried on outside London, are on foot; but, admirable as the idea is, and promising as it may appear, the limited size will certainly not be sufficient to supply the want felt, or render unnecessary further efforts.

It is often said that the French temperament is more fitted than the English to receive artistic education, and so to excuse our national failing in this respect; but it is tolerably evident to the student in Paris that it is more a matter of sound education, for among the English and American students who throng the French *ateliers*, the average of success is, I should say, certainly as high, if not higher, than among their French brethren, first places in the various *concours* being frequently taken by Anglo-Saxon students. The same results, as is now notorious, have been obtained in Belgium.

If the student is easy-going, and content to let things rest, the state of things as it now is is satisfactory enough; but allowing him to be patriotic, it is not surprising that he should prefer to get his necessary training, if possible, in his native country, and study foreign art (a highly commendable thing in itself) by choice, not compulsion.

To remedy this state of things, it appears to the writer that the same system which obtains in Paris might easily be applied in London, were our eminent artists equally obliging as the French.

The system has been so often spoken of in these and other pages, that it is almost an impertinence to again explain it; but, to prevent misunderstanding I will venture to restate it. An artist in Paris makes a name, we will say, in the Salon or otherwise. Students naturally look on his work with admiration, and feel a desire to study under him. A few get together, a meeting is convened, and a deputation waits on the artist, asking him if he will undertake the direction of their studies to the extent, say, of two visits a week, the average amount. This is rarely refused. A studio is found, the students get to work, the professor makes his bi-weekly visits, and the students being satisfied with their instructor, affairs progress in a satisfactory manner; and, as a natural consequence, great advance is made in their studies.

In the absence of the above system the case simply amounts to this. We have the professors, we have the material; but, simply owing to want of coalition between the two, London is in the position of being without schools capable of affording higher instruction to an immense number of students, who are consequently driven abroad, whence they frequently return, having not only learned French technique, but imbued also with French ideas as to art, a result in the writer's opinion by no means to be desired, tending as it does to the denationalisation of our art, and to the loss of qualities peculiar to ourselves, not to be lightly thrown away.

Indignans.

BUILDING PATENT RECORD.*

APPLICATIONS FOR LETTERS PATENT.

1,532. A. C. Boothby, Kirkcaldy. Automatic flushing apparatus. March 24, 1883.

1,535. J. Booth, Bolton. Construction of window-frames, skylights. March 24, 1883.

1,567. W. Lord, Middlesbrough. Apparatus for preventing down-draught in chimneys, &c. March 28, 1883.

1,570. R. A. Hunter, Dublin. Ventilators. March 28, 1883.

1,574. A. F. Morrison, Manchester. Construction of lavatories, baths, water-closets, &c. March 28, 1883.

1,585. W. P. Thompson, Liverpool. Heating apparatus for domestic use, &c. (Com. by C. Launay, Paris.) March 29, 1883.

1,592. L. C. Besant, Glasgow. Stoves. March 29, 1883.

1,599. A. F. Andressen, London. Smoke-preventing and fuel-saving grates and stoves. March 29, 1883.

NOTICES TO PROCEED

have been given by the following applicants on the dates named :—

March 27, 1883.

599. S. S. Hellyer, London. Water-closets and slop-sinks, &c. Feb. 3, 1883.

March 30, 1883.

5,626. H. Sutcliffe, Halifax. Metal cistern and syphon used therewith. Nov. 27, 1882.

5,680. H. Doulton, London. Construction of the steps of flights of stairs. Nov. 29, 1882.

920. H. W. Davidson and J. Speir, London. Assisting the combustion of fuel in grates, &c. Feb. 20, 1883.

ABRIDGMENTS OF SPECIFICATIONS.

Published during the Week ending March 31, 1883.

2,728. M. Cockburn, Falkirk. Washing-houses. June 10, 1882. Price 6d.

The partitions dividing the wash-house, are formed partly of unperforated plates and partly of wire netting, &c.

3,696. W. Ney, London. Preventing noise in window-frames. Aug. 3, 1882. Price 2d.

An indiarubber wheel is mounted in a frame on the window frame, and intervenes between the sash and the frame. (*Pro. Pro.*)

3,729. A. J. Boult, London. Washstands. (Com. by U. O. Bond, Fairfax, U.S.A.) Aug. 5 1882. Price 2d.

The wash-basin is so suspended that it can drop down with the stand, to empty its contents, and be again raised. (*Pro. Pro.*)

3,749. A. M. Clark, London. Fabric for wall-hangings. (Com. by A. Hutchinson, Paris.) Aug. 5, 1882. Price 4d.

This consists of caoutchouc, oxygenated linseed oil and cork, cocoa-fibre, oak, sienna, and ochres, or metallic oxides, reduced to a powder, with the waste filament of wool or cotton, &c. This mixture is rolled out in a thin layer upon a backing.

3,775. J. C. Bloomfield, Blen-y-Lung, and J. McGurn, Bally-Magharan. Manufacture of bricks, tiles, or slabs. Aug. 8, 1882. Price 2d.

Two parts of sand are mixed with one part of chalk with water. The mixture is moulded, and the articles at once baked, while wet, and while hot are dipped in boiling coal-tar.

3,811. C. H. Southall, Leeds. Apparatus for cleaning and polishing windows. Aug. 10, 1882. Price 6d.

This is a spring bow-frame, fitted with swivelling rubbers.

3,844. E. A. Brydges, London. Reed fabric for ceilings. (Com. by P. Stauss and H. Ruff, Cottbus, Germany.) Aug. 12, 1882. Price 6d.

Doubled reeds are woven in a loom in such a manner that the upper and lower layers are woven on to an intermediate wire, and this fabric is used for ceilings.

3,969. J. Chaffin, Charlcombe. Glazing greenhouses, &c. Aug. 19, 1882. Price 6d.

Strips of felt are interposed between the glass and the rafter-bars, and between the overlapping edges of the panes.

4,850. W. Teague, Illogan. Apparatus for ventilating. Oct. 12, 1882. Paice 4d.

The outlet-pipe is surrounded by one or more tubes each of which has an inlet placed near the end of the pipe, near the fan.

* Compiled by Hart & Co., Patent Agents, 186, Fleet-street.

BURNLEY.

The Guardians of the Burnley Union Workhouse decided the other day as to the contractors for four blocks of cottage homes in connexion with the workhouse. They will be erected on the south side of the site, with local parpoints lined with brick. The joiners' work will be of pitch pine varnished. The contractors are as follow : — Excavators' and masons' work, Messrs. Smith & Kippase, Burnley ; carpenters' and joiners' work, Mr. Robert Brown, Burnley ; slaters' work, Mr. W. Stannath, Burnley ; plumbers' and glaziers' work, Messrs. Collinge Brothers, Burnley ; plasterers' and painters' work, Mr. Robert Smith.

On Saturday last Mrs. Fraser (wife of the Lord Bishop of Manchester) laid the foundation stone of new schools and mission church, Healey Wood, Burnley. They will accommodate 350 children (boys, girls, and infants), and seat from 500 to 600 for worship. They are faced with local parpoints, lined with bricks, with an open roof. All joiner's work is finished in pitch pine varnished, and the schools will be complete with playgrounds and conveniences. The contractors are :—Masons' work, Messrs. Parker Bros. ; joiners' work, Mr. John Clegg ; slaters' work, Mr. Wm. Stannorth. The other works are not yet let. The cost will be about 1,400*l.*, of which over 800*l.* is already subscribed.

Mr. Thos. Bell is the architect in both cases

LEICESTER.

The foundation-stone of a new Sunday school memorial hall was laid on the 29th ult. The building, which is intended to form the headquarters of the local Sunday School Union, occupies an excellent situation in a central thoroughfare of the town. It is designed in the Tudor style, and is to be faced with red brick with stone dressings. It is of two stories, the lower floor being occupied by class and committee rooms and the upper floor by an assembly hall. The architect is Mr. Tait, and the contractors are Messrs. Holmes, Chambers, and Norman & Underwood, all of Leicester.

Mr. Henry Percy Boulnois, the City Surveyor of Exeter, has been elected Borough Surveyor of Portsmouth, by the Town Council of that place, at a salary of 600*l.* a year. He was chosen from forty-nine candidates by a majority of forty-five, against five for another candidate. Mr. Boulnois is a most efficient officer, and has done good service in Exeter, but has been queerly treated by Radical members of the Council, who recently refused an application which he made for permission to act occasionally as Consulting Surveyor. It has been represented, too, that he is overpaid in Exeter with 500*l.*, yet his services have now been secured for Portsmouth at a salary of 100*l.* a year more, with promise of an early increase.

Calne Town-hall Competition.—In the limited competition for the Calne Town-hall, the Town Council adopted the report of the professional referee and unanimously accepted the design of Mr. C. Bryan Oliver, of London and Bath.

EDINBURGH ARCHITECTURAL ASSOCIATION.

The usual fortnightly meeting of the Association was held on Wednesday evening, the president, Mr. David McGibbon, in the chair.

After the preliminary business was disposed of, Mr. John Kinross, architect, Edinburgh, read a paper entitled, "Some Notes on Italian Buildings." He prefaced his remarks by stating that the first feeling experienced after seeing several Italian towns was regret of the want of unity in design and incompleteness of structure which so many of their best churches exhibited, and also that these incongruities put the different styles in strong contrast, and enabled one to judge their merits clearly. The lecturer pointed out that the salient internal features of the Basilican Churches of Central Italy are:—the great width of nave (so desirable in order that all may have an uninterrupted view of altar or pulpit), the rich effect gained by the close spacing of columns, the broad decorated surfaces and the apse conchas with their figures of Christ or Madonna might, with advantage, be adopted in our own churches in order to make them "more attractive every day resorts and resting-places," and that the prominent external feature of the churches of Lombardy and Venetia, their great breadth of wall surface decorated with different coloured materials in courses or geometrical patterns would give some brighter and much needed in our cold streets. He then compared the Roman, Florentine, and Venetian Palaces, showing that those of Florence have a grandeur suited more for civic buildings than for residences, but that the Venetian ones have a grace and elegance desirable in residential buildings, and quoted the opinions of different authorities on the much-disputed subject of the Ducal Palace at Venice. Reference was then made to the small houses found in the Mediæval towns, more particularly in San Gemignano, near Siena, remarkable for their simplicity and fitness, and lastly, of the tenements now being built for the middle classes in Rome, and their very solid construction was pointed out, external and partition walls being much thicker than usual here, and that the fireproof nature of their floors and roofs are of a sufficiently inexpensive character as to warrant their adoption in this country.

At the conclusion, a cordial vote of thanks was accorded to Mr. Kinross.

EPSOM TOWN-HALL.

On Tuesday, April 3rd, the Right Hon. the Earl of Egmont [opened the New Assembly-Rooms and Public Hall at Epsom. After referring to the scheme and to the long-felt want of some building suitable for lectures and theatrical entertainments, his lordship then spoke in eulogistic terms of the way in which the work had been carried out, and highly complimented the architect and builder. The new buildings are situated at the junction of Church-street and High-street, and are in close proximity to the London and Brighton Railway station, which will give every facility for artistes and visitors residing within a reasonable distance. The accommodation on ground-floor consists of a club-room and reading-room which are situated on either side of central hall; each room is 30 ft. long, 16 ft. wide, and 14 ft. 6 in. high, and is lighted by two large windows and heated by specially-designed fire-places and mantels with plate-glass in over-mantel. Fresh air is admitted by shafts in window-sills and by ventilators at ceiling line. The small lecture-hall is approached from the centre hall and also from the principal hall. The room is 40 ft. long, 38 ft. wide, and 14 ft. 6 in. high, and is lighted by five large 3-light windows, and is heated by steam, and fresh warm air is admitted by vertical shafts in window-sills and the vitiated extracted at ceiling line. In connexion with the room there is a dressing-room with lavatory accommodation. The room is intended to be used for suppers and entertainments of a limited kind. The principal entrance to public hall is situated on the left of the building, and consists of large hall 26 ft. long, 16 ft. wide, and 24 ft. high, and is lighted by a large 3-light window. The hall is paved with concrete to a specially-designed pattern. The stairs are of concrete 6 ft. wide with iron ballusters and oak hand-rail. The gentlemen's cloak-room and lavatory are placed at the back of entrance hall. The public hall is 68 ft. long, 40 ft. wide, and 26 ft. high, with deal panelled waggon roof with moulded principles and purlins with carved cornice; the gallery is serpentine on plan, with enriched concrete front with moulded swags and heads. The stage is so constructed that when not required for performances it can be taken down and will form twelve tables, each 12 ft. 6 in. long, and 3 ft. 4 in. wide. At the back of the stage are three dressing-rooms, each having lavatory and water-closet accommodation, with a staircase and separate entrance from the road. Accommodation is also provided on the landing, for the storage of scenery, &c. The whole of the joinery is stained and varnished, also the boarding to roof. A separate staircase and entrance hall is provided, with urinal accommodation, for the back seats and gallery. The public hall is lighted by six large 2-light windows at the sides and by a large window at the end, and is heated by steam, and fresh warmed air is admitted by vertical shafts in the window-sills, and the vitiated air is extracted by cowls in the roof. The artificial light is provided by two sunburners. The kitchens and heating-chamber are situated in the basement, and are approached from the private road. In the kitchen there is a kitchener and three large steamers, and a lift which runs up to small lecture hall or supper-room (this can be continued to public hall if required); the heating-chamber contains a 10-horse power boiler which supplies all the steam required for heating the building, cooking and pumping the water from the well, which is 15 ft. deep. The buildings are designed in the Classic style, the front being faced with bracknell red bricks and Lascelles concrete mouldings; the enrichment in centre pediment with the cornice, also the enriched pediments over entrance-doors, are superior castings in concrete. The whole of the walls are of cement concrete, faced inside and out with Lascelles potters' slabs, the outside being of a dull red colour, and the inside having chocolate-coloured slabs up to dado capping, and above that they are a buff colour. Messrs. Homan & Rogers, of 17, Gracechurch-street, provided the iron girders and roof principles. The Thames Bank Iron Company fixed the heating apparatus, pump, &c. Messrs. Sandland & Co., of Mansell-street, Aldgate, were the gas engineers. The contract for the works has been carried out most satisfactorily by Messrs. W. H. Lascelles & Co., of 121, Bunhill-row, E.C., from the designs and under the superintendence of Mr. Hatchard Smith, architect, 41, Moorgate Station-buildings.

AMBER.

Some months ago a builder in Berlin, in excavating for the foundations of a new house, came upon a considerable number of pieces of native amber, and as this material ranges in value from eightpence up to four pounds sterling per pound avoirdupois, the discovery naturally stopped building operations for a time. The hoped-for amber mine, however, was not found, only occasional pieces being stumbled upon, which were too limited in quantity to make it worth while to prosecute the search. The commonest impure kinds of amber are used to make varnish; and the demand for the more valuable kinds which are employed for necklaces, pipe-mouthpieces, and other purposes, is such as to make an amber mine a source of great wealth. The largest European amber deposits are found on the Baltic shores of North-eastern Prussia. There about eighty tons a year are at present dug up, and the supply appears practically inexhaustible. Since the beginning of the century it is calculated that over 1,600 tons have been produced there, and if the production, as some contend, has been going on for three thousand years, the total quantity produced in that period cannot, it is calculated, have been less than sixty thousand tons. The amber is found in isolated pieces, varying from the smallest beads up to blocks of many pounds in weight. The largest piece ever discovered weighs thirteen pounds and a half, and is now in the Royal Mineral Cabinet in Berlin. The material lies in a layer of blue earth, which extends from the surface to a depth of from 80 ft. to 100 ft. The area of the amber fields of Prussia is nearly fifty miles long by nearly ten in breadth, and here it is present in large quantities. It is reckoned that every 12 square feet of surface will produce a pound. In this part of Prussia alone it is estimated that there lie hidden there at this moment not less than half a million tons. But the Baltic shores of Prussia are not the only region where amber is found. No doubt it lies in large quantities beneath the Baltic Sea, between the Prussian coast and the islands of Bornholm, Oesel, and Gothland, in which islands it is also found. It is likewise met with in Northern Siberia, Kamtschatka, and on the Behring Straits; further on the White Sea shores, in Greenland, and in the south of Sicily. Amber was mentioned by Homer, who speaks of it as being esteemed of equal value with gold. It is the fossil resin produced by upwards of six kinds of coniferous trees in pre-historic times. Two of these trees, of which immense forests covered the regions now producing amber, have been proved to be nearly related to the existing Weymouth pine and the modern fir-tree. While the wood of the trees rotted away, the resin which exuded from them has been preserved in the form of the fossil amber. The resin oozed out of the stem of the tree as well as out of the roots, and was deposited eventually in immense quantities in the soil. In some of the pieces of the amber bits of the wood and bark of the trees are found imbedded, and through this lucky accident have been preserved from decay. On examining this wood with the microscope, it is at once apparent that the trees were, as intimated above, closely related to our modern coniferæ, but were not absolutely identical with any of the existing species. Ages ago the whole region now covered by the eastern part of the Baltic Sea was covered with these amber-producing trees. The industry of amber-digging is one of very great importance for Prussia, and it is calculated that the amber district of that country still contains a quantity which, at an average value of five shillings per pound, is worth no less than 250,000,000l. sterling.

SMOKE ABATEMENT COMMITTEE.

Sir,—I am sure that with your usual impartiality you will allow me to correct a few slight mistakes into which Mr. N. R. E. Coles and Mr. D. K. Clark have fallen. Small flues are not more fit for slow-combustion grates than for others. Quite the contrary. Chimneys are still generally constructed 14 in. by 9 in. This allows of the gentle ascent of a column of air sufficient in volume to carry off the foul products and of any kind of grate to be used without frequent chimney-sweeping. Boys used to sweep chimneys, not men, unless they were remarkably small. Chimneys or flues 9in. by 9 in. or 9 in. in diameter, are very rarely used. When they are used, the owner or occupier has to use the most contracted forms of grate.

It is the fireplaces below the chimneys that are contracted, not the chimneys themselves. Chimneys at top are never throttled by experienced men, and they never use the gim-crack contrivances mentioned by Mr. Clark. The aperture at top should always be equal to the aperture below when the register is thrown open. A suitable size is 10 in. for ordinary fireplaces, and 11 in. or 12 in. for large fireplaces and kitchens. Chimney-pots are sometimes too small, and the occupants of the houses have hence to put up with smoky chimneys and close or stuffy rooms in unblissful ignorance of the cause. Many years ago 6-in. drain-pipes were used for flues in a large public building, but they had all to be removed and proper chimneys constructed.

Mr. Clark was suspicious of something being wrong when my grate was tested. It had acted admirably in the arcades with an 11-in. temporary chimney. In the test, however, he saw that the test was unsatisfactory, and even muttered to me a suspicion of the flues being too small, but I did not learn the size.

However, enough has been said; but, strange to say, here is another little discovery. It appears by another report, published also in the *Sanitary Record*, that one of the grates promoted to honour emitted air for two hours at a temperature of from 380° to 440°, and that "the velocity of discharge of the heated air averaged 120 ft. per minute during the trial, making a volume of 13,000 cubic ft. of heated air delivered per hour." Such temperature is vastly in excess of what is ever used in a Turkish bath, and fit only for a baker's oven!

Frederick Edwards.

PS.—You saw by the extracts I sent you that I was fully justified in using the names of the gentlemen I mentioned.

ACTION BY A BUILDER AGAINST A SOLICITOR.

CURTIS *v.* BEEP.

This was an action in the Westminster County Court, before Mr. Judge Bayley and a jury, brought by the plaintiff, a timber merchant and builder, of Penge, to recover from the defendant, a solicitor in the City, the sum of 39*l.* 5*s.* under unusual circumstances.

Mr. Tirrell appeared as counsel for the plaintiff; and Mr. Kemp, Q.C., with whom was Mr. Tindal Atkinson, for the defence.

Mr. Tirrell, in opening the case, said his client's claim was for inclosing some portion of The Burdhurst Estate at Croydon, as he would be able to prove, by the defendant's order, who had on prior occasions employed the plaintiff, and had paid him moneys on account. His client had on several occasions made unsuccessful applications for his money, which necessitated the present proceedings, which were originally instituted in the High Court of Justice, and were sent down as an issue to be tried in this Court.

The plaintiff being called, said that the defendant ordered him to do the work in question, but that the precise dimensions and instructions were given him by a Mr. Hammer, the defendant's agent at Croydon. The defendant was in the habit of making advances to speculative builders on mortgages of their leases. He (the plaintiff) did not know who were the builders on the inclosures he had erected, but he was aware the defendant was the solicitor to the estate. When he called for his account he was continually put off, and was told that he could not have his money till the accounts of a Mr. Keeber, a builder on the estate, had been gone into. He had nothing to do with this, and as he had received 5*l.* 15*s.* on account, he considered the defendant liable, who ultimately having denied his liability, the present proceedings were taken.

John Carter, called, said that he knew the plaintiff had received his instructions from the defendant's agent, an was aware that neither Mr. Keeber nor any one else had given the plaintiff instructions to carry out the work.

William Latter, in the employment of the plaintiff, said in his evidence he had called on the defendant for money, and was paid money on account, and was promised the balance now sued for as soon as Keeber's affairs were settled, as the defendant said that the debt was owing by Keeber.

This was the case for the plaintiff.

The defendant being called, said he was solicitor to the estate in question. He knew the names of Brock, Norman, Lloyd, and others, who had purchased plots on the estate, and had built upon them. Hammer was the original builder, who had sublet to Keeber. Hammer was never his agent, neither had he agreed to pay for anything he ordered to be done. In 1882 there was some small balance due to the plaintiff, amounting to 5*l.* odd, which he paid, but that was irrespective of the present claim. In cross-examination witness admitted advancing money to Hammer and others, and that it was to his advantage to have the works completed as soon as possible.

Mr. Hammer, called, said he was never the defendant's agent, and never gave the order in question.

Mr. W. J. Keeber, a builder, said that the fencing was done by his order; he merely knew the defendant by calling upon him in company with other builders for advances.

After Mr. Tirrell had addressed the jury in a most exhaustive speech,

The learned Judge, in summing up, told the jury that if they, after the evidence, believed that Hammer was the agent of the defendant, they must rule in favour of the plaintiff; but if, on the other hand, they believed the statements of Hammer and Keeber, they must rule in favour of the defendant.

The jury, without retiring, gave an immediate verdict in favour of the plaintiff for the full amount claimed. The question of costs was reserved for the Court above.

Notice of appeal was at once given, and a copy of the learned Judge's notes granted.

Glasgow.—Last week, at a meeting of the landward heritors of the Barony parish, Mr. Whyte, assistant Master of Works for the Corporation of Glasgow, reported upon the dilapidations of the Barony parish church, estimating the cost of restoration at 450*l.* Decay, however, had entered the building, and it might be found, notwithstanding the minuteness of the inspection, that some defects still existed. Dr. Marshall Lang said his kirk-session were unanimously of opinion that no repairs that might be executed just now would put the church in a satisfactory position. The church in many respects, unless there was an entire reconstruction, would remain an unsatisfactory building. They, therefore, felt that the erection of a new church should be seriously contemplated. It was ultimately agreed that the meeting should get the church put into a safe and proper condition.

STEVEN *v.* RICHARDSON.

The plaintiffs in this action were the well-known firm of ironfounders, Steven, Bros., & Co., of London and Glasgow, who sought to recover from the defendant, J. O. Richardson, builder, of Peckham, the price of a quantity of iron staircase balusters, made to defendant's order, to be paid for cash on delivery. The defendant refused to take delivery on the plea that they were not made according to order, but from the evidence given it was clear that the defendant had made a mistake in ordering a straight instead of a curved baluster, as a straight baluster could not have been used for the stair he intended it for.

The defendant's counsel also tried to overthrow the plaintiffs on a point of law, that the whole of the goods had not been tendered; but the judge ruled that, as the defendant had refused the part tendered, the plaintiffs were relieved from any further tender.

This was a second trial; the jury in both cases having found a verdict for the plaintiff.

"ARCHITECTURAL IMPROVEMENTS IN FORE STREET."

Sir,—I notice in your issue of the 24th ult. a description of the buildings in course of erection on the south side of Fore-street, and find a slight error has crept in with reference to the architects engaged upon the work.

Kindly allow me to explain that the buildings of five stories now being erected by Messrs. Brass & Lawrence, having a frontage of 123 ft., are from my designs, and are being carried out under my supervision. George Vickery, A.R.I.B.A.

DISSENTING CHURCH-BUILDING NEWS.

Southport.—The trustees of the Wesleyan school-chapel, Southbank-road, Southport, have just accepted tenders for additional buildings, comprising four large class-rooms, a library, tea-room, and infants' school. The works will be carried out from the designs and under the superintendence of Messrs. Maxwell, Tuke, & Hurst, architects, Southport.

Blowick, Southport.—Tenders have just been accepted for the erection of a lecture-hall and infant-school for the trustees of the Wesleyan chapel, Blowick, Southport. The plans have been prepared by Messrs. Maxwell, Tuke, & Hurst, architects, Southport, and the buildings will be erected under their superintendence.

Bury.—A school-chapel is about to be built in Parkhills-road, Bury, for the Methodist Free Church. The buildings are intended to be used for the present as a chapel, day-school, and Sunday-school. Sufficient land is left in the front of the site for a large chapel, which is intended to be built in the near future. Accommodation will be provided for 300 day-scholars, including infants, allowing 8 super. feet per child. The architects are Messrs. Maxwell, Tuke, & Hurst, of Southport.

Books.

Kelly's Directory of the Building Trades. Comprising every trade and profession in any way connected with Architecture and Building throughout England and Wales, and the principal towns in Ireland. London: Kelly & Co., Great Queen-street, Lincoln's Inn-fields. 1883.

Kelly's Directory of the Engineers, and Iron and Metal Trades, and Colliery Proprietors. Comprising every trade and profession in any way connected with the above trades throughout England, Scotland, and Wales, and the principal towns in Ireland. London: Same publishers.

Each of these books has reached a fourth edition, and is likely to be carried on for many years to come. The care and pains with which they have been produced, and their value as books of reference, are beyond praise. Their arrangement is such, too, as to make it easy, notwithstanding the size of the books, to find at once anything desired. Some interesting facts given in the preface of the "Building Trades Directory" show to how large a body the information given appeals to. From the last-published "Occupations of the People" it is found that there are in London alone:—

Architects'	1,928
Surveyors	971
Builders	5,657
Carpenters and joiners	31,699
Bricklayers	19,983
Marble masons	853
Mason-paviors	6,029
Plumbers, painters, and glaziers	27,719
Total	92,839

Besides plasterers, paperhangers, and others, to the number of about 8,000 more.

The returns of last census are not yet published, but there is no doubt that they will show a very considerable increase upon these numbers. These figures show not only the great importance of the building trades, but are instructive as indicating the enormous losses that must accrue from a "strike" or "lock-out" in any of the principal branches of the trade. The editor speaks of the prosperous condition of the building trade at the present time being due, to a considerable extent, to the absence of those unhappy strikes which occurred during a former period. Whether, however, the trade is in such a prosperous condition we are not quite sure.

In the volume in question the employers of labour only are, as a rule, dealt with, and it it will doubtless be interesting to note the vast numbers of persons employed by them, directly and indirectly, throughout the country. Thus, it is found that there are 5,672 architects, 3,097 surveyors, and 23,129 builders, while these latter may be said to find employment for the following subsidiary branches of the building trades, viz.:—

Carpenters and joiners	205,624
Bricklayers	99,945
Marble masons	2,931
Mason-paviors	95,199
Slater tilers	6,079
Plasterers	24,575
Paperhangers	3,442
Plumbers, painters, and glaziers	103,382
Brickmakers and dealers	36,249

In addition to which there are 516,605 general labourers not otherwise particularised, but of whom a very considerable number were certainly employed in connexion with these trades.

Among the fine arts connected with these trades may also be mentioned 799 sculptors and 2,480 wood-carvers. To manufacturers and merchants, if to no others, desiring to get into connexion with persons in any way connected with architecture, engineering, the metal and the building trades, throughout the kingdom, these books are absolutely necessary.

Technologisches Worterbuch in englischer und deutscher Sprache. By Prof. G. Eger. English-German. Braunschweig: F. Vieweg und Sohn. 1882.

The great progress made by scientific literature during the last half-century has been accompanied by a corresponding active intercourse between the men of science of all nations. Hence, works having for their aim to facilitate such intercommunication,—that is to say, scientific and technical dictionaries in two or more languages,—have been in great request, and, unfortunately, many works have found ready buyers which were hardly worth the paper on which they were printed. We are glad to be able to state that Prof. Eger's book is not of that description. On the contrary, the work has been compiled by a scholar, who in his turn has been assisted by a galaxy of well-known men in their several walks of science. It would not be candid to say that the work is entirely free from faults, but those faults consist rather in omissions. We have missed many words which, we thought, should find a place in such a dictionary. But, on the other hand, it may be said, in mitigation, that a work of this nature takes necessarily a long time for preparation, and that even while it is passing through the press, new expressions are constantly being added to the scientific vocabulary. With all these shortcomings, the volume is not only a good book, but it is by far the best which we have seen during a long experience as technical translators. The part before us especially will be of very great assistance to English students; but we hope that the appearance of the second part (German-English) will not be long delayed. To make proper use of such a dictionary, it is absolutely necessary that both parts should be in the hands of those who use it.

VARIORUM.

The warming of buildings by means of steam becoming more and more the fashion, especially in the United States, such a book as "Steam Heating for Buildings" (published by John Wiley & Sons, New York; but to be had of Messrs. Spon, of Charing-cross, London), will prove very useful, there being a dearth of practical information on the subject. The author, Mr. W. J. Baldwin, gives a description of steam heating apparatus for warming and ventilating private houses and large buildings, with remarks on

steam, water, and air, in their relation to heating; useful miscellaneous tables being incorporated. The illustrations interspersed in the text might be a shade better.——"The Electric Lighting Act, 1882," by Messrs. W. C. and A. Glen barristers-at-law (Knight & Co., publishers), is one of the several legal manuals which have lately made their appearance in connexion with electric lighting. Legal literature on this subject is as yet but scanty, and the work which the joint editors have performed has been to add notes and references, as well as a few decisions, to the various sections of the several Acts which are either partly incorporated with or are referred to in the Act of 1882. The code of rules recommended by the Council of the Society of Telegraph Engineers and of Electricians and the rules of the Board of Trade, annotated, are also given. The book appeals to all introducers of electric lighting.—We have received two publications emanating from advertisement agents. One is "May's British and Irish Press Guide," a book so well known that it needs no further advertising, beyond noting the fact that it has now reached its tenth year of issue, and that it is published by Messrs. F. L. May & Co., of 159, Piccadilly, London.——The other book relating to advertising is Mr. H. Snell's (of 167, Fleet-street, London) "Philosophy of Advertising, and Newspaper Register." With it is published a reference map for advertisers, which by itself makes it worth while for the latter to purchase the book, now issued for the second time.

Miscellanea.

The late Chancellor of the Exchequer and his Carpenter.—The *Exeter Gazette* for March 30th records the following:—Last Tuesday the mortal remains of Sir Stafford Northcote's head carpenter, John Webber, were laid in the churchyard at Upton Pyne. The deceased, who was seventy-two years of age, expired on Tuesday last, and so great was the esteem felt for the deceased, that Sir Stafford Northcote and a large number of the inhabitants of the village were present at the funeral. Webber was born in the village, and during the whole of his lifetime has not left his native place for a longer period than six months. He has been carpenter for Sir Stafford for many years, as well as clerk in the parish church. The funeral *cortège* left the deceased's cottage, and at the lych-gate was met by Sir Stafford Northcote, carrying a beautiful wreath, which he immediately placed upon the coffin. The corpse, before burial, was taken into the church, where Mrs. J. S. Northcote, Miss Ley, Mrs. Stoneman, Mrs. Bamsey, Mr. Bamsey, and Mr. Stoneman sang the hymn, "Brief life is here our portion," and at the grave the hymn, "Thy will be done," was also sung. The officiating clergyman was the Rev. J. S. Northcote. At the conclusion of the funeral, a knell was rung on the parish church bells.

Canal Casualties.—About a month since traffic was resumed on the Shropshire Union Canal from Ellesmere Port on the Mersey, through Chester, to the Midlands, after being stopped for nearly a month at Bunbury, Cheshire, through the bursting of a large lock. This lock is said to be built on a large bed of quicksand, which is continually shifting, and the forces at work beneath burst asunder the iron rivets supporting the canal bank and locks. The traffic was stopped, and gangs of navvies were constantly employed day and night to repair the mischief, and large iron plates absolutely encasing the lock were put down, supported by immense iron uprights, to support them against the drifting sand, but the forces of nature have again been too enormous for resistance. The plates and rivets have been, it is supposed, forced out of position, as the canal again shows unmistakable signs of immediate collapse. The London and North-Western Railway Company, which works the canal, have accordingly drawn off the water and entirely suspended traffic. In the meantime the traffic will be carried over their lines of railway. An investigation will be made by the engineers of the company into the damage, and further steps will have to be taken to consolidate and strengthen the canal embankment.

Institute of Painters in Water Colours. The following artists have been elected members of the Institute of Painters in Water Colours:—Mr. R. Spencer Stanhope, Mr. E. A. Abbey, and Mr. Walter Langley.

Private Bills in Parliament.—Of the 276 Private Bills which were deposited at the Private Bill Office on or before Dec. 21, 1882, no fewer than 41 have, up to the present time, been either withdrawn, not proceeded with, or thrown out on second reading, or standing orders. Of this number the following 21 Bills relate to London and its suburbs:—East Essex Railway; East London Tramways; East of London, Crystal Palace, and South-Eastern Junction Railway; Great Eastern Railway (High Beech Extension); Greenwich and Northern Lines Connecting Railway; Haverstock-hill and Hampstead Tramways; Kingston and Surbiton Tramways; London Southern Tramways (Extensions); London Street Tramways (Extensions); London Tramways (Extensions); Mid-Essex Junction Railway; Mid-London Market; Mid-Metropolitan Railway; North Metropolitan Tramways; North-Western Metropolitan Tramways; North-West Metropolitan Tramways (No. 1); North-West Metropolitan Tramways (No. 2); Poplar and Canning Town Railway); Southwark and Deptford Tramways; Tower (Duplex) Bridge); and the West Metropolitan Tramways Extensions.

Cowes.—Extensive building operations are about to be commenced at Cowes, it being the intention of Mr. Ward (says the *World*), the lord of the manor, to let out Northwood Park for the erection of villas. Indeed, several sites near Egypt Hill have already been taken, one by General Baring and another by a lady who intends to build a large house in the Queen Anne style. I trust that great care will be taken to preserve a certain uniformity of design in the Northwood villas, or at least that Cowes will not be made hideous as Shanklin and Ventnor have been. Both of these places have been ruinously over-built, and their original beauty has been destroyed by frightful ramshackle villas. The members of the Squadron are setting their house in order, and a new spacious private landing-stage, which has long been required, is about to be built, which, with the approaches and other improvements, will involve an outlay of 4,000*l*."

National Association of Brassworkers. The eleventh annual delegate meeting of the National Society of Amalgamated Brassworkers was held on the 14th ult. at Zion School-room, Newhall-street, Birmingham. Mr. S. Maddocks presided, and there were present delegates from Wolverhampton, Sheffield, Walsall, Rotherham, London, Manchester, Luton, Bradford, Halifax, &c. The forty-fourth quarterly balance-sheets of the association were submitted, and showed that during the past quarter there had been a saving of 300*l*. The report was unanimously adopted as satisfactory. The meeting then proceeded to elect a general secretary to fill the vacancy created by the appointment of Mr. W. J. Davis as a factory inspector. There were two candidates, viz.,—Mr. Edward Lilly, vice-president; and Mr. Walter J. Glover. After considerable discussion Mr. Edward Lilly was elected by 97 to 25.

Subsidence of Houses at Wigan.—An extraordinary occurrence took place near Ince Station, Wigan, on the night of the 15th inst., resulting in the death of one man and in several others having narrow escapes. Without any warning the front of two cottages in Viaduct-street gave way, and disappeared with a loud crash down an old coal-pit shaft which suddenly disclosed itself. It appears that many years ago coal was worked from this pit, but the shaft was filled and cottages erected on the surface. The material must have been forced into the old workings, and arching over the top of the shaft given way. One house was tenanted by an old man, named Plunkett, who escaped, but his son-in-law, John Banks, was buried in the falling *débris*, and his body has not yet been recovered.

Tiverton Waterworks.—The water supply of this borough, although fairly good in dry weather, becomes very objectionable during even slight rainfall. The Corporation, therefore, are naturally desirous that an improvement be effected, for which purpose they have instructed Mr. Edward Pritchard, C.E., of Westminster and Birmingham, to examine and report as to the best means to be adopted.

At Sheerness on Saturday last an inquiry was held before Mr. J. T. Harrison, C.E., one of the inspectors of the Local Government Board, for sanction to borrow the sum of 1,269*l*. for sea defences and street paving, to be carried out under the directions of the Board's surveyor, Mr. H. W. Stringfellow.

Royal Victoria Coffee Hall.—The military concert given at the above hall by Lieut.-Col. Keyser and the officers of the 7th Royal Fusiliers on Thursday, March 29th, was a great success. Lieut.-Col. Keyser took the chair, and by his conviviality kept the whole concert going in an exceptionally brilliant manner. Where all did their parts so well it would be invidious to single out individuals for special praise, although we cannot pass over Lieut. W. H. Heron-Maxwell and Lieut. H. G. Dunning, who were real *comiques*, and could only be surpassed by Lieut.-Col. Keyser's own singing and acting. The programme for the month of April includes a ballad concert on April 5th, at which Mdlle. Mathilda Enequist will appear, a grand miscellaneous concert on April 18th, in aid of the funds of the Royal College of Music, which will be attended by H.R.H. Princess Christian.

A New Railway.—The new line of railway between Lancaster and Glasson Dock is now completed, and only awaits Government inspection prior to being opened for passenger traffic. By this line, which is a branch of the London and North-Western Railway, and about four miles in length, more direct communication by sea with Liverpool, Whitehaven, and other ports is established. In connexion with the new railway the Lancaster port commissioners have extended the stone pier at Glasson at a cost of over 12,000*l*., and provided other facilities for loading and discharging vessels. The new line skirts the river Lune nearly the whole distance to Glasson.

Haworth, Yorkshire.—One of the three-light windows of this lately-erected church has just been filled with painted glass, by way of memorial of some late members of the family of Mr. W. H. Townend, of Heaton Hall. The subjects illustrated are the Nativity, the Marys at the Sepulchre, and (centrally) the Ascension; the tracery lights being mainly filled with figures of angels. The treatment, in accord with the architecture, is fifteenth century. The window is from the studio of Messrs. Powell Bros., of Leeds.

Liverpool Engineering Society.—The sixth meeting of the Society was held on Wednesday, the 28th of March, at the Royal Institution, Colquitt-street, Mr. W. E. Mills in the chair, when a paper, entitled "Notes on American Locomotives," was read by Mr. W. H. Fleming. The paper was illustrated by a number of photographs that Mr. Fleming had collected during his connexion with the Brooks Locomotive Works, Dunkirk, New York State.

The Wilkinson Tramway Engine.—A committee of advice, appointed to make recommendations for the more *profitable* and *economical* working of the North Staffordshire Tramway Company has recommended that the *Wilkinson* type of engine should be employed on the lines, instead of the ones now in use, by which change they consider the *cost of working* would be *much reduced*. The line runs through the Potteries. This report has been adopted by the shareholders, and the directors have been requested to carry it out.

Parcels Post.—We understand that Mr. John Philipson's designs for parcels-post vans, carts, and hand-barrows have, after several interviews with the authorities at the General Post-Office, been approved by the Postmaster-General; and Messrs. Atkinson & Philipson, coach manufacturers, Newcastle-upon-Tyne, are making a set of vehicles suitable for the parcels-post service.

St. Paul's Church, Sale (a suburb of Manchester), the foundation-stone of which was laid on July 15th last, by Mrs. W. Cunliffe Brooks, is in a very forward state of completion, and will shortly be ready for consecration. The structure is expected to cost about 5,000*l*., exclusive of tower and spire. The architect is Mr. H. R. Price, of Manchester.

Mr. W. J. Wainwright, of Birmingham has been elected an Associate of the Royal Society of Painters in Water-Colours. He is an occasional contributor to the Birmingham Society of Artists, and a member of and a contributor to the Birmingham Art Circle.

Engines.—Such of our readers as may have occasion to purchase engines should look to a sale of sixty high-class and second-hand engines, &c., advertised in our present number by Mr. A. T. Crow, for Messrs. Barrows & Stewart.

Ramsgate.—The architect under whose direction the tidal baths mentioned last week are to be constructed is Mr. A. B. Pite, and not Mr. A. R. Pite, as stated.

TENDERS.

For erecting nineteen houses and stables at Stoke Newington, for the Incorporated Society of Licensed Victuallers. Mr. H. J. Newton, architect:—

Oldrey	£12,200	0	0
Patman & Fotheringham	11,648	0	0
Gibbs & Flew	11,540	0	0
Maton	11,260	0	0
Nightingale	11,259	0	0
Chamberlain	10,935	0	0
Langmead & Way	10,715	0	0
Godden	10,653	0	0
Cook	10,584	0	0
Lamble	10,402	0	0
Bryant & Stapleton	9,700	0	0
Shurmur	9,693	0	0
Pickersgill	9,032	0	0
Walker	8,460	0	0
Royal	8,332	0	0
Wood	8,319	0	0

For Turkish Baths, Northumberland-avenue, Charing-cross. Mr. R. Walker, architect. Quantities supplied by Mr. C. Mayland:—

Greenwood	£19,766	0	0
Brass	19,340	0	0
Trollope	18,901	0	0
Ashby & Horner	18,579	0	0
Dove Bros.	18,475	0	0
Perry & Co.	18,362	0	0
Ashby Bros.	18,280	0	0
Stephens & Bastow, Bristol	18,000	0	0

For alterations to 38 and 41, Broadon road, for Mr. C. E. Webb. Mr. George Edwards, architect. No quantities:—

Green	£1,111	0	0
Longmire & Burge	1,090	0	0
Sanders	930	0	0
Scharien & Williams	836	0	0
Scrivener & Co.	820	0	0
Stimpson & Co. (accepted)	775	0	0

For alterations to 2a, Exhibition-road, for Mr. W. Follett, Mr. George Edwards, architect:—

Green	£319	0	0
Stimpson & Co.	£305	0	0
Wilkins	274	0	0
Hogben & Co. (accepted)	260	0	0

For alterations and additions to National School, Stapleton. Mr. J. Payne Curtis, C.E., architect, Sutton, Surrey. Quantities supplied by the architect:—

				Boundary Wall.
Pitt	£465	0	0	—
Green	451	5	9	£37 15 3
Eastabrook	430	0	0	41 0 0
Sharp & Graham	425	0	0	—
Gowitt	420	0	0	42 0 0
Cowlin	420	0	0	39 0 0
Veals	419	0	0	31 0 0
Hayes	403	7	0	45 0 0
Case	380	16	0	39 0 0
Richards	380	0	0	47 0 0
J. Tyley	370	0	0	—
Humphreys	365	0	0	41 0 0
H. Tyley (accepted)	345	0	0	34 0 0
Downs	340	0	0	38 8 0

For pulling down and rebuilding Nos. 12, 13, and 14, Rathbone-place, Oxford-street, for Messrs. J. Brinsmead & Sons. Messrs. Karslake & Mortimer, architects, 5, Great Queen-street, Westminster:—

Gregory & Bruce	£6,782	13	3
Chappell	6,024	11	0
Stead Bros.	5,965	19	9
Toms	5,731	0	0
Outhwaite & Son	5,678	0	0
Patrick & Son	5,480	0	0
Lawrance	5,407	0	0
Mark Manley (accepted)	5,392	0	0

For new pavilion, for the Gloucester Cricket Club. Mr. J. P. Moore, architect. Quantities supplied:—

W. Freame, jun.	£780	0	0
Jos. Sims	748	0	0
W. Rew	740	0	0
Gloucester Wagon Company	739	0	0
W. Wibby	724	0	0
D. C. Jones & Co.	694	0	0
J. Meredith	664	0	0
W. Wingate & Sons (accepted)	660	0	0
A. Gyde	653	0	0

For erecting six houses and shops, Victoria-road, Peckham, for Mr. F. Austin. Mr. James Buckland, architect:—

W. Smith, Camberwell (accepted)	£2,407	0	0

For erecting stables and alterations to residence, Wickham-road, Lewisham-road, for Mr. G. R. Higgins. Mr. R. M. Shaw, architect:—

McLachlan & Sons	£1,140	0	0
Colls & Sons	809	0	0
Crabb & Son	789	0	0
W. Smith, Camberwell (accepted)	729	0	0

For the erection of a warehouse (No. 1) in Baldwin's-gardens, Gray's-inn-road, for Mr. Frederick Sage. Mr. A. Hedborough, 18, Abingdon-street, Westminster, architect. Quantities supplied by Messrs. R. L. Curtis & Sons:—

Geo. Parker, Peckham (accepted)	£1,924	0	0

For the construction of roads and footpaths, and laying in pipe sewers, and works in connexion therewith, on the Beddington Park Estate, Mitcham, Surrey, for the House Improvement and Supply Association, Limited. Mr. A. Bedborough, architect. Quantities supplied by Messrs. R. L. Curtis & Sons:—

	Roads and Sewers.	Aberdeen Granite Curbing.
W. Jenner, Sutton	£3,560 16 0	£1,189 14 6

Accepted.

For two houses, Dixon-street, Gilberts-hill, New Swindon, for Mr. E. Lay:—

Pettifer	£345	0	0
Barrett	335	0	0
Kent	325	10	0
Witshire	320	0	0
Turvey (accepted)	306	0	0
Henley	300	0	0

Received by the Corporation of Leicester for the deepening and widening of the River Soar and the Leicester Navigation, including concrete towing-path walls, the construction of a new stone weir and works in connexion therewith (according to plans and specifications of Mr. J. Gordon, C.E., Borough Surveyor. Quantities prepared and supplied by the Borough Surveyor:

J. Jackson, London	£20,827	2	9
Small & Sons, Dewsbury	20,748	15	2
A. Palmer, Birmingham	18,592	1	10
Geo. Lawson, Glasgow	18,346	0	0
S. & W. Pattinson, Sleaford	16,349	0	0
Foster & Barry, Scarrington	15,174	0	0
G. B. Godfrey, Hull	15,132	10	0
S. W. Pilling & Co., Manchester	14,762	18	10
Whittaker Bros., Hosforth	14,200	0	0
Kellett & Bentley, London*	13,699	18	5

* Accepted.

For residence at Priest Hill, Old Windsor. Messrs. Charles J. & C. Herbert Shoppee, 61, Doughty-street, architects:—

G. Smith & Co.	£10,037
Colls & Sons	9,945
W. Brass	9,940
Burman & Sons	9,831
Langmead & Way	9,817
Watson	9,646
E. Lawrance	9,583
Ashby Bros.	9,339
Goddard & Sons	9,280
Stephens & Bastow	9,229
Hann & Co.	8,590

Dwelling House for Crawford Barlow, Esq., Tooting Bec Gardens, Streatham. Mr. F. Wheeler, architect:—

Hill Bros. (accepted)	£2,050		

For rebuilding Nos. 9, and 10, Charlotte-mews, Tottenham-street, W., for Mr. J. A. Deintze. Mr. J. Shelley Birch, architect:—

Baylis	£1,988
Sabey	1,968
Swain	1,797
Scott	1,737
Cooper	1,684
Drew	1,680
Heusman	1,650
J. Rider Hunt	1,641
Bolding (accepted)	1,567
T. Ennor Julian & Co.	1,535
D. D. & A. Brown	1,449

For the extension of the West Ham Union House, Leytonstone, contract No 1. Mr. Lewis Angell, architect. Quantities by Messrs. R. L. Curtis & Son:—

J. W. & J. Neave	£5,790	0	0
Carpenter & Poole	4,777	0	0
Priestley & Gurney	4,600	0	0
Reed	4,575	0	0
Kingerley	4,395	0	0
Parker	4,350	0	0
Nightingale	4,291	0	0
Webb	4,250	0	0
Morter	4,163	0	0
Gregar	4,137	0	0
Horlock	3,900	0	0
Cox (accepted)	3,894	0	0
Russell	3,490	0	0

Accepted for Reform Club, Delph, Saddleworth, Yorkshire. Mr. Alexander Banks, architect, Rochdale-road, Oldham-lane:—

Charles Winterbottom Delph (excavating, stonework, brickwork, and concreting).
T. Wood, Delph (carpenter's, joiner's, and iron-founder's work).
J. C. & W. Shaw, Delph (slating and tiling).
John Hudson, Upper Mill, Saddleworth (plumbing, glazing, and painting).
Whitehead Brothers, Dobeross, Saddleworth (plastering).

For additions to the Chestnuts, Denmark Hill, for Mr. A. Stedall. Mr. George Edwards, architect:—

Green	£540	0	0
Stimpson & Co.	378	0	0
Goad (accepted)	309	0	0

For reinstating, after fire, No. 138, Upper-street, Islington, for the Fire Insurance Office:—

W. Balsam, Trinity-street, Borough*	£300	0	0

* Accepted.

For the alteration and reconstruction of certain sewers in the Holborn district, for the Holborn District Board of Works. Mr. Lewis H. Isaacs, surveyor to the Board:—

John Mowlem & Co.	£1,870	0	0
Bell	1,798	0	0
Harris	1,790	0	0
Marshall	1,740	0	0
Pizzey	1,709	0	0
Killingback (accepted)	1,635	0	0

For building two houses and shops on the Leyton Park Estate, Leyton. Messrs. Wilson, Son, & Aldwinckle, architects, 2, East India-avenue:—

Ward	£1,325	0	0
Wood	959	0	0
Ford & Anderson (accepted)	9	0	0

For additions of shops upon the forecourts and other alterations, works and repairs, to the houses, Nos. 226 & 228, Southwark Park-road, for Mr. J. J. Riches. Mr. E. Crosse, 32, Bermondsey-square, architect:—

T. F. Ashton, Bermondsey	£330	0	0
J. Bullers	320	0	0
J. Almond (accepted)	315	0	0

For alterations and additions to Swarland Hall, Swarland, Northumberland, for Mr. Hugh Andrews. Mr. Ed. Jno. May, architect. Quantities by Mr. R. C. Gleed:—

J. & W. Lowry, Newcastle-on-Tyne	£6,030	0	0
R. Robson & Son, Durham	5,918	0	0
W. Scott, Newcastle-on-Tyne	5,780	3	11
Reid & Son, Newcastle-on-Tyne	5,459	0	0
R. Carse & Son, Acklington	5,320	0	0
Green & Douglas, Acklington	4,918	10	0
R. Saunderson, Durham	4,889	10	0

For completing eleven houses at Royal-road, Teddington, for Messrs. Saunders & Co. Mr. R. Evans, architect:—

C. Beach	£1,819	0	0
W. Bell	1,410	0	0
Feldous	1,390	0	0
Aviss	1,249	0	0
Alderidge & Gorvey	1,165	0	0
C. Dearing & Son	1,088	0	0
Holdstock	962	0	0
Terry	907	0	0

For works to Buccleuch House, Surbiton. Messrs. William Reddall & Son, architects, 10, South-street, Finsbury:—

Woodward	£840	0	0
Adkins	773	10	0
Scase & Son	636	0	0

For general repairs, &c., 63, Albert-street, Regent's Park, for Mr. G. D. Brown. Mr. J. H. Martin, architect:—

Roads	£141	13	0
A. & J. W. Baldwin	135	15	0
H. Barter	134	15	0
Durnford	134	15	0
Scowen (accepted)	111	0	0

For three houses and shops, Church End, Finchley. Messrs. Brooking & Nelson, architects:—

Royal (accepted)	£1,640	0	0

For completing four houses in Leicester-road, East End, Finchley, for Mr. W. Patterson:—

Royal (accepted)	£690	0	0

For proposed presbytery for the Rev. Canon Applegath, Alma-road, Windsor. Messrs. Byrne & Wilmot, architects, 303, Strand, and Windsor. Quantities by the architect, Mr. P. J. Byrne:—

Smith & Son, London	£1,797	0	0
Watson, Ascot	1,730	0	0
Lang, London	1,695	0	0
J. Higgs, London	1,677	0	0
Jackson & Todd, London	1,630	0	0
Ham & Co., Windsor	1,550	0	0
Kelly, Windsor	1,549	0	0
Woodbridge, Maidenhead	1,543	0	0
Bishop, Windsor (too late)	1,545	0	0
Wills, Windsor	1,538	0	0
Pither, Sunninghill	1,514	0	0
Ashfold	1,474	0	0
Oades & Sons, Egham	1,398	0	0
Akery, Windsor	1,340	0	0

For alterations, &c., to school, Deptford-road, for the School Board for London. Mr. E. R. Robson, architect:—

Atherton	369	0	0
Kirk & Randall	362	0	0
Jerrard	354	0	0
Oldrey	326	0	0

For alterations and additions to School in Kinder-street, Old Kent-road, for the School Board for London. Mr. E. R. Robson, architect:—

Lathey, Bros.	£989	0	0
Good	893	0	0
W. Shurmur	873	0	0
Jerrard	843	0	0
F. Higgs	824	0	0

For alterations, &c., to Nos. 16 and 18, Kingsland-road. Mr. C. Dunch, architect:—

Taylor	£537	0	0
B. T. Wood	520	0	0
Woodward	515	0	0
Palmer	514	0	0
W. Shurmur	493	0	0

For the construction of stoneware pipe sewers in roads at Park End, Bromley, Kent, for the Bromley Local Board. Mr. Hugh S. Gregeen, surveyor:—

E. Peill & Sons	185	0	0
T. Lansbury	170	0	0
R. Stockwell	165	0	0
Davis & Attwood (accepted)	150	5	0
T. Lawrence	150	0	0

For the Perry-Watlington Memorial Convalescent Home, to be erected at Clacton-on-Sea, Essex. Mr. Fred. Chancellor, architect, 8, Finsbury-circus, London, and Chelmsford. Quantities prepared by Messrs. R. L. Curtis & Sons:—

Hoskings	£3,415	0	0
Morter	2,915	0	0
Gozzett	2,900	0	0
Dobson	2,880	0	0
Grimes	2,874	0	0
Brown	2,850	0	0
Wood	2,690	0	0
Saunders (accepted)	2,684	0	0

For alterations to residence, Brockhurst, Gosport, for Mr. James Carter. Mr. Richard Peters, Wool Exchange, Coleman-street, E.C., architect:—

Julian & Co.	£330	0	0
Cantle	296	0	0
W. Rapley (accepted)	244	0	0

For proposed reredos in the parish church of Micheldever, Hants, for the Earl of Northbrook. Messrs. Colson & Son, architects, Winchester:—

Cox & Son, London	£200	0	0
T. Earp, London	149	0	0
Harry Hems, Exeter (accepted)	100	0	0

For roads and pipe sewers at Lime Hill, Walthamstow:—

Peill	£1,480	0	0
Woodham	1,355	0	0
Dunmore	1,212	0	0
Bloomfield	1,201	11	6
Pizzey	1,197	0	0
Wyleon (accepted)	1,160	0	0
Keeble	1,160	0	0
Harris	1,150	0	0
Jesse Jackson	1,088	0	0

For erecting a house and stabling at Egham. Messrs. Notley & Trollope, architects:—

Scott, London (accepted)	£2,200	0	0

For additions and alterations to premises, Store-street, Stratford, Essex, for the Stratford Co-operative and Industrial Society, Limited. Mr. Henry Foster, Belle Vue, Earlham grove, Forest Gate, Essex, architect. Quantities by the architect (exclusive of fittings and buildings on land recently acquired):—

G. J. Heskings	£6,038	0	0
R. Abraham	5,879	0	0
North Bros	5,870	0	0
M. Patrick & Son	5,447	0	0
T. E. Julian & Co.	5,160	0	0
Jackson & Todd	5,150	0	0
J. Morter (accepted)	4,890	0	0

For the erection of Congregational church, Stormont-road, Lavender-hill. Mr. T. Heygate Vernon, architect. Quantities by Messrs. Mann & Saunders:—

Titmas	£5,189	0	0
Candler	5,000	0	0
Holloway	4,980	0	0
Rider & Son	4,978	0	0
Gregory	4,950	0	0
Stimpson & Co.	4,830	0	0
F. Higgs	4,620	0	0

For Charterhouse Schools, Godalming, Surrey. Mr. A. Blomfield, architect. Quantities by Messrs. Gardiner, Son, & Theobald:—

Holland & Holland	£12,380	0	0
Thompson	12,380	0	0
Grimwood	12,013	0	0
Dove Bros.	11,375	0	0
Parmenter	11,294	0	0
Goddard & Sons	10,764	0	0
Stevens & Bastow, Bristol (accepted)	10,284	0	0

For the erection of new Grand Stand and offices for the Leicester Club and County Racecourse Company, Limited, at Oadby, near Leicester. Mr. Chas. J. Bentley, architect, 4, Union-court, Old Broad-street. Quantities by Mr. W. E. Brown:—

				Deduct.*
Condor, London	£7,830	0	...	£72 0
Turtle & Appleton, London	7,550	0	...	360 0
Clarke & Bracey, London	7,491	0	...	273 0
Lawrence, London	7,188	0	...	200 0
Cooke & Co., London	6,810	0	...	100 0
Herbert, Leicester	6,390	0	...	133 5
Hewitt, Derby	6,200	0	...	150 0
Holliday & Greenwood, London	6,097	0	...	75 0
Jewsbury, Leicester	5,653	0	...	15 0
Bass (accepted)	5,353	5	...	25 0

* Deduct if cement concrete is used throughout instead of brickwork.

New Road and Sewers.

Cooke & Co., London	£1,704	0	0
Maclean, Derby	1,697	0	0
Ball, London	1,657	15	6
Lea & Co., Leicester	1,479	0	0
Rowland Bros., Bletchley	1,450	0	0
Carter, London	1,373	17	6
Hutchinson & Son, Leicester*	1,061	4	0

* Accepted.

For repairs to Unicorn Hotel and premises, Leighton Buzzard. Mr. Frederick Gotto, architect, Leighton Buzzard.

G. Saunders, Leighton Buzzard	£200	0	0
G. Andrews, Leighton Buzzard	176	0	0
A. M. Heath, Leighton Buzzard	172	10	0
J. Tutt & Sons, Leighton Buzzard	149	10	0

For the erection of one block of dwelling-houses, called Block E, on the Bridge House Estate, Brockley, London. Mr. W. Charles Evans, architect, 3a, Poet's Corner, Westminster Abbey.—

T. Gregory (accepted)	£1,780	0	0

For excavating and removing about 5,000 cubic yards of earth from Dudgeon's Wharf, Cubitt-town, for Messrs. Ingall, Phillips, & Co., being the first contract in connexion with the excavation for tanks. Mr. A. G. Collins, civil engineer:—

	Per Cubic Yard.		
H. Standen	£0	11	0
Martin & Co.	0	6	0
F. Cornish	0	5	0
W. Kew	0	4	9
Lowrie & Tucker	0	4	6
J. J. Rutty	0	4	6
W. Fennor	0	4	3
Thompson & Son	0	4	0
G. A. & A. Fuller	0	3	11
Colwell & Hazle	0	3	7½
H. Wilson	0	3	6
J. Ades	0	3	4
T. Pedretto	0	3	0
T. Huntly (accepted)	0	2	3

For making up the Havelock-road, Southall, forming footpaths, laying down drain, &c., for the Burial Board for Norwood, Middlesex. Mr. T. Newell, surveyor:

P. J. Pound	£330	0	0
P. Bell	295	0	0
H. Wilson	290	0	0
G. Simmonds	285	0	0
E. W. Brown	266	0	0
S. H. Watkins & Co. (accepted)	222	0	0

For extension of warehouses, Millwall. Mr. Wm. Eve, architect:—

Higgs	£1,710	0	0
W. Shurmur	1,630	0	0
Salt	1,509	0	0
Downs	1,474	0	0
Harris & Wardrop	1,344	0	0
Crabb	1,310	0	0

For the erection of deaf and dumb school at Boundary Lane Schools, Lambeth Division, for the School Board for London. Mr. E. R. Robson, architect:—

Reading	£1,050	0	0
Good	1,010	0	0
W. Shurmur	963	0	0
T. Higgs	945	0	0
Boyce	940	0	0

TO CORRESPONDENTS.

M. P. B. (thanks, no).—W. E. A. (shall have attention).—G. V.—A. C.—S.—J. B.—L. D.—T. B. K.—E. P.—A. B.—Dr. F.—C. H. S.—W. de G. B. L. & B.—W. Y. B.—Mr. M. W. R.—J. S.—H. O'N. N. F. S. W.—C. & L.—F. E.—T. N.—C. B. O.—M. & O.—F. G.—C. J. B. —W. B.—W. & B.—E. A. O.—H. P.—H. J. & Sons.—J. H.—A. G. C.—W. E. M.—R. C. G.—A. B.—H. & Co.—W. R. & Sons.—F. C.—C. D. & Son.—T. F.—W. R.—P. & P.—H. S. C.—J. T.—J. H. M.—A. R.—W. S. J. H. S.

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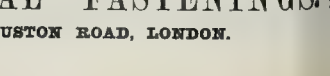
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Supplement to The Builder,

APRIL 7, 1883.

THE BUILDING TRADES' EXHIBITION

AT THE AGRICULTURAL HALL.

INDEX TO EXHIBITORS MENTIONED.

Adamsina Paint Company, Lime-street . . . 487
Aldous & Son, Queen's-road, Peckham . . . 488
Allen & Genge, Theobald's road . . . 487
Anti-septic Apparatus Company . . . 487
Ashton & Green (Limited), St. Mary Axe . . . 484
Bellman & Ivey, Wigmore-street . . . 488
Birks, J. & T., Hartshill, Stoke-upon-Trent . . . 468
Bolding, J., & Sons, South Molton-street . . . 482
Bostel, D. T., Brighton . . . 483
Botting, F., Market street, Crossett Green . . . 475
Bourtreehill Colliery Company, Dreghorn, Ayrshire . . . 478
Boyle, R., & Son, Holborn Viaduct and Glasgow . . . 473
Bracknell Pottery Brick & Tile Co. . . . 485
Bradford & Co., High Holborn . . . 476
Brazier & Son, Blackfriars-road . . . 487
Brown, E. H., Bali's-pond . . . 478
Brunton & Tyler, Westminster . . . 487
Burley, W., London wall . . . 486
Capper, Son, & Co., Fenchurch-street . . . 484
Causley, C., Shacklewell . . . 483
Chanliers Monnery, & Co., Bishopsgate-street . . . 484
Clark, Bunnett, & Co., Rathbone-place . . . 478
Connolly, H., Hampstead-road . . . 477
Crow, W. R., & Son, Benjamin-street, Clerkenwell . . . 496
Dearda, W. & S., Harlow . . . 481
Dick, A., Cannon-street . . . 487
Dorrett, A., Portsmouth . . . 488
Doulton & Co., Lambeth . . . 488
Duffy, M. C., & Co., Stork's-road, Bermondsey . . . 477
Eberhard & Co., Edward-street, Hampstead-road . . . 467
Ellis, Partridge, & Co., Leicester . . . 468
Esdaile & Co., Wenlock Basin . . . 471
Farmiloe, G., & Sons, St. John street . . . 488
Finch, B., & Co., High Holborn . . . 486
Gent, J. T., & Co., Leicester . . . 487
Harris, E. H., Upper Holloway . . . 477
Hayward Bros. & Eckstein, Union-street, Borough . . . 481
Hayward Tyler & Co., Upper Whitecross street . . . 479
Hempsted & Co., Grantham . . . 479
Hindley, C., & Sons, Oxford-street . . . 474
Hindley, E. S., Bourton, Dorset . . . 474
Hitchins, R. W., Shacklewell . . . 487
Howard & Sons, Berners-street . . . 483
Hyatt, T., Farringdon-road, Clerkenwell . . . 408
Imperial Stone Company, East Greenwich . . . 470
Jackson, G., & Sons, Rathbone-place . . . 476
Jeffrey & Co., Essex-road Islington . . . 485
Jennings, George, Stangate . . . 473
Johnson, Bros., & Co., Waterloo place . . . 486
Jones & Morris, Aberystwith . . . 479
Jones & Willis, London and Birmingham . . . 467
Kearick, A., & Son, West Bromwich . . . 476
Lascelles, W. H., & Co., Bunhill-row . . . 488
Lawrance, W. & S. n, Ditchworth . . . 488
Lawrence, T., & Son, Bracknell, Berks . . . 467
Leggott, W. & E., Bradford . . . 481
Leroy & Co., Commercial-road . . . 487
Lewis & Lewis, Cambridge Heath-road . . . 472
McLean & Co., A., Belvedere-road, Lambeth . . . 467
Meakin, J. F., Baker-street . . . 468
Medway, M. T., Deptford . . . 488
Messenger & Co., Loughborough . . . 486
Miller, Little, & Co., Devonshire-street, Portland-place . . . 486
Newton, Chambers, & Co., Thorncliffe Ironworks, Sheffield . . . 477
Orr, J. B., & Co., Charlton . . . 472
Owen, J., Whitland, South Wales . . . 487
Parker Macbe & Company, Wellington street Strand . . . 468
Patent Enamel Tapestry Company . . . 488
Pennycook Glazing Company, Glasgow . . . 467
Phelps, S. D., Cambridge . . . 486
Phillips, C. D., Newport, Mon. . . . 482
Pilkington & Co., Fish-street-hill . . . 481
Quirk, Burton, & Co., Gracechurch-street . . . 484
Rendle, W. E., & Co., Westminster . . . 468
Reynolds, F. W., & Co., Acorn Works, Blackfriars . . . 474
Richardson, W., & Co., Darlington . . . 479
Roeher, F., & Co., Upper Ground street, Blackfriars . . . 485
Salmon, Barnes, & Co., Ulverston and Westminster . . . 469
Sanitary Paint Company, the, Liverpool . . . 480
Shanks, J. & T., Barrhead, near Glasgow . . . 476
Smith & Stevens, Archibald, Queen's Road, Battersea . . . 469
Smith, Thos., & Co., Old Kent road . . . 490
Smith, W. E., & Co., Chelsea . . . 488
Stanbridge, J., Southwark Bridge Road . . . 480
Steven Bros. & Co., Upper Thames-street . . . 471
Stiff & Sons, Lambeth . . . 469
Studd, Abrahams, & Co., Kettering . . . 484
Syer, T. J., Finsbury-street . . . 488
Tagnon, A. Gray's Inn road . . . 471
Thames Bank Iron Company, Upper Ground-street . . . 485
Treggon & Co., Jewin street . . . 482
Turner Gas Engine Company, St. Albans . . . 479
Tyler, H., & Co., Upper Whitecross-street . . . 488
Victoria Stone Company, Patent . . . 491
Walker, W., & Sons, Bunhill-row . . . 483
Walker, W., & Son, King's Lynn . . . 474
Walton, F., & Co. (Limited), Berner's-street . . . 484
Warhurst, R. W., Highgate-road . . . 483
Waygood, R., & Co., Falmouth-road, Newington . . . 478
Webb & Co., Euston-road . . . 476
White, W., Abergavenny . . . 485
Wilson, T., & Co., Stowmarket . . . 485
Woollams, W., & Co., High-street, Manchester-square . . . 468
Yale Lock Manufacturing Company . . . 474
Zimdars, C. E., Gray's Inn-road . . . 487

IN commencing some general remarks on the Building Exhibition of last year, we observed that a certain amount of repetition in the constituent elements of such an annual exhibition was inevitable, and must be allowed for. In that year there was, however, a sufficient amount of exhibits of some special interest, either in regard to novelty or to the way in which the work was got up, to afford matter for a good deal of comment. In looking round the Exhibition of this year, by way of forming a general estimate of it, apart from the detailed report which we give further on, we must confess that we were so much struck with the lack of any proportion of exhibits that presented matter for special interest or special comment, as to entertain some doubt about the advisability of repeating these displays at such short intervals as twelve months; at least, unless we are to somewhat change the point of view from which we were at first disposed to regard them. When first the idea of a building exhibition on a large scale was started, a great deal of interest naturally attached to it, as an opportunity of getting a general comparative view of the state of building materials, and of building methods and appliances, affording even to men experienced in such subjects the opportunity of examining some materials and processes with which they had not been familiar, or which they had not seen carried out in the best form before. And up to last year this kind of interest was still maintained. There were then several stands of exhibits by eminent builders and manufacturers, which presented the use of new or little known materials and processes in exceptionally good forms as to workmanship and finish. Some of these were really suggestive to an architect, and calculated to afford him ideas for new combinations, both in regard to architectural and constructive design. Now, without wishing to throw any word like a damper on the undertaking, which has at the worst its practical uses of another kind for a great number of people, we must say that we found the present exhibition remarkably deficient in elements which could be of any novel interest or value from the professional architect's point of view. In some part of the show the effect of repetition was such that we seemed to be having almost precisely last year's exhibition over again; collections were to be seen under the same names and in the same places as last year, and containing almost the same things, or with exactly the same class of work and the same degree of merit. In other cases, the chief difference was that exhibitors who had made a fine show last year seemed to have come to the conclusion that they had done "enough for honour," and to have contented themselves with a very restricted display in the present instance. This seems to have been more especially the case with some of the large firms of established position, who have no need to seek publicity through the medium of the exhibition, and having once displayed in an adequate manner what they could do with their materials, evidently did not think it worth while to repeat the display again in twelve months.

The natural result is that the purely commercial object of the exhibition, to most of the exhibitors, becomes more and more obvious, and we imagine this must continue to be increasingly the case if the exhibition is kept up annually on the same lines. It is in this case just as it is with annual exhibitions of a more varied and larger interest,—such as, for instance, the annual "international" art exhibitions which for some years were held, commencing about 1870, in the galleries adjoining Exhibition-road. For two or three years these were very interesting, then the interest began to flag every year through the difficulty of getting a sufficient succession of really good works to fill the galleries, and at last they collapsed altogether. Now this must be the case with the Building Exhibitions, so far as we are asked to regard them as of value to the architect, unless some modification of their system should be adopted. At present it is quite apparent that the exhibition is in reality a great combined show-room and (to a great extent, we believe) saleroom for builder's wares and machinery of all kinds. Of course this is a perfectly legitimate object, and even a very useful institution to many people. It enables men who come up from the country to see many things in the same building for which they would otherwise have to go to different depôts at often out-of-the-way parts of London; and on the part of the exhibitors it may be justly urged that business is business, and that such an opportunity of acquiring public notice must not be let slip, a feeling which we must allow to be perfectly praiseworthy from the tradesman's point of view, even if we are inclined to be a little impatient at the amount of circulars with which we have been favoured by post during the last two or three weeks, "calling attention" to objects in the exhibition, or at the anxiety of some one at every turn to thrust prospectuses into the hands of the visitor. This is, we know, "all for the good of trade," and on that plea let it pass. Let it be admitted also that the Building Exhibition does at least this, as far as we have observed,—it fosters a standard of good workmanship; and we hardly know that there is anything to be seen there which is not honest and solid work, and as well turned out as its producers can do it; and probably in this way the exhibition gives a healthy stimulus to good workmanship and the selection of good material.

It is obvious, however, that a building exhibition might be more than this; and, in fact, the exhibitions which commenced this series, and even the last of all, were something more. Up to last year there was something to be seen of novelty, of the illustration of special appliances and materials, sometimes well illustrated, sometimes badly, but, at all events, in many cases suggestive. And the reason (as we suppose) that it is not so this time is simply that the interval of twelve months is too short to supply materials for keeping up that kind of interest in successive exhibitions. New ideas do not

come so quickly, and those who have made the best show last year are not inclined, after such a short space, to take the same trouble again. What is the solution of the difficulty? One way to meet it would be to discard the idea of having the exhibition annually; to hold it at intervals of five years, for example, when there would have been time in the interim for progress, and the exhibitions at that interval would serve to illustrate what had been invented, improved, or perfected in the meantime. From our point of view, that would be the best arrangement. We can find no particular value in these annually-recurring exhibitions. The present one offers nothing of any importance which had not been illustrated in the previous one. If, however, it is found that the annual exhibition, even apart from its possessing any novelty, is a good commercial speculation, and that it benefits both manufacturers and their customers by bringing methods and materials before the latter in a convenient manner, concentrating them in one place, we have nothing whatever to say against that; only that it cannot be expected that we and others who regard the matter rather from an architectural than a commercial point of view should continue to be greatly interested in such a series of exhibitions. There are two other courses that might be taken. One would be to set apart a section of the exhibition specially for invention, novelties, improvements on existing methods or materials, leaving the remainder of the exhibition to be conducted on the merely commercial footing. The other way would be to keep the annual exhibitions as at present, but to make every fourth or fifth one a special exhibition at which inventions should be specially brought forward, special efforts made to secure public attention, and special premiums offered for inventions in regard either to materials or methods. Such a system, it appears to us, would secure to all parties the advantages which are possibly to be attained by such an exhibition. The commercial value and convenience of the annual exhibition would be kept up, "on account of whom it might concern," and the special value to architects and others of an exhibition bringing forward the latest and most valuable inventions would be maintained also, far better than under any circumstances it could be maintained in an annual exhibition. For it must be observed that it does not do to attempt to stimulate and reward invention over much or at too-frequently recurring intervals. To offer annual prizes for new ideas, for instance, in building materials and contrivances, would probably be to bring forward a considerable proportion of valueless and ill-digested novelties, invented (if the word could rightly apply) for the mere sake of invention. Spread the time over longer periods, and there would be opportunity for new ideas of value to be invented and accumulate, in such proportion as would render our suggested prize exhibition at the end of five years a really useful one; an object for practical men to work up to, and an opportunity for others to get new ideas from them, and for architects to take note of new possibilities in building. This is what seems to us the most feasible plan for keeping the higher standard of the Building Exhibition permanently, and preventing it from degenerating into a mere means of commercial advertisement, which it certainly seems to be tending towards more decidedly this year than in any previous one.

There might, of course, be more special interest in this one if those who have any really new and useful idea to bring forward would take this opportunity of doing so, and if every facility were afforded them. Probably the promoters of the exhibition would reply that they would be most happy to receive such contributions and to display them as well as possible; but we apprehend that the system must be made more special to do any real good in that way. As it is, large and important firms, with names well known in the trade, demand considerable space, and occupy it in a showy manner, and tend to crush out of notice, possibly, really new and useful, but humbler and more unpretending, work. We see firms which have long had a reputation in their own line, taking up great space with exhibits,—wall-papers, stained glass, ornamental brickwork (not so much of this last as usual, however), which are excellent work in their way, and show that said firms are keeping up to their work, but which present not the slightest difference from the same firms' displays of last year, not the slightest advance upon or change from what they have been known to be doing for a good many years back. Such displays may be of use, as we said, to the country customer, or even to the Londoner not conversant with such things, and wanting to know where to go for this or that article; but of what use are they to the architect? He knows all about them; has probably had the circulars of the same firm sent to him regularly twice a year; the exhibition can, therefore, be of no value to him, except in the same way that it may be to the "country customer," in enabling him to arrange with the representatives of different building firms in the same building. But that is hardly an object worth having a Building Exhibition for. We hope, therefore, that the conductors of the exhibition may see their way to give some consideration to our suggestion, and to aim at doing something to render the exhibition, at intervals, though not annually, something more than a mere bazaar of the building trades.

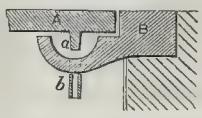
One new feature we noticed, or at least the intention to introduce it, viz., a collection of architectural designs in one of the galleries. These however, though filling a considerable space in the catalogue, were not to be seen, except a very small proportion of them, on the second day of the exhibition (Tuesday), the unreadiness of which we complained last year being again to be observed this year. But this idea of having architectural drawings is worth consideration, and at the same time it is worth while to do it in the most systematic and suitable manner, about which a word may be said, A building exhibition is practical or nothing. Architectural drawings, if forming part of it, should, to be in keeping with the objects of the exhibition, take a decidedly practical turn. As far as we observed those drawings which were hung, and as far as we could judge from the description in the catalogue of those that were not hung, there seemed to be the intention to have just the usual collection of perspective views which we see in so many collections of architectural drawings, and which tell us so little really about the architecture of the building. There was a set or two of plans illustrating the employment of concrete in cheap dwellings, which were more to the point; but we do not imagine that this will be the character of the bulk of the architectural drawings when hung. It would be far more to the purpose if, when there is an attempt made to add architectural drawings to the exhibition, the endeavour should be made to induce architects to send and even to make for the purpose (those who have time) drawings specially illustrative of the constructive side of architecture (so completely neglected in the show at the Architectural Room of the Royal Academy), and also of the use of the materials exhibited in other parts of the building in architectural construction and design. This would be a really interesting feature in the exhibition; it would practically connect it with the work of the architect, and might stimulate some of our young architects who are far too much given to making pretty pictures for exhibition, to give a little special attention to the proper treatment of new materials (when these find place in the practical part of the exhibition). Perhaps, also, a series of architectural drawings of this sort would do something to help the manufacturers and builders themselves to see how wretched are their own attempts to exhibit what they vainly think to be "ornamental" treatment of their materials,—a painful side of the matter on which we commented last year. Except in the case of two or three firms who are professedly decorators, and have artistic labour at their command, there is hardly an attempt at showing the decorative uses of any material in the exhibition which is not vulgar and commonplace, and only calculated to excite the dislike or the laughter of those who know at all what design or decorative treatment really means. It would be worth the while of some of the exhibitors of patent stones, patent concrete, patent brick and terra-cotta, &c., if they only knew it, to engage some one who did know what to do with the material to make good designs in it, instead of exhibiting the wretched devices made, one may presume, by their own clerks, and which only tend in many cases to create a prejudice in the architectural mind against a material which may be susceptible in reality of very effective treatment.

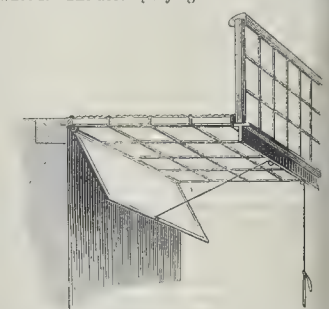
We proceed to give, in another form, such practical information and particulars as may be of value to our readers, as to the contents of the present exhibition; but in these preliminary observations we have felt that it would be most to the purpose to endeavour to suggest in what way the standard of these exhibitions might be raised and kept up, and their wider value, to architects as well as to the trades and their customers, increased in the future.

For the convenience of our readers, we have placed at the head of these pages an index giving the names of the exhibitors whose goods we have been able to notice. Owing to the largeness of the exhibition, and the somewhat complicated way in which the holdings or stands of exhibitors are numbered and arranged, we have found it impossible to adopt any alphabetical or numerical arrangement. The space in the main body of the hall is traversed by six avenues, lettered A to G, and the numbers of the exhibitors' stands and the avenues to which they front are indicated in our notices. Where the word *Bay* occurs it is meant to be indicated that the holder occupies one of the spaces on the ground-floor under the front of the gallery, except when one of the bays in the Arcade leading from the Hall to the Islington-green entrance is specially referred to. The large spaces or holdings underneath the gallery, against the side and end walls, are described as "Stand No. —, *North Side*," or "*West End*," according to position. There are other exhibits in the Gallery and in "King Edward's Hall." Where we have noticed them their locality is indicated. There still remain several exhibits of which we are obliged to reserve mention until next week.

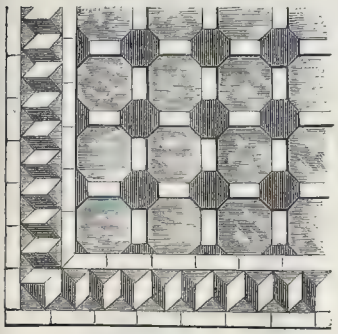
Messrs. W. R. Crow & Son (*Bays* 57 *and* 58, *Arcade*), of Benjamin-street, Clerkenwell, are exhibitors of some serviceable yellow deal doors and mouldings, as imported by them from Sweden, and manufactured there to their order. They also show some pine doors of American and Canadian manufacture. This firm, it may be mentioned, have ready for delivery a stock of several thousand doors, as well as a large and varied assortment of mouldings. They also supply balusters, and sashes and frames, put together or in pieces as imported with the view of saving freight.

Mr. Thaddeus Hyatt (*Stand* D 126, F 151), of Farringdon-road, exhibits several of his specialities in the way of lens and prism lights for pavements, areas, roofs, shop stall-boards, partitions, &c. His patent flap-doors for street openings to cellars or subways may be either illuminating or otherwise; but in any case leakage through the joints is prevented in the manner shown in the accompanying small cross section of a portion of one of Mr. Hyatt's patented guttered frames. A represents a part of the flap-door resting in the guttered seat of the frame B; *a* is a drip on the underside of A, which compels all leakage through the joint of the door to fall into the gutter below it, and from which gutter a pipe *b* may be made to conduct the water to any desired point. Flaps on this principle may be made either hinged at the back or sides, or arranged to slide back on wheels. The accompanying sketch is an illustration of Mr. Hyatt's lens, area and stallboard lights in combination with silvered reflectors, which latter, as will be seen, are so contrived that they can be raised or lowered at will, and thus (while not interfering with the direct light

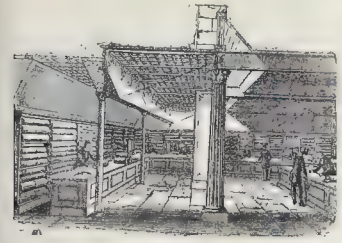




obtained immediately beneath the area lights) made to direct the rays of light to the remoter parts of the basement. The squares shown in the sketch can be filled either with Mr. Hyatt's lens-lights or with his prism lights. The former have the lenses arranged singly or in clusters of button-like projections above the flat portion of the top side of the lights, but flush with the iron divisions, thus forming a good foothold. The prism lights are in the form of elongated deck lights. Both kinds of lights have been very largely used in public and private buildings, and from all we can hear they appear to give satisfaction in every respect. The annexed engraving repre-



sents one of many patterns of Mr. Hyatt's encaustic tile and glass work, or safe-walking illuminating pavement. This is not only suitable for area coverings, but for halls, vestibules, corridors, and, in short, for almost any position where it can be used for the transmission of light. The glass lights, it will be seen, occupy the largest spaces in the pattern, the iron frames being completely covered by the tile strips, with octagons at the intersections of the bars. We are not bound to admire the design. For internal use the tile inlays may, obviously, be replaced by inlays of wood. The following sketch illustrates the



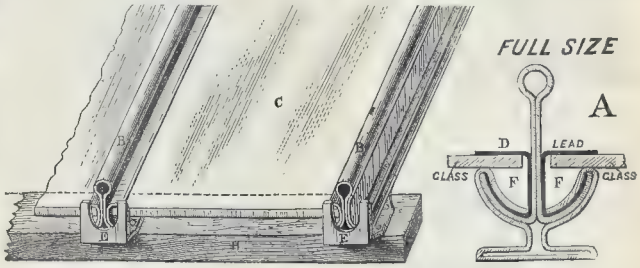
manner in which, by means of the inventions described in the foregoing lines, basements may be utilised to a far greater extent than is at present the case. This is certainly an important consideration, whether or not Mr. Hyatt be accurate in his statement that "twenty millions of pounds sterling in value of good real estate in London, lying below the street level, is now almost a waste for want of light."

Messrs. Thomas Lawrence & Son (*Stand* F 203), of Bracknell, Berks, exhibit specimens of their very excellent red facing bricks, and red rubbers and cutters, the uses of which are well exemplified in a structure 12 ft. high, and 7 ft. wide, in what may be described as the Free Classic style. The base of this structure is of plain red facing bricks, with moulded surbase. On each side is a pilaster supporting a moulded and carved cornice in gauged work. Above the cornice is a pediment, flanked by moulded and carved pedestals with terminals, and having a terminal at the apex. The pediment is filled in with the royal arms of England, well carved in bas-relief. The back and sides of the structure are covered with plain red wall tiles, and the roof with plain and ornamental tiles, all being produced by the exhibitors at their Swinley, Easthampstead, Wick Hill, or Warfield yards. The structure has been erected by Messrs. Veitch & Close, builders, Stanhope-street. It is claimed for the bricks we have mentioned that they will keep their colour in any climate, and that they will neither peel nor chip nor turn "whitey" when built up. This firm's pressed facing bricks, and their red rubbers and cutters, are of very great excellence; the latter are burned in three colours,—first, an orange red; second, a bright cherry red; and, lastly, a rich dark red; and each brick will be found to cut and rub all through of the same uniform colour. The plain and ornamental tiles and other goods of the kind produced by the same exhibitors are of excellent quality.

Messrs. Jones & Willis (*Bays* 65 *and* 66, *Arcade*), of London and Birmingham, have a good display, including one half of a pair of wrought-iron gates, containing some very elaborate forged work. They also show a very good wrought-iron panel or grille, with the monogram "J. & W." ingeniously worked in the centre, with several other panels and pieces of work, all unpainted and as it left the hammer of the workman. This firm are also exhibitors of a handsome brass gas-standard, suitable for the sanctuary of a cathedral, with a great deal of chasing and handwork upon it. They show, too, a carved oak eagle lectern, a Caen stone font with marble columns, a pulpit panel carved in stone, and other items of church furniture and fittings, including a good assortment of their well-known "Hesperus" lamps, which have been largely used for the lighting of churches in localities where gas is not obtainable.

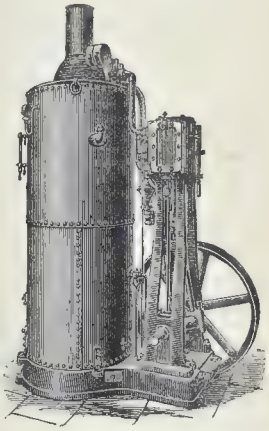
Messrs. Alex. McLean & Co. (*Stand* E 158, F 187), of Belvedere-road, Lambeth, exhibit improved non-efflorescent Keene's and Parian cements, in powder and also worked up into mouldings, large and small, and polished. They are exhibitors of chimney-pieces manufactured in stone cement, plain and trussed, and with small panels; also of chimney-pieces of the same material, with sunk panels of imitation marble, and with encaustic tiles in jambs and frieze. They also show flowers, &c., modelled in their Keene's cement while in a plastic condition. Their patent embossed and plain tiles, manufactured in their non-efflorescent Keene's cement, are worthy of special attention. It is claimed for them that they are perfectly damp-proof, and they are intended to be used for dados, walls, ceilings, bath-rooms, conservatories, &c. They are fixed in the usual way with Keene's cement, and may be had in sizes as large as 18 in. by 12 in. They can be put on laths, lime and hair, or Portland cement, or screwed to battens or fixed to brickwork direct. They can, of course, be embossed to any design.

Messrs. Eberhard & Co. (*Stand* C 100, D 119), of Edward-street, Hampstead-road, show some excellent parquetry in a great variety of patterns, laid with their patent composition glue, of the merits of which we spoke on a previous occasion. By the use of this composition it is rendered immaterial whether the parquetry be laid on stone, concrete, brick, or wood; it will stand successfully in either case. An oak door, with carved pediment and panels, in the style of François Première, exhibits some good workmanship. The same may be said of the oak staircase, with handrail, moulded and carved string, and square balusters in arch, in the Renaissance style. Among the other exhibits we may mention a carved oak chimney-piece and dado, and American walnut and other wood chimney-pieces in various styles. There are also to be seen here a good assortment of plain and twisted balusters and newels, and dado and panel mouldings in various woods. Eberhard's "permanent end-grain parquet treads" for stairs have been adopted with great advantage in some large establishments known to us, and from personal observation we can speak well of them. They have been successfully used for surfacing the worn treads of stone stairs, and, besides being very durable, they are very cleanly and attractive in appearance.



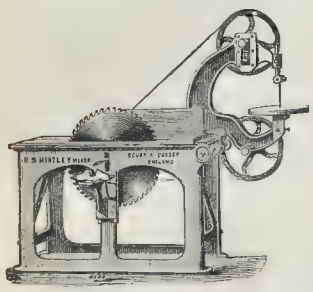
The Pennycook Glazing Company (*Stand* C 110, D 113), of Glasgow, exhibit one of the newest of the many methods now before the public for glazing without putty. As will be seen from the diagrams here given, this system consists of a series of sash-bars, which may be constructed of sheet-zinc, copper, or other metal, in the form shown by full-sized section A, whereby a double gutter F F is formed in each bar for carrying off condensed moisture. The glass is held in position, or "glazed," by the folding down of narrow flanges of sheet lead, which are rolled in with the sash bars, in the manner shown in the section. The sash-bars are fixed to the roof by shoes or clips, and the upper and lower edges of the glazing are protected by flashings of sheet-lead or zinc. The bars may be carried on purlins 8 ft. apart. In the perspective view of a small piece of glazing done on this system, E is the shoe for holding the bars in position on the wall-plate or runner H. It is claimed by the patentees that roofs glazed on this system are perfectly wind and water tight, that no painting is required, and that there is no breakage of glass from expansion, contraction, or vibration. We understand that it has been used at the new buildings lately erected in connexion with the Museum of Building Appliances, Maddox-street, Regent-street.

Mr. E. S. Hindley (*Stand* 267, *North Side*), of Bourton, Dorset, exhibits a 4-h.p. vertical steam-engine, named the "Alcázar," with 5-h.p. boiler on water-tank foundations, requiring no fixing. This engine, which has been newly designed, is substantially made, and its parts are few and simple. The crank-shaft is internal, and carries a fly-wheel at one end, being made long enough to receive a pulley at either end in addition. A compact 1½-h.p. vertical engine and boiler, on

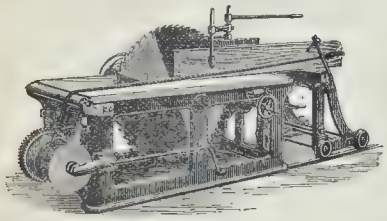


three travelling wheels, with handle for dragging it from place to place, is also shown. This is certain to be very useful where only small power is required, and it will meet many cases in which a tenant's lease permits of the use of a portable but not a fixed engine. A 10-h.p. horizontal engine, in connexion with a vertical

boiler, both resting on a cast-iron stand, are exhibited. This exhibitor's No. 2 circular saw-bench, with band-saw apparatus, is a useful



machine. It has a table, 4 ft. by 2 ft., but is made in other sizes, both smaller and larger. It has a rising and falling spindle, and is, altogether, a very handy and workable machine. Last, but not least, we must make mention of Mr. Hindley's circular saw-bench, with self-acting rope feed, variable while working. It has a substantial table, 6 ft. long by 3 ft. wide, and carries a saw 42 in. diameter, cutting 18 in.



deep. The special feature, however, in this bench is the feed-gear, which is variable while working to any speed between 5 ft. and 25 ft. per minute. The stopping of the feed is instantaneous. There are rollers at the ends of the table, and a pressure-roller to keep the wood against the fence. The bearings are long, and of gun metal.

The Papier Mache Company (*Stand* B 56, C 90), of Wellington-street, Strand, exhibit a fibrous plaster ceiling of simple but effective design, somewhat in the style in which the Brothers Adam worked. Ceilings of this material are made in slabs in sizes up to 6 ft. square, and they can be readily screwed up to the joists, together with a cornice of corresponding design, made in 12 ft. lengths, and capable of being fixed with rapidity. This company also show an over-door in the same material, and of the same class of design. In *papier mâché* work they exhibit an over-door and sides, and a dado suitable for a drawing-room; also two chimney-pieces of the Queen Anne and Adam styles; a small bedroom chimney-piece with *papier mâché* enrichments; and a great variety of designs in *papier mâché* finger-plates. For this purpose the material is well suited. For decorative sculptural figures (one of which, a very good reproduction of Thorwaldsen's Hebe, is exhibited) it is also well suited, on account of its lightness and its non-liability to chip. The company also include among the articles exhibited by them a number of miscellaneous ornaments, among which are several in new Louis Seize designs.

Messrs. J. & T. Birks (*Stand* E 160, F 185), of the Hartshill Brick and Tile Company's Works, Stoke-upon-Trent, are exhibitors of some bricks, tiles, and similar goods, of excellent colour and texture. Particular attention may be directed to the grotesque and other finials exhibited at this stand; most of these, together with some panels and string-courses, are of new design, and are well worthy of inspection. They are to be had either red, blue, or brown in colour, and the finials can be ordered to match any ridge and to fit any position, whether for gables, hips, or junctions. The same firm exhibit two turrets covered with their roof tiles, with the view of showing that their tiles can be made to suit any angle, and at the same time make a watertight covering without the use of sheet-lead or any other material than the tiles themselves. Hip tiles of suitable form are provided; these form a weather-tight covering, and are easily fixed in position. Various specimens of roof tiles, red, blue, brown, and brindled, are exhibited, fired according to the colour required, and without any subsequent artificial colouring; they are hard and comparatively non-porous. Paving tiles of various designs and qualities are shown, some of the best are excellent as regards finish and surface, and have very much the same effect as encaustic tiles; and being 1 in. thick, as against ½ in. in the generality of encaustic tiles, they are capable of standing more wear and tear. The Hartshill Brick and Tile Company are also exhibitors of various patterns of garden border tiles and stable bricks of vitrified blue ware of great excellence. Their pattern-sheets will be found very useful for reference by architects and builders.

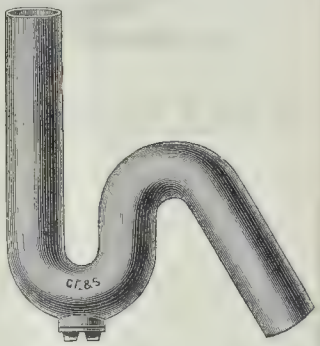
Mr. J. F. Meakin (*Stand* D 137), of Baker-street, exhibits his "self-acting" sash-fastener and opener, which has been largely used with satisfaction. It provides a convenient means of opening and closing the largest plate-glass sash-windows for ventilation and cleaning, and secures both sides of the window when it is closed, irrespective of the height of the meeting-rails above the floor-line. It also dispenses with the use of long-arms, centre-lines, pull-down handles, and the ordinary sash-fastening. Where it is used windows may be safely left open a little at top or bottom, or both, for ventilation. Meakin's solid-frame oilable sash-pulleys, just introduced, embody a marked improvement, conducive at once to strength and cheapness. The bearings for the pulley are cast both in one piece, a slot being provided at each side for the admission of the pulley-axle.

Messrs. W. H. Lascelles & Co. (*Stand* 270, *North Side*), of Bunhill-row, have some good things in concrete work as applied in architectural forms. Firstly, we may mention a large mullioned window in red concrete, for a house at Eastbourne, designed by Mr. William Kidner, architect. Another large mullioned window exhibited is from a design by Mr. Ewan Christian, and is to form part of some new buildings in Warwick-lane, Newgate-street, for Mr. J. Whitaker, whose name is so well known in connexion with a very popular and useful almanack. A Gothic window, with traceried head in the same material, for some new schools at Lynn, Norfolk, Mr. J. Hatchard Smith, architect, is also shown here, together with a piece of the enriched gallery front for the Epsom Town-hall, now being erected by Messrs. W. H. Lascelles & Co. under the direction of the same architect. The walls of this building, by-the-bye, are being constructed of Potter's concrete slabs, of which Messrs. Lascelles are the manufacturers. Portions of a "concrete ashlar" front to new premises in Mill Hill-place, Oxford-street, for Messrs. Debenham & Freebody, now in course of erection by Messrs. Holland & Hannen, under the direction of Mr. Thos. Harris, architect, are also shown, as well as portions of a frieze in concrete designed by Mr. A. Causton for some new stables for Mr. Robert Harrison, near Gloucester-road Station, South Kensington. This frieze contains horses' heads, emblems of the chase, &c., and well exemplifies the capabilities of the excellent concrete work with which the name of this firm is so largely identified. Sundry copings, steps, balustrades, plinths, cornices, caps, &c., are shown, also two concrete chimney-pieces designed by Mr. R. Norman Shaw, R.A., and a third as used in the offices of the Peninsula and Oriental Steam Navigation Company, Royal Albert Docks, designed by Messrs. Vigers & Wagstaffe, architects. Some good joinery work, being portions of jobs in hand, is also shown by this firm.

Messrs. T. Wilson & Co. (*Stand* B 69), of Stowmarket, are exhibitors of their alkaline composition for removing old paint and varnish from wood, metal, &c. Another variety of the composition is especially adapted for cleaning and washing paint, floors, &c., and removing wall paper, old distemper, &c. It is claimed for these compositions that they possess the caustic properties of the most powerful alkalies without any of the evils attending their use in the ordinary process of removing, cleaning, and washing paint. Samples of the work done by this composition are shown. On a previous occasion we mentioned that we had tried the composition with satisfactory results.

Messrs. Quirk, Barton, & Co. (*Stand* D 116), of Gracechurch-street, exhibit their patent tin-lined lead-pipe, for the prevention of lead poisoning in the conveyance of water, beer, and other liquids. It consists of an inner pipe or lining of pure block tin, encased by one of lead, the two metals being so united at their surfaces of contact as to be inseparable by the bending of the pipe. The inner or tin pipe is thus the channel for the flow of the liquids, the outer or lead pipe forming a protective coating to the tin-pipe, and, being of much greater thickness than the latter, imparts strength and solidity to the combination. This piping can be manufactured to any weight per yard ordered; the cost is stated to be about the same as ordinary lead pipe, by lineal measurement, the weight per yard being considerably less for an equal pressure.

Messrs. George Farmiloe & Sons (*Bay* 19) of St. John-street, have a good display, including American drawn-lead traps, which are considered to be far superior to cast-lead traps, as the metal in the drawn-lead traps is necessarily more dense and free from air-holes or flaws of any kind. The annexed woodcut shows

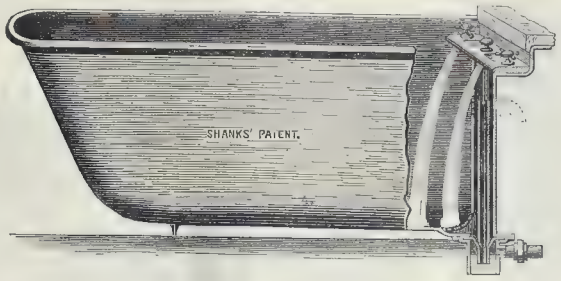


one of the many shapes in which these traps may be had. With the good qualities which belong to them it is not surprising that they are being largely used. This firm are also exhibitors of baths, lavatories, and water-closets, including their "Special" valve-closet, the cost of which, we understand, is only about the same as that of the pan-closet, which, although so generally condemned by sanitarians, is still largely used. The same exhibitors have some good specimens of beer-engines and public-house bar-fittings, including a mahogany counter with polished pine front, pewtered recesses, spirit rail, tills, and drawers complete. The same firm have a good show of pumps of all kinds, and some samples of ornamental lead glazing.

Messrs. Ellis, Partridge, & Co. (*Stand* E 156, F 189), of Leicester, have a very satisfactory display, including roofing slates of every kind. The roof of a small office is shown, covered with best Bangor slates from Lord Penrhyn's quarries, as a specimen of slating work, for which the firm are contractors. Other varieties of slates shown are Old and New Vein Portmadoc and Carnarvon, also Westmorland and Whitland Abbey green slates, the colour of which is very good. Among manufactured slate goods here shown is a small cistern; also samples of Thomas's "United" and "Detached," and Williams's, slate ridging. In the brick department we noticed some deep-red pressed facing-bricks, and moulded bricks for cornices, string-courses, door and window arches, &c. These are shown in great variety, and some of them in use in the formation of an arch built on one side of the small office before mentioned. They are excellent in colour and texture. Common wire-cuts, patent pressed, and hand-made bricks for contractors' work, made from the well-known Leicestershire clay; also blue bricks for pavements, copings, sewerage work, and dock and bridge work, together with white pressed bricks for facing, are among the other goods of the kind shown by this firm. Among their exhibits we must not omit to mention their plain, pressed, and ornamental strawberry-coloured roofing tiles, gable and hip tiles, &c. Of salt-glazed sanitary ware they show socketed pipes of good manufacture, siphons, junctions, &c. There are also to be seen here some small models of white chimney-tops; a variety of terra-cotta squares

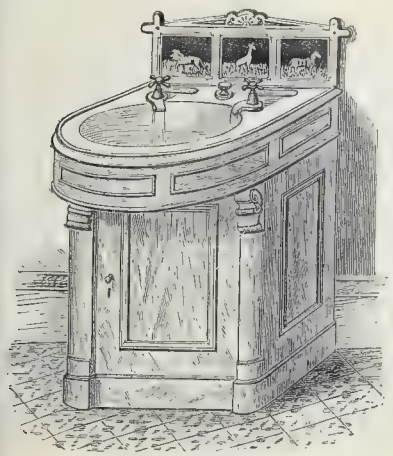
for ornamental facing work in conjunction with the red facing-bricks; some bright red ridges; and red, blue, and buff quarries for flooring. Altogether this exhibit is a very good one.

Messrs. J. & T. Shanks (*Bay* 10), of Barrhead, near Glasgow, are exhibitors of some very useful and good sanitary appliances. First of all we will refer to their patent "Imperial" combined bath and fittings; the bath is made in two forms, viz., with parallel sides and with taper sides. The accompanying woodcut is

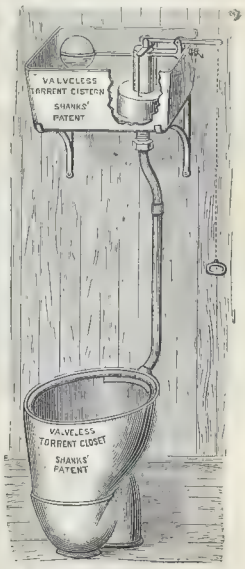


part view and part section of a parallel-sided bath, made of cast iron, the standing waste or discharge pipe being cast on to the end of the bath, and communicating with the bath by means of a grating or grating-holes cast on the bottom, so as to completely empty the bath when the waste-valve, which is constructed to act as overflow, is lifted. The waste-pipe is carried up and communicates with the fittings, which are fixed on a shelf or recess cast in the end of the bath, about 3 in. below the flange. The hot and cold taps, also the arrangement for lifting the waste-valve, are covered with a porcelain plate exactly fitting the shelf or recess, thus facilitating cleanliness of appearance, as the only brasswork to be kept clean is that of the knobs for working the valves. The porcelain plate is constructed with two depressions for soap-trays, draining into the waste-pipe. They have a trap at the bottom of the waste-pipe, so that all the plumber has to do is to attach his waste and supply pipes. These baths were fitted by the exhibitors in the Russian Imperial yacht, the *Livadia*. Other baths shown by these exhibitors are Shanks's patent "Universal" combined bath; Shanks's Sitz bath, and their No. 1 A bath, with cabinet work, the bath being of copper, with spray canopy and fittings; this arrangement combines in one a plunge, spray, and shower bath. The patent "Eureka" bath, combining also all these requirements, is of cast iron, enamelled inside, and is made with a large circular end; the canopy is made to suit this, and the spray-jets all converge to the centre of the circular end, while additional room is provided for the bather. Bath fittings in great variety, and of much excellence are shown. Shanks's patent lava-





lavatories and lavatory taps and fittings are shown in variety. Shanks's patent valve-closets, with iron-encased basin, are very good, and have previously been commended by us. Of wash-out closets they show their patent "Crown" encased safety wash-out closet, which consists of an earthenware basin with O-trap, cast in one piece, with ventilating arm leading from the upper bend of the trap, behind the water seal. The basin is embedded in cement in the iron case shown in the view, and through the bottom of which the outlet of the O-trap is taken. The exterior of the iron casing is painted and fixed *in situ* without any woodwork (except that of the rim), and thus the wood-boxing usually employed, with its liability to harbour dirt and vermin, is rendered unnecessary. This firm's patent "Torrent" closet, No. 44, is shown in conjunction with their "Torrent" cistern, here represented. The introduction of the water from cistern to basin is direct and without obstruction, effecting a thorough wash-out, while the outlet is oval and at the front of the closet. The cistern gives a two-gallon flush. Their waste-preventing

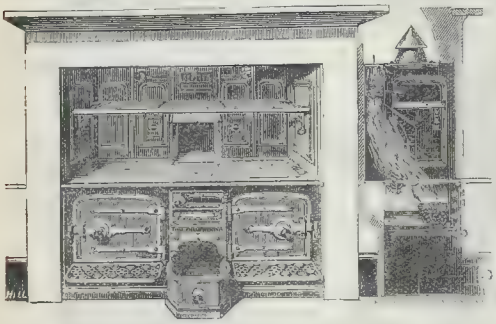


cisterns and a variety of hot and cold water taps are among the other exhibits of this firm

Messrs. F. Rosher & Co. (*Stand* 271, *North Side*), of Old Jamaica Wharf, Upper Ground-street, show as their principal exhibit some red and white Suffolk bricks, both facing and moulded,—the latter in very great variety, there being some ninety different patterns in the two colours, from plain splays and plinths to some rather elaborately-ornamented string-courses and diapers. This exhibit includes bricks for door-jambs, window reveals, mullions, arches, and key blocks, the arch bricks being of several sizes, ranging from 4½ in. to 18 in. long. The facing bricks in both colour appear to be very hard and sound. This firm also exhibit some specimens of "brimstone" paviours, which are very hard and durable, and possess the great advantage of freedom from slipperiness, even when wetted. Although used only for paving, they would probably make excellent building bricks, where their colour would be approved, owing to their hardness and solidity. Among other bricks exhibited by this firm are some red and white rubbers or cutters. They also show red roofing tiles of all the usual descriptions,—plain tiles, pantiles, and corrugated tiles, with ridges of plain roll or ornamental patterns, effective in colour and good in quality. A speciality in this department is Phillips's patent "lock-jaw" roofing tiles, now manufactured by Messrs. Rosher. It is claimed for them that they are the most perfectly weatherproof tiles of the kind that have been produced, their complete lapping and interlocking form, together with their hardness and trueness of make, rendering them at any pitch,—even of the flattest,—one of the soundest roof-coverings to be had. The exhibitors direct special attention to the facilities they have for despatching their goods by water carriage in lieu of by railway, thereby saving one-half or one-third of the freightage. To the importance of providing and maintaining adequate means of water-carriage for heavy building materials, and to the difficulties in the way of the economical carriage of such goods by railway, we have drawn special attention in the columns of the *Builder* during the last two or three years. But, to return to the goods exhibited by Messrs. Rosher & Co., we notice that they are exhibitors of pressed paving bricks and tiles, and garden-edging tiles of varied patterns, also of plain weather tiling. There is also shown a selection of their artificial stone vases, terminals, &c., together with laths, asphalte roofing felt, and other materials.

Messrs. Steven Bros. & Co. (*Stand* C 101, D 118), of Upper Thames-street, occupy their old

position in the centre of the hall, but have a much larger holding of space than on previous occasions. They are thus amongst the largest exhibitors of general builders' castings, kitcheners and open-fire ranges being well represented. Amongst them we notice one of the firm's "Prize Medal Double Oven Kitcheners," with tile covings and and electro-plated fittings. An extra heavy kitchener for hotels and other large establishments is exhibited; it is provided with extra-



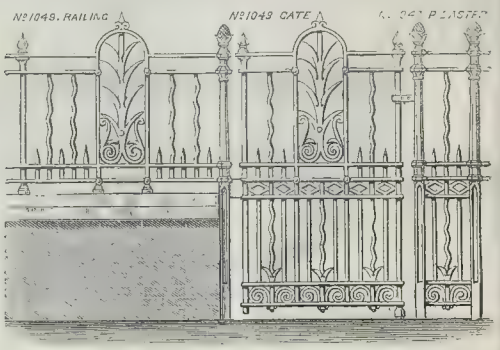
large ovens, and is altogether, owing to its convenience and the excellence of its make, calculated to stand a great amount of hard work. There are also other kitcheners shown, with two ovens, oven and side boiler, and oven and steam, besides a good variety of open ranges, and one or two of their combined open-and-close-fire kitchen ranges, one of which, No. 87 C, we illustrate above. The kitcheners are all fitted with a patent cone ventilator, shown in the section, for carrying off the odours of cooking. Another very excellent range is the one shown in the following woodcut; it has commodious ovens, is strong in construction, and excellently finished. Capable of adequately serving the requirements of smaller establish-

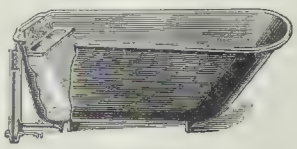


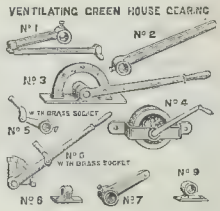
ments than those for which the ranges already mentioned are adapted, is the small kitchener, with oven and boiler, shown in the small engraving. As will be seen, it is portable, and may be fixed either within the chimney recess (in which case it requires no brickwork), or in

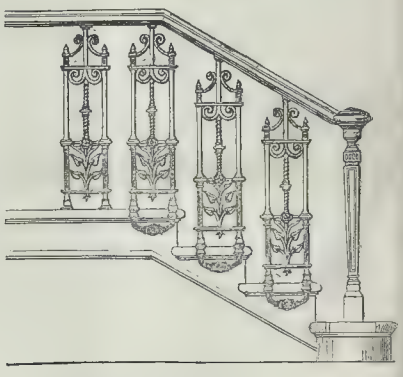


front of a larger disused range or kitchener. The same exhibitors' wrought welded bath boilers (which, when needed, are supplied with the kitcheners and ranges) are all fitted with patent steel "manhole covers," which never break when screwed up tight, as is so often the case with cast-iron covers. Some excellent chimney-pieces are shown some of them, with marble over-mantels and mirrors, are quite new. They seem likely to become favourites. The tile and other stoves, with hearths and fender curbs, are also worthy of attention, as combining excellence in design and finish with moderation in price. Messrs. Steven Bros., & Co. also display a very good assortment of ornamental gates and railings, some of them of new design. The castings are sharp and clean, and some of the patterns are such as will accord very well with styles now in vogue. We illustrate one of these designs, No. 1,049. Among other work exhibited at this stand there is a good specimen of constructional ironwork in the shape of a large verandah of new design. It is raised 4 ft. from the ground, and is approached by a flight of ornamental cast-iron stairs with the registered "Queen Anne" balusters. These balusters are shown in the engraving above. The castings are sharp and clean, and the workmanship generally is of such excellence as to commend it to architects and builders. The other goods displayed at this stand are finials and weather-vanes, balusters, spiral staircases, crestings, lamp-posts and lanterns, coil-cases, hot-water boilers and fittings, stable-fittings, and baths,—in fact, everything in the casting trade required in the construction and fitting of buildings. We give above a view, showing part section, of one of their patent baths, and there are also figured above their useful ventilating greenhouse gearing, as being representative of a large variety of similar appliances made by the exhibitors.





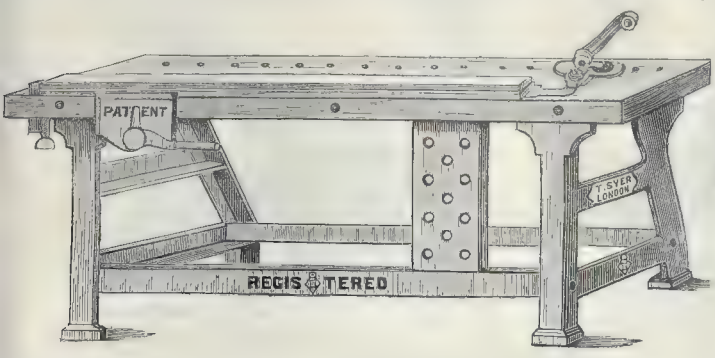




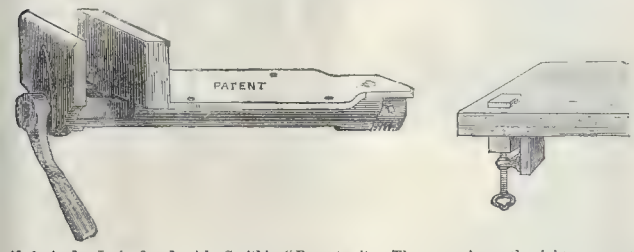
The Imperial Stone Company (*Stand* D 128, E 149), of East Greenwich, have a very good display of their "Imperial" (silicated) stone, of the manufacture of which, and of its use for drain-pipes and other purposes, we spoke at some length and in favourable terms a year ago (see *Builder*, April 1, 1882). We are informed that the material has been in increasing demand since last year's exhibition, and that, to meet new demands, other branches in concrete-making have been added to the company's business,—notably the mouldings in red and stone-coloured concrete. The flight of steps, with landing, piers, balusters, and coping, is a good and substantial piece of work, fully illustrating the capabilities of the material. The samples shown of builders' materials, such as sinks, copings, window-heads, sills, garden edging, caps, coal-plates (with rim and cover complete) are very clean and smooth in finish. The company also show an "Imperial" stone enamelled bath, sink, and slabs, as illustrating other directions in which this material can be used, and incidentally suggesting the fire-resisting qualities of the material, inasmuch as the process of enamelling requires the application of a considerable degree of heat to properly bake on the enamel. Samples of "Petrosilicon," a description of their stone laid *in situ* on a concrete bed, where such is required, appears to be especially adapted for railway platforms and goods-sheds, stable floors, corridors, yards, areas, basements, cow-sheds, and a variety of similar purposes. It is calculated to be of great service in the construction of fireproof floors, and as a protective coating for iron girders and columns.

Curbs and channels of silicated stone, and samples of silicated stone pipes for sewerage work (one pipe being 36 in. in diameter), are also shown. The strength of these pipes is very great, as will be seen by a reference to the account of the tests already referred to by us. Among other things exhibited at this stand is a very good specimen of coping for railway platforms. Altogether, this is a material which ought to, and doubtless will, make its way.

Mr. Thos. J. Syer (*Stand* F 206, G 221), of Finsbury-street, exhibits some useful articles for the engineer's and carpenter's shop, and even for the private house where the tenant is a handy man. The "Registered Portable Bench," the

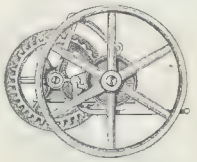


parts being connected by means of iron screws, readily removable when the bench has to be taken to pieces and packed for removal, possesses several good points. It is made of white deal, with bench-knife fitted as shown. It is claimed for it that, being on metal supports and firmly bolted, it cannot rack and get loose at the joints, as is too often the case where wooden standards are used. The top is bolted through its entire thickness, as shown on the front edge of the bench, with iron bolts, so as to prevent warping. The bench-knife will be found useful for holding the wood during the process of planing or rabbeting, and it can be quickly removed to any distance, or taken off the bench

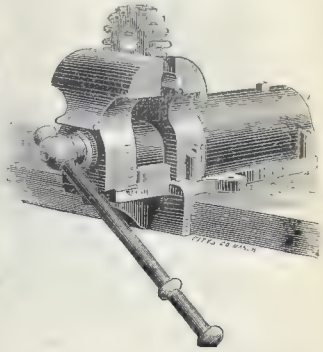


if desired. It is fitted with Smith's "Patent 'Standard' Instantaneous Grip" vice, here figured, which is suitable for joiners, pattern-makers, cabinet-makers, engineers, &c. This vice grips and relaxes its hold instantly in any distance from $\frac{1}{16}$ in. to 1 ft. 1½ in., and is always parallel when open. All the working parts are made of cast steel and annealed. The "Desideratum" engineer's vice, Smith & Co's patent, shown next to bench, has all parts screwed, so that they can be renewed when requisite. The jaws are steel-faced, screwed on, and checkered. As will be seen by the woodcut, all the working parts are covered, so that no filings or refuse can get between them. The jaws are always parallel when open. A very handy little article is the screw for bench-stops figured above. By its use the ordinary wood stop can be made to rise or fall to any distance required. Lee's patent self-feeding portable hand-power drilling machine, to take the place of the old ratchet brace in places where the work to be done is not accessible by an ordinary drilling-machine, is well worthy of notice; it will drill holes at almost any angle, and is stated to be capable of doing three times as much work as the ratchet drill. A handy mitreing-machine, a corner cramp, and other articles, including Syer's folding ladders, go to complete the list of articles which are exhibited at this stand.

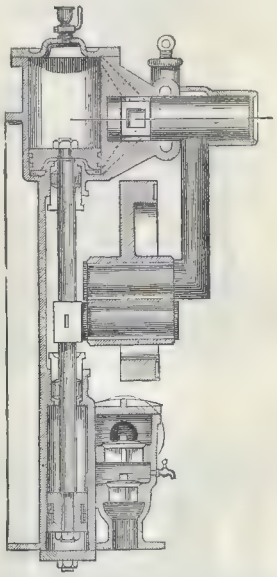
Mr. J. Stannah (*Stand* F 207, G 220), of Southwark Bridge-road, exhibits his new "Southwark" lift-gear, intended for passenger and goods lifts. It embodies a simple contrivance by means of which the same apparatus will do for lifts of different sizes, and it also possesses the advantage of being self-contained. The spindle which carries the lifting-rope wheel has its bearings in the cast-iron side-frames; the other spindle, with the endless-rope wheel and pinion, has independent bearings, which are fitted in a radial groove in the outside of these frames. The engraving at the bottom of this column, in which the two spindles are on the same level, shows the gear arranged for the largest box or cradle. By moving the centre of the large rope wheel spindle higher in the groove, the apparatus can be adjusted so as to bring the ropes exactly in their proper positions. Two 5-cwt. "Southwark" gears are exhibited, one for a lift or cradle 4 ft. wide, and the other for one 3 ft. wide, by depths varying from 3 ft. 6 in. to 2 ft. Besides these there are shown several sizes of the "Southwark" lift-gear for light weights. There is also exhibited, in several sizes, Stannah's patent "Pendulum" steam-pump, which is a very excellent machine. It is claimed for this pump that it occupies less than half the space, and that it is only two-thirds of the weight, of any other pump of equal capacity. The engraving on the right represents a vertical section of a No. 22 double-acting "pendulum" pump. The steam cylinder, pump-barrel,



frame, and clack-box are cast in one piece, so as to reduce the number of parts to a minimum. On the front of the cylinder, and at a right angle with it, there is a circular steam-chest, which is bored out so as to form a bearing; on the outer end of this is fitted a loose cap, also bored so as to form a similar bearing. From this saddle-shaped bearing the pendulum swings, the upper part of it being made T-shaped, each arm being turned to fit the bearings just mentioned. The stem of the pendulum passes downwards through an elongated hole in the loose cap. A portion of the arm of the pendulum next the cylinder, and near that end, is cut away so as to leave a steam passage. Here a steam valve is fitted, to work in connexion with the steam ports, as in ordinary practice, except that it is actuated by the motion of the pendulum, to the arm of which it is attached. On the lower end of the pendulum is a projecting pin, on which the disc revolves, the disc being driven by the crosshead pin, so that both the pendulum and the crosshead pins take their bearings in the disc. It will be understood that the centre of the pendulum pin, which is also the centre of the disc, swings through an arc, the chord of which is equal to the stroke of the pump. The action of the pump is very simple. Supposing that all the parts are in the position shown in the engraving, when the steam is turned on the piston



will take its stroke upwards. The crosshead, moving in a vertical line, causes the pendulum to swing from right to left, at the same time turning the disc, the pendulum being at the extreme end of its swing when the crosshead is half-way. On the piston arriving at the top of its stroke the pendulum will again be on the centre; and on the piston descending the pendulum will swing from left to right, and again allow the crosshead to pass. Every care seems to be taken, in the manufacture of these



ingenious pumps, to produce perfect workmanship, each working part being turned or otherwise prepared to standard gauges. In order to prevent the escape of steam along the arm of the pendulum, Stannah's patent stuffing-box is used.

Messrs. Esdaile & Co. (*Stand* B 59, C 88), of the City Sawmills, Wenlock Basin, exhibit some very good doors and mouldings of English manufacture, also some doors of Swedish and American make. Swedish mouldings and trellis-work, English and American Venetian-blind laths, and hand and machine made

plasterers' laths, are amongst the other exhibits shown at this stand, besides some strong pulley blocks for builders' use, with and without iron binding. At the same stand are shown specimens of dados, friezes, and ceilings executed by the Pliable Wood Decoration Company for the interior decoration of saloons, suites of apartments, ships' cabins, railway carriages, &c. These should be looked at.

Messrs. Lewis & Lewis (*Stand* 250, *South Side*), of Cambridge Heath-road, are exhibitors of some very good builders' plant for wood-working and other purposes. Before describing the wood-working machines, we will say a few words respecting the portable combined engine and mortar-mill shown by this firm, and of which a view is given in fig. 1. The engine is of 4-h.p., and although carried on the same frame, is constructed entirely independent of the mortar-mill, from which it can be disconnected when required to drive other machinery. The pan, as well as the rollers, is made to revolve, and false bottom-plates, 2 in. thick, easily renewable, are fitted to the pan. The boiler is vertical, fitted with cross tubes, feed pump, and all necessary fittings. An improved friction hoist is shown at the same stand. It is intended to be worked by steam power, and to be driven by the man who lands the load, the hoisting, lowering, and brake being controlled by one hand-line, which can be carried any required distance. The "Islington" mortising-machine, the "Lambeth" mortising-machine and boring apparatus, and the "Kensington" mortising-machine and boring-apparatus are also exhibited.

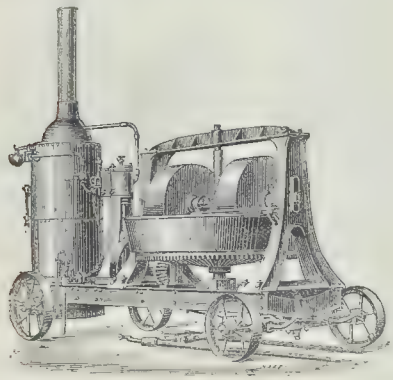


Fig. 1.

We give a view of the "Lambeth" (fig. 2.). Each of the three last-named machines is provided with a set of chisels and core-driver. The "Anerley" patent combined circular and band-sawing machine can be worked either by hand or steam power, and appears to be well adapted to the requirements not only of joiners and builders, but of carriage-builders, wheelwrights, pattern-makers, chair-makers, and others. It is shown by the engraving (fig. 3.). It will take a 22-in. circular saw, and will cut by hand-power 5 in. deep, either with the circular or band saw. The saw-spindle can be raised or lowered as may be desired for rabbeting, grooving, tenon-cutting, &c., or, with steam power, for sticking small mouldings. The fence will cant to any angle. The boring-table will take wood of any length, and holes can be bored up to 1½ in. diameter. The band-saw table is made to cant to any desired angle for sawing on the bevel, the top pulley being adjustable and fitted with tension arrangement, with the view of preventing the breakage of the saws. Altogether this is an exceedingly useful machine for a great variety of purposes. The "Dulwich" patent combined "General Joiner" and bandsawing machine, with countershaft for steam power, is constructed entirely of iron. It is made to take a circular saw 27 in. in diameter, and will cut boards up to 11 in. deep. The band-saw will cut wood up to 8 in. thick, and has 27 in. clear space between the saw and the column. The circular saw spindle rises and falls, and is made long enough to take a moulding cutter-block, grooving saws, tonguing and rebating irons, &c. Loose collars are provided for spacing tenon saws for tenons ¼ in., ⅜ in., and ½ in. thick. This machine can be arranged to stick mouldings, to plane any thickness up to 7 in. wide at one cut, and 11 in. by reversing, to edge several thicknesses of boards at one time up to 9 in. wide, to cut single or double tenons, and to bore or mortise from outer end of saw spindle. The "Clapham" machine for making circular or irregular mouldings has its spindle made to rise and fall, and can be arranged to revolve at any required speed, and with great steadiness, thereby cutting mouldings cleanly and rapidly. Another useful machine exhibited by this firm is the "Westminster" hand-feed planer, shown by fig. 4. It is claimed for it that it will "take out of winding" any kind of timber, and however "twisted" or uneven the wood may be, reduce it to an "even face" in less time than the work would take to do in a "trying-up" machine. The band-sawing machine shown by fig. 5 can be worked by the foot or by steam power. The table is made to cant for bevel sawing, a tension apparatus is fitted to the top pulley slide, and the saw pulleys are 20 in. in diameter. Lastly, we have to mention the "Knightsbridge" circular saw-bench, with rising and falling spindle (fig. 6.). This bench is fitted with a steel spindle and canting-fence, which is also made to turn back over the end of the bench so as to be out of the way when cross-cutting work has to be done.

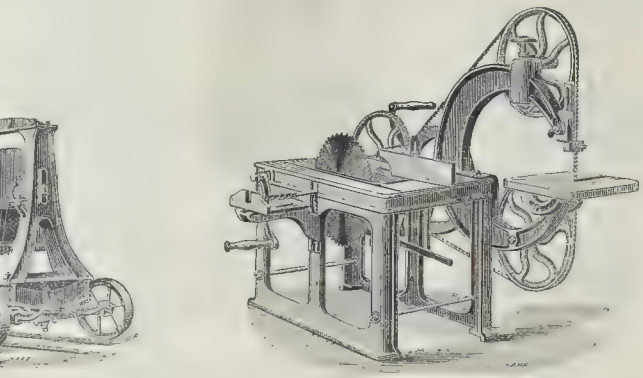


Fig. 3.

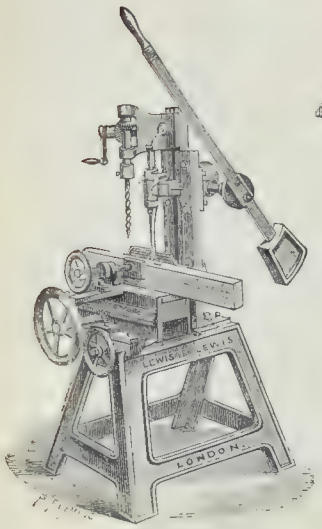


Fig. 2.

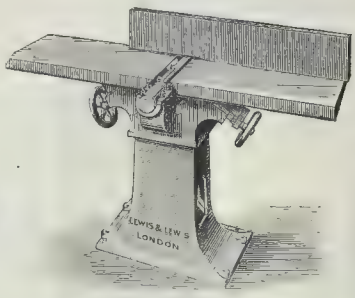


Fig. 4.

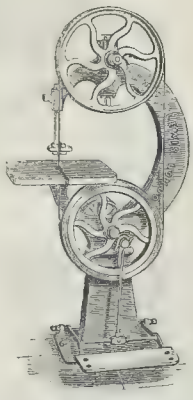


Fig. 5.

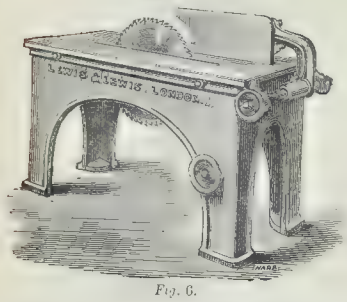


Fig. 6.

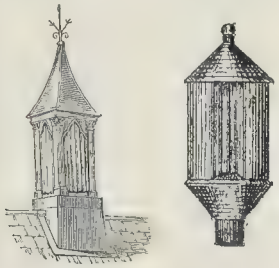
Messrs. J. B. Orr & Co. (*Stand* B 60, C 87), of Charlton, are exhibitors of the Silicate Paint Company's well-known productions and their applications. With regard to their "Duresco" or washable distemper,—a process which we noticed some time ago,—they show a model of a drawing-room decorated with it, the

woodwork being done in Charlton White and Enamel paints. The effect is undoubtedly very good, and the same may be said of the series of panels illustrative of the work that can be done with the Charlton Enamel paints. There is also exhibited at this stand a chromatic arrangement of Charlton oil paints, upon a ground of Charlton white on canvas. Akin to this is a series of small panels showing gradations in "Duresco" colouring. A variety of raw materials and manufactured articles from the Company's works complete the exhibit, which is one of great interest, not alone to the painter and decorator, but to the sanitarian, for it is claimed for all these materials that they are non-poisonous.

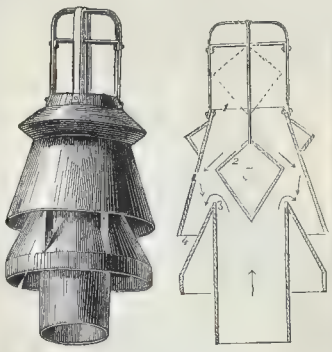
Messrs. Robert Boyle & Son (*Stand* A 3, B 49), of Holborn Viaduct and Glasgow, exhibit different forms and applications of their air-pump ventilators, of which, although they are now tolerably well known, we give a plan showing their arrangement. The air-pump ventilator, as shown by the plan, consists of



four sections, each acting independently of the other. On the exterior will be seen a curved baffle-plate or guard (1) to concentrate the current and prevent the wind blowing through the slits opposite. Next there is provided a curved plate (2) to take the pressure off the vertical slits communicating with the internal chambers, and to prevent down-draught. The external air impinging upon the diaphragm (3) is deflected on to the central radial plate (4), creating an induced current, and in its passage drawing the air from the vertical chamber (5), expelling it at the opposite opening. The foul air immediately rushes up the shaft connecting the ventilator with the apartment to be ventilated, to supply the place of the air extracted by the action we have described. The cross partitions (6) divide the vertical chamber, and prevent external air from being drawn through the slits upon which the wind is not directly impinging. The left-hand figure shows one of the many varieties of form which the ventilator may be made to assume externally, according to position. The principle of these ventilators has been applied by the patentees to the ventilation of soil-pipes, and one of their soil-pipe ventilators (which are all made of galvanised iron and painted with enamel paint) is shown by the illustration on the right hand. These

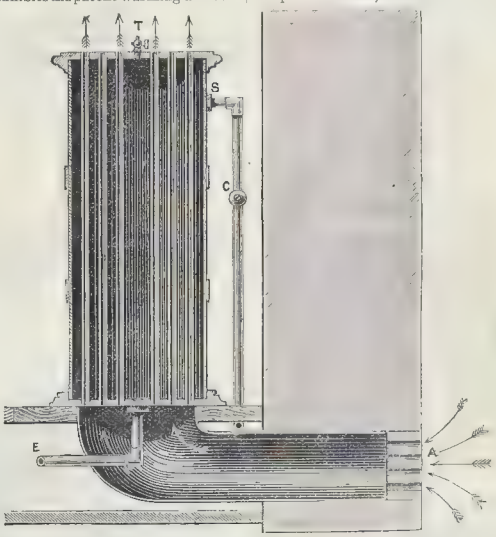


ventilators and soil-pipe heads have been very largely used for many public and private buildings, as mentioned in our columns from time to time, and their efficiency seems to be attested by the increasing demand for them. Messrs. Boyle exhibit, along with specimens of their appliances, plans and models showing their application to the ventilation of houses, ships, &c. Nearly a year ago (May 27, 1882) we described in some detail the means adopted by this firm for the ventilation of ships' holds and saloons, and they seem to have succeeded in satisfactorily solving this difficult problem by the use of their patent "downcast" or inlet ventilators used in conjunction with a special form of their self-acting air-pump exhaust ventilator. Boyle's patent chimney-cowl, for preventing a blow-down, is shown by the annexed illustrations. If a body of air is forced in at the false top, 1 (see section), instead of passing down the vent it is split up by the diaphragm, 2, deflected over the real top, 3, and

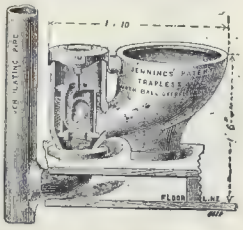


passes out at the louvre opening, 4, assisting to a certain extent the up-draught. It will be seen that this cowl has no movable parts about it, except that the cone 2 is made to push up when the brush of the sweep's machine comes in contact with it, so as to leave the vent quite open. This appears to be a very useful cowl, but it is only intended to prevent a down-draught, not to cure bad or sluggish vents. Among other appliances shown at this stand are some mica-flap ventilators for the discharge of heated and vitiated air from rooms into smoke-flues or shafts.

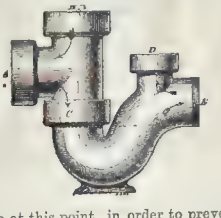
Mr. George Jennings (*Stand* E 171, F 173), of Stangate, exhibits his patent warming and ventilating arrangement for supplying fresh warm air to churches, schools, &c. It consists, as will be seen, of a hot-water or steam chest with a number of tubes running through it; into these tubes the external air is admitted and warmed



as it passes through them into the apartment to be warmed and ventilated. The same exhibitor, it is hardly necessary to say, shows some excellent sanitary appliances, including water-closets, lavatories, urinals, slop-sinks, and stoneware goods. Among them we may specially name Jennings's patent valve water-closet and trap, in one piece of earthenware, with ventilating socket and anti-percussion regulating service valve. The socket P is provided for connexion with an air-pipe, so as to relieve the seal of the trap from the pressure of sewer-gas and to prevent the syphonic action (so often resulting in unsealing a trap) due to the contents of the basin being rapidly discharged down a soil-pipe. Another very excellent closet is Jennings's trapless valve closet (here shown), for fixing on well-ventilated soil-pipes. The



overflow in both these forms of closet is provided in the plug or stand pipe, which, while allowing of the free escape of waste or overflow waters, is, it is claimed, hermetically sealed against the admission of impure air by the introduction of the "Patent Flexible-Seated Ball-trap." Jennings's improved patent Bramah valve-closets and galvanised iron traps, with and without waste-preventing arrangements, are shown; they are very serviceable things. The same exhibitor shows his combined seat-action, self-flushing water-closet, urinal, and slop-sink. His ventilating drain and cesspool-trap, for introduction at a point of junction with cesspool or sewer, is shown in the illustration below. It has a socket B at the top, provided for the admission of fresh air at the lowest point in the line of drain. Under certain conditions, the makers say, mica valves are

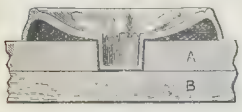


advisable at this point, in order to prevent the escape of foul air that may be driven *down* the pipe by descending waters. The trap being formed in two pieces, the socket A may be turned round at any required angle to the line

of drain, and several pipes may be connected to one outfall by the substitution of a junction-piece having two or three inlets. The length of drain on the sewer or cesspool side of the trap can be ventilated from the socket D. Jennings's patent three-person urinal, in enamelled slate, with automatic flushing arrangement, has been and is being largely used. Jennings's patent concealed urinal, in mahogany case, and with self-acting flushing arrangement, is the only thing of its kind which can be fixed in certain positions. Of lavatories there are one or two representative specimens, including a patent tip-up and lift-out lavatory-basin, with



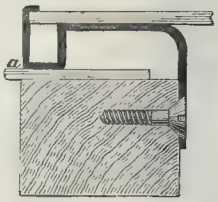
polished marble and mahogany stand, and provided with hot and cold shower and spray shampooing apparatus. A simpler and inexpensive lavatory is shown, consisting of a tip-up and lift-out basin, in enamelled slate top, with galvanised cast-iron standard and frame. A very handy little contrivance in the shape of a soap-dish, for marble and other lavatories, is shown by the small section here engraved. The soap-



dishes of marble lavatories have hitherto generally been made in the form of a depression or hollow sunk into the surface of the marble slab, with a small pipe draining it into the receiver or basin. It is found that these small pipes are always becoming stopped up. The tray or dish now introduced is made in one piece of porcelain, and is provided with a hollow stem or boss, round on plan, on its underside. This boss fits loosely into a round hole prepared in the slab A, thus keeping the dish in position and preventing breakage. Ribs are added to allow the water to drain freely into the small well or recess. The whole thing is instantly removed for cleansing. Among other exhibits at this stand are Jennings's patent self-acting latrines for schools and public buildings; the Dubois drawn-lead traps and bends for soil-pipe and other uses; Jennings's patent ball-traps and tidal valves, sluice valves, fire-cocks, hydrants, force and lift pumps, drinking-fountains, standposts, stoneware drain-pipes, bonding and air bricks, damp-proof course, invert sewer blocks, terra-cotta door and window dressings (from Mr. Jennings's potteries at Poole); also electric bells, speaking-tubes, and burglar-alarms on an improved principle.

Messrs. C. Hindley & Sons (*Stand* D 135), of Oxford-street, have a very attractive stand, forming, in effect, the end of a handsomely-decorated room. The walls are covered with one of their Japanese leather papers, of which there are shown many other specimens. Against the background, of a rich terra-cotta shade, thus formed, are arranged three very well-designed wood chimney-pieces, with over-mantels. The one in the centre, which is painted ivory white, with sage-green silk plush panels to the over-mantel, is of revived "Queen Anne" style. The two smaller chimney-pieces are placed one at either end of the stand. One of them is painted in turquoise blue and the other in peacock blue, the panels of both being covered with Japanese leather paper. All these chimney-pieces struck us as being good in proportion. They are made, we understand, of Canadian white wood, and, as they are moderate in price, it is once more shown that excellence in design and beauty of workmanship are not incompatible with a reasonable cost. There are also shown several useful little cabinets and other pieces of furniture in dark mahogany. The dado of the extemporised apartment in which all these things are shown is of Japanese leather paper, and very satisfactory this material looks in such a situation. The frieze has a shaded terra-cotta ground, whilst, dividing the filling from the frieze, is a shelf supported upon shaped brackets. Upon this shelf there are displayed various vases and other articles of china.

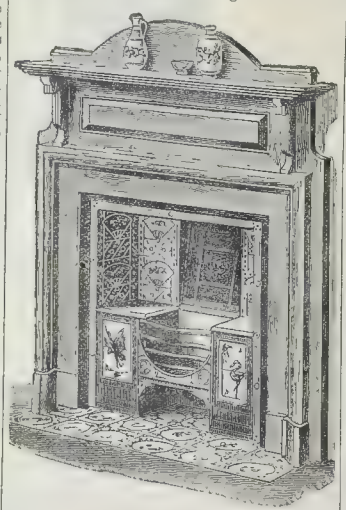
Messrs. W. E. Rendle & Co. (*Stand* F 204), of Westminster, show a model building glazed on their patent "Acme" system, which is very simple and good. The accompanying woodcut



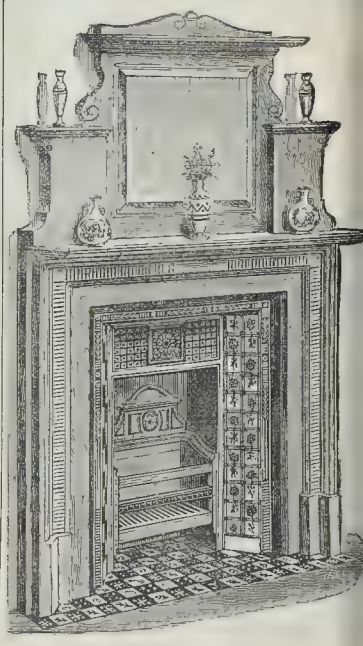
shows a section of a wood purlin fitted with the "Acme" horizontal metal bar, the form of which is shown by the thick black line. The glass is shown fixed in position, perforations being formed along the front of the channel *a* to carry off condensed moisture from the inside, as well as any water which may find its way in from the outside. In conjunction with these horizontal bars vertical metal bars of the section here shown are used, the channels *b b* carrying off any water that may penetrate at the junction of the glass and metal to the next square below, and so on from square to square. On this and the other patent systems of this firm we are informed that 6,000,000 square feet of glazing have been done, one of the largest jobs of the kind being the roof of the new Citadel Station, Carlisle, covering an area of about 7 acres. At the same stand Messrs. Rendle Bros. exhibit their "Electric" paint remover, of the merits of which we spoke at some length in the *Builder* of December 31st, 1881, after witnessing some successful experiments with it.



Messrs. W. Walker & Sons (*Stand* E 153, and F 192), of Bunhill-row, have on view some handsome and well-made chimney-pieces, grates, and fenders. One of them is an American walnut mantel-piece and over-mantel in the Free Classic style. It is of very good design and workmanship, and is shown in conjunction with a handsome brass and iron grate, brass fender, and hand-painted tile hearth. The over-mantel is fitted with shelves and bevelled plate-mirrors. Another good chimney-piece shown by this firm is of oak, stained dark. It is somewhat heavier in design than the last



named, but the workmanship, as is the case with all the exhibits shown at this stand, is of very great excellence. These and the principal other chimney-pieces shown by the exhibitors have, we understand, been specially designed for this exhibition. Two cheap but good walnut-wood mantel-pieces are shown, Nos. 795 and 798. The first-named is provided with black slate slips and slow-combustion grate, fitted with tiles round chimney-opening, and with tile hearth. No. 798, which we illustrate, has black slate slips, a hob-grate fitted with tiles, &c., and tile hearth. Two simple walnut-wood chimney-pieces with over-mantels are exhibited. No. 791 has a convex mirror in the over-mantel, and is fitted with a set of black slate slips, the grate being fitted with tiles in splay cheeks; and there is a tile hearth. No. 790, the subject of our second illustration, has a bevel-edged silver plate in the over-mantel, a grate fitted with tiles in splay cheeks, and a tile hearth. A very good mahogany chimney-piece and over-mantel, with bevelled mirror, brass grate, hand-painted tile hearth and cheeks, and brass fender and fire-irons, is shown at this stand; it is quiet in design and well executed.

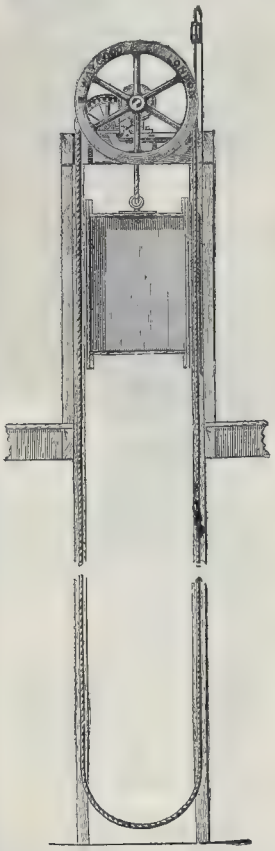


Richer in effect are an American walnut and gold mantel-piece and over-mantel (suitable for a boudoir or small drawing-room), with blue tile cheeks and hearth, and slow-combustion grate; and a dark mahogany chimney-piece and over-mantel, hand-painted with festoons and flowers, the design being after the style of Pergolesi. This is shown with a hand-painted tile hearth and tile splays, specially designed to go with the chimney-piece. A rosewood chimney-piece and over-mantel, with inlay of mother-o'-pearl, is very effective. The brass grate and fender, and the tiled hearth, are in excellent keeping with it; indeed, it may be said of all the handsome chimney-pieces shown by this firm that the grates, fenders, tiles, and other accessories are excellently well chosen to accord with them. Taken as a whole, this is the best display of wood chimney-pieces in the exhibition, and is sure to be looked at by visitors.

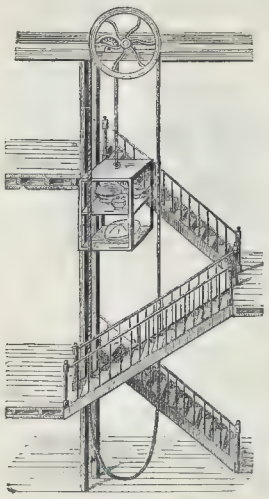
Messrs. W. Woollams & Co. (*Stand* 134 D), of High-street, Manchester-square, have, as might be expected by all who know their productions, a very admirable display of artistic wall and ceilingpapers, guaranteed free from arsenic. On either side of their stand there are exhibited specimens of raised flocks for painting over; raised flocks, finished without paint, on mica grounds; and patent embossed flocks, with designs in relief richly modelled; these are in every shade of colour, with and without gold, and are free from unpleasant odour. In the centre is the tapestry pattern, No. 14,996, Venetian in style. This is a handsome design, showing bold zigzag strap ornament, with overlying pattern of rich flowers and foliage, and with an under-

print of gold, to which the special attention of visitors may be directed. The design itself is 21 in. by 42 in., and the colouring is varied so that there is no actual "repeat" in 42 in. by 42 in., giving to the paper unusual interest and variety. The colours are partly opaque, partly transparent, in some cases solid and in others shaded in gradations. It is composed altogether of thirty-eight different tints, multiplied by variation in position in the various sections until equal to ninety-four ordinary printings, apart from the ground colour and mica. Beneath this *tour de force* are other imitations of Genoese and Venetian tapestries in Cheviot flock. On the right is a Jacobean decoration, a lyre bird, designed by Mr. Owen W. Davis, in a new colouring,—gold, green, red, blue, &c., harmoniously combined. To the left is another dado decoration, of the character of the work done by the Brothers Adam. It is called the "Savoy," and is in shades of terra-cotta, red and gold; it was designed by Mr. A. F. Brophy. In the corner are a fine chintz paper, "Magnolias," and an Italian tapestry pattern. They are in soft, velvety tints, on mica grounds, with dados of real embossed leather and embossed leather-paper. On the table are a great number of specialities, too numerous to mention individually; they include a good variety of chintzes, damask, and other "Queen Anne" patterns.

Messrs. R. Waygood & Co. (*Bay* 15), of Falmouth-road, Newington, exhibit a few small hand-lifts. One of these, shown by the annexed section, is suitable for either goods or

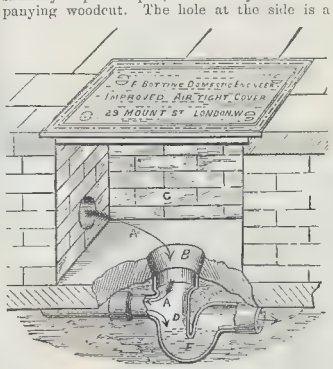


passengers, and has Messrs. Waygood's patent self-sustaining brake and their improved safety apparatus. These lifts are exceedingly easy to work. The exhibitors also show one of their smaller lifts, suitable for use in private lodging-houses, public institutions, &c., the cage or box being made to work in the well-hole of the staircase, as shown. The cage of this lift can be made the full width of the opening, on account of the runners being arranged at one end or side only, and, while acting as guides, also carrying the balance-weight. Another lift exhibited by this firm is worked from below, and is so arranged that no overhead gearing is

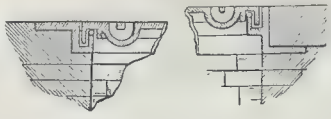


necessary. The box can be made to work up into a pedestal or sideboard. Another class of lift is shown, with two mahogany boxes, large hauling-wheel, and brake complete. Their "chop-lift" is very suitable for use in restaurants and small hotels. All these lifts are arranged in a nest together, for convenience of inspection and comparison. The whole of them are of excellent quality as regards both workmanship and material. This firm, it may be added, is now largely concerned in the production of hydraulic passenger lifts.

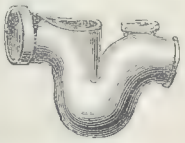
Mr. F. Botting (*Stand* F 209, G 218), of Mount-street, Grosvenor-square, exhibits his improved air-tight manhole cover, for use over sanitary inspection pits, as shown by the accompanying woodcut. The hole at the side is a



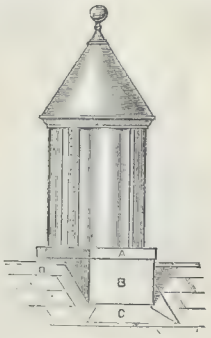
cold air inlet; the arrows A A show the course of the current along the top of the drain, and the arrow D the course of the sewage into the trap. B is a hole in the base of the pit for access to the trap. F is the intercepting trap. The overflow discharges into the sewer, or, in the case of isolated houses, into a cesspool. It is claimed for this cover that it is perfectly air-tight, that it can be removed and replaced without the aid of skilled labour, that no cement is needed to remake joint, and that the joint will not set, as the metal is not in contact. The



frames are made of different sections to suit varying materials, the section shown in the left of the two small woodcuts being that for use with a stone curb, and the section to the right being that used in conjunction with wood, cement, asphalte, brick, or tile floors. It is claimed for Botting's improved cast-iron 6-in. "Accessible Trap" for disconnecting drains from the sewer that, as it is cut down much shorter than the one shown beneath the manhole in the sketch, it allows of access being had

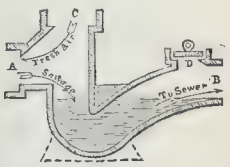


for the insertion of rods in case of stoppage. It has a good fall into the trap, and an equally good dip. Mr. Botting also shows some of the ventilators and other appliances patented by Mr. W. P. Buchan, of Glasgow, whom he represents in London. Buchan's induced air-current ventilator, in its simplest form, is shown by the annexed view and plan. The



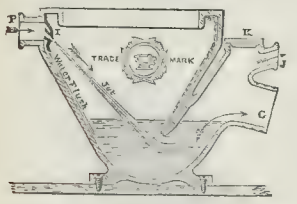


square base A may be made round, or octagonal if so ordered. The principle of this ventilator, it will be understood, is that of a wind-acting exhaust, for the ventilation of churches, schools, and other buildings. Externally it may be made of more ornamental form than here shown, according to the necessities of position. Buchan's patent cascade-action disconnecting ventilating drain-traps, also exhibited, have been, we are told, largely used in connexion with house-drainage purposes. A section of the No. 2 form of it is here given. It is claimed for it



that the fall of the water over the sharp edge into the well of the trap tends to keep the trap clean, while the fact of the water in the trap being below the level of the drain behind prevents the trap from offering any obstruction to the free flow-off of the water or sewage in the drain. The opening C at the top allows of access for cleansing or examination, and provides an opening for the ventilation of the drain or soil-pipe. The opening at D, it will be seen, gives access to the outer side of the trap, and affords means for the ventilation of the drain beyond it if required. These traps, we are informed, have been largely used. Buchan's patent improved access drain-pipe, with a flat raised sole to enable the workman to make the under side of the joints easily and well, and at

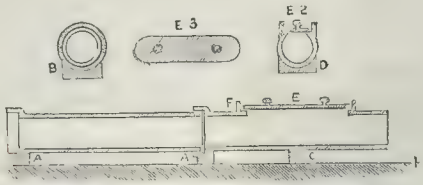
the same time to prevent the pipe from rolling, is shown in longitudinal and transverse sections in the accompanying engraving. The longitudinal access-opening E, on top, allows of easy examination or cleansing without disturbing the pipes; and, with pipes of 6 in. diameter and upwards, the opening would be large enough for a workman to get his head in for the purpose of looking along to see that the interior of a length of drain was quite clear from obstruction. The small transverse sections B and E 2 explain themselves; E 3 shows the cover of the opening. Buchan's patent "Carmichael wash-down" closet, shown in section here, is entirely of



earthenware, and, as will be seen, no part of it is below the floor-line, and has no part out of sight on the house side of the water trap. There is no machinery about it to get out of order. It will be seen that, besides the surface-flush of the basin, a separate jet of water is directed into the water in the trap. We are not sure that this arrangement is altogether to be commended.

Messrs. George Jackson & Sons (*Stand* E 141), of Rathbone-place, have a very good display of well-designed and modelled fibrous plaster and carton-pierre work. Their fibrous plaster ceilings, made in slabs and screwed up to the ceiling joists, are well represented. One of them, known as the "Scorton" pattern, is very rich in effect. A plain ribbed ceiling, Elizabethan in style, is very well moulded, and a portion of a coffered ceiling of Louis Seize style is also a good piece of work. Wood chimney-pieces, enriched with carton-pierre, are among the other exhibits of this firm. One chimney-piece, with *appliqué* enrichments in black carton-pierre, is very effective. A chimney-piece and over-mantel in white wood, with enrichments in carton-pierre, and with the niches done in fibrous plaster; and a smaller chimney-piece and over-mantel of the same description, are among the other exhibits in this department. We must not omit to mention some specimens of friezes in the Italian style, in fibrous plaster, and a few sections of cornices in the same material. A very good piece of cedar-wood panelling, with surbase, is shown by the same exhibitors.

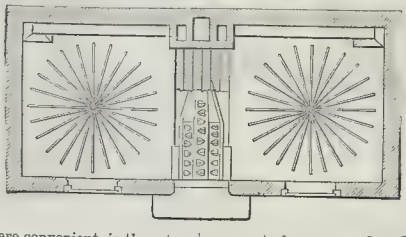
The Sanitary Paint Company (*Stand* B 55, C 91), of Liverpool (Griffiths, Berdoe, & Co., Limited), are exhibitors of their well-known non-poisonous silicate and other hygienic paints, and of specimens of decorative work executed with them. Griffiths's patent white is an efficient substitute for white lead, and has many recommendations, which we have mentioned on previous occasions. The sanitary paints manufactured by this company have the "patent white" as their basis, and they may be obtained in all colours. They are sent out in the usual form for thinning down with oil and turpentine, or, by preference, with specially-prepared "thinnings"; but can be supplied ready for use. The silicate paints are similar to those last-named, but are prepared with a special kind of silica, which imparts a high degree of hardness to the paint. Enamel paints in all colours, ready for use, are also shown here. These are very useful, and dry quickly with a hard glazed surface somewhat like porcelain, rendering varnish unnecessary. They are well suited for ironwork, and for walls exposed to driving rains. A petrifying liquid for the cure of damp walls is manufactured by this company. Their "Silicate Distemper" is a non-poisonous water paint in all colours, and is capable of being made the medium of very effective decorative work for the interiors of hospitals, workhouses, asylums, &c., provided, of course, that the work be designed and carried out by some one with artistic knowledge. It can



be applied to plaster wall-surfaces, drying quickly, and has a washable surface, a matter of very great importance in many situations for which it is adapted. Varnishes of all kinds, prepared patent thinnings, "Marine" paint (in all colours) for use on shipboard, "Brockley black"—a very rich black paint, suitable for engineering work; and anti-fouling paint, for protecting iron and wooden ships, are among the other goods shown at this stand. All these productions are largely used, and with regard to the silicate paints, Mr. E. R. Robson, the architect to the School Board for London, says he has found them to be the best for all internal work where cleanliness and true sanitariness is desired. In houses they are useful for passages, halls, kitchens, &c. In schools and hospitals Mr. Robson finds that after the expiration of two or three years they become like new on the application of soap-and-water and the scrubbing-brush.

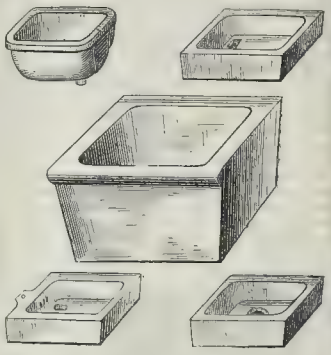
Messrs. Bradford & Co. (*Bay* 8), of High Holborn, are exhibitors of laundry machinery and fittings in great variety, the machinery being shown in motion, driven by a gas-engine. Models are shown of their single and double radial drying-closets. We give a view and plan of one of the double closets, the plan being on a reduced scale. The entrance-door





may be placed, where convenient, in the return ends or at the back of the structure, as the radial horse in the centre of each compartment (shown on plan and by the dotted lines through brickwork and doors) revolves in any direction. The heating-stove, specially contrived for the purpose, is fixed between the "radials." There are twenty-four arms to each "radial" horse, so that one of them, 6 ft. in diameter, contains 72 ft. of drying rail. The linen is placed upon each arm without the necessity of the laundress entering the closet. Means are provided to carry off the steam from the clothes, the drying of which only takes from ten to twenty minutes per batch.

The Bourtreehill Colliery Company (*Bay* 54 *in Arcade*), of Bourtreehill Colliery and Fire-Clay Works, Dreghorn, Ayrshire, are exhibitors of white enamelled bricks, sinks, slop-stones, and washing-tubs; also of facing and fire-clay bricks. The white enamelled bricks are of a pure white colour, and are well adapted for lining external walls in courts and areas, for reflecting purposes, and for the internal walls of hospitals, school-rooms, kitchens, &c. The company exhibit several forms of



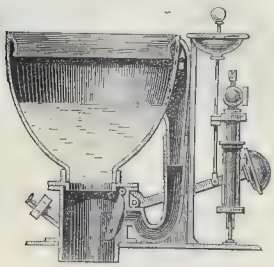
white and yellow enamelled kitchen and scullery sinks and wash-tubs, some of the shapes of which are here shown. These goods are nearly equal to porcelain in appearance, while being of fire-clay they are of far greater strength. All these enamelled goods, we are informed, are fired in kilns specially built for the purpose, and are subjected to an intense heat, so as to thoroughly incorporate the enamel with the body of the clay. The Bourtreehill fire-clay appears to be very good, and well adapted for building purposes.

Messrs. A. Kenrick & Son (*Centre Stand*), of West Bromwich, have some very attractive cast-iron door-hinges, knobs, bell-pulls, &c. The castings are clean and sharp, and the butt-hinges for folding doors and other positions are made with incised ornamentation of various patterns, producing a very good effect. All these productions are shown electro-bronzed or nickel-plated. A cast-iron flower-stand, nickel plated, is an excellent specimen of casting.

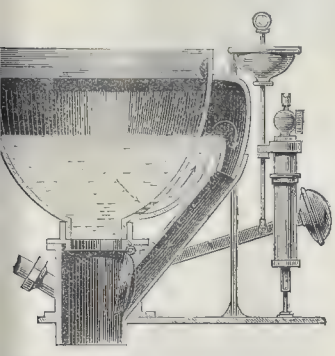
Messrs. M. C. Duffy & Son (*Stand* 283, *in King Edward's Hall*), of Stork's-road, Bermondsey, are exhibitors of some very good and useful deal turnery for builders' use, including balusters, newels, table-legs, &c. These goods are very well finished, and are cheap in price.

Mr. E. H. Harris (*Stand* 59 *and* 63 *in Arcade*), of Upper Holloway, exhibits a portable or removable conservatory or greenhouse. It has been invented and patented by the manufacturer, and is intended to be a "tenant's fixture," removable by its owner whenever he "flits." It is cheap and handy, and a thing likely to commend itself to many persons of limited means who devote attention to horticulture. A portable pony stable, constructed on the same principle, is also shown by this exhibitor.

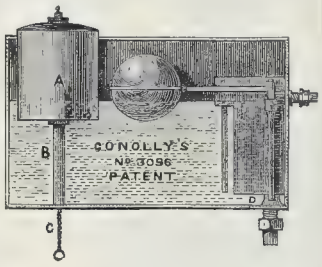
Mr. H. Conolly (*Stand* C 103 and D 117), of Hampstead-road, has an attractive display, which includes some very good things in gasfittings, sanitary appliances, hand-painted tiles, and ornamental glazing. The latter includes some work satisfactory in design and colour, among them two figure-panels, "Summer" and "Winter." Some of the floral designs are very good, and well executed. One of the specialities at this stand is Conolly's patent "Elastic Valve Closet," shown in section by the accompanying engraving. The manner



in which the overflow-arm is always charged with water, and flushed every time the closet is used, is shown. The earthenware arm is carried to the top of the basin A. An extra opening is made at B, which prevents the basin overflowing, a connexion being made from the flushing-rim without interfering with the ordinary supply to the closet. The overflow is protected by the clack of the closet-valve when in action, so that it is impossible for matter to accumulate on the edge of the overflow pipe. The pipe shown on the left-hand side of the engraving is for ventilating purposes. Conolly's patent water-waste preventer, shown

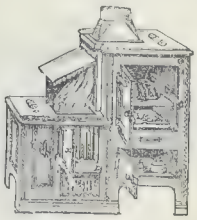


on this page, is leverless, valveless (excepting the necessary ball-valve), and noiseless in action. It siphons-out the contents of the tank with great rapidity, giving a very effective flush. The float A is connected by the pull C through the tube B, and it is only necessary to momentarily pull down the chain C, thereby depressing the float, to "start" the syphon, which, once started, the water continues to flow out until the cistern is empty. The supply-valve is constructed with a long nose, carrying the inlet down to the bottom of the cistern at D, so that the very objectionable noise of the inrush of the water is avoided. This cistern is particularly well adapted for wash-out closets, also for cottage and hopper basins and traps. Mr. Conolly also shows, among other closets, his new patent valve-closet, the overflow trap of which is always sealed by the water in the basin. Its construction is shown by the section given below.



It will be seen that this trap is self-cleansing, for each time the closet is used the water in it is entirely changed, without the use of a weeping-pipe or other auxiliary. Raimes's patent deodoriser for water-closets, urinals, &c., is shown in action. In baths and lavatories some good things are shown at this stand, including the "Bachelor's" combined bath, likely to be very useful to gentlemen living in chambers, and to commend itself to managers of clubs, hotels, &c. It occupies very little space, being enclosed in a mahogany or other wood case resembling in appearance an ordinary wardrobe. It is so arranged that either a cold douche, a hot, tepid, or cold shower, spray, wave, or sitz bath can be had at pleasure by its use. The several valves are easily accessible by the bather. The "Acme" needle and plunge bath combines a spray or needle bath, with shower and douche, and is sure to be very much appreciated. It only occupies the same space as the ordinary plunge-bath. Housemaids' sinks, slop-sinks, and lavatories are well represented here, together with a good show of sanitary ware. The earthenware lavatory basins for angle and other positions are made with oval basins. Lavatories of a more costly description, with marble tops on fancy wood stands, hand-painted tile backs, and silver-plated fittings, are shown in good variety. The Dubois drawn-lead traps, and other plumbers' lead and brass work, are shown at this stand, which is one of the most attractive in the Exhibition.

Messrs. Newton, Chambers, & Co., Limited (*Stand* 240), of the Thorncliffe Ironworks, Sheffield, and Great George-street, Westminster, exhibit their "Thorncliffe" patent close-and-open fire cooking-range, No. 220, 5 ft. wide and 5 ft. high. It comprises two sheet-iron ovens for baking and roasting, fitted with bright bands and disc latch, ventilator and air pipe, flue doors, movable grated and plain shelves, cast-iron plate rack between the ovens, sheet-iron door over plate rack to lift off and give access to the chimney, and projecting hot plate for boiling, frying, stewing, and grilling, with movable covers. The cover over fire can be thrown back, thus making the range into an open fire range. Bracket shelves are provided in front of hot plate, square slip along back and side, with folding doors at back of fire opening into the chimney when an open fire is required. The range proper consists of wrought-iron top and bottom bar and three movable cast-iron bars; door in front of range fitted with bands and knob; two cast-iron hot-closets under hot-plate, with cast grated shelf and saddle, and fitted with bright bands and disc latch; wrought-iron boiler at back of fire, fitted with manhole, pipe, and tap; one pair of slide dampers; and top plates over ovens, with dampers. The roasting ovens, it will be seen, are placed at a very convenient height for the cook. All flues are ascending, with the object of insuring uniform heat round the ovens. It is one of the best ranges we know of, and we have described it thus fully on that account. Two other varieties of the same range, No. 220ss and No. 220d, are also exhibited. To meet more modest requirements than those which the foregoing are so well adapted to meet, Messrs. Newton, Chambers, & Co. show their admirable "Economist" portable close-and-open fire cooking range. In this also all the flues are ascending, so as to secure as nearly as possible the perfect combustion of



the fuel. It is stated that it will not consume, when in full work, more than 2 lb. of coal per hour, and that uniformity of heat all round the oven is secured. Of this range we give a small view. It comprises one sheet-iron oven for baking and roasting, 12 in. wide, 15 in. high, and 17½ in. in depth backwards, fitted with bright bands and latch, flue door, movable plain shelf, and hot-plate, 18 in. square, over range and boiler, for boiling, frying, and stewing, with movable covers. The cover over fire can be taken off, and hood on side of oven lifted up, thus making the range into an open-fire range. A bracket shelf is provided in front of hot plate, and the range has vertical fire-bars, with



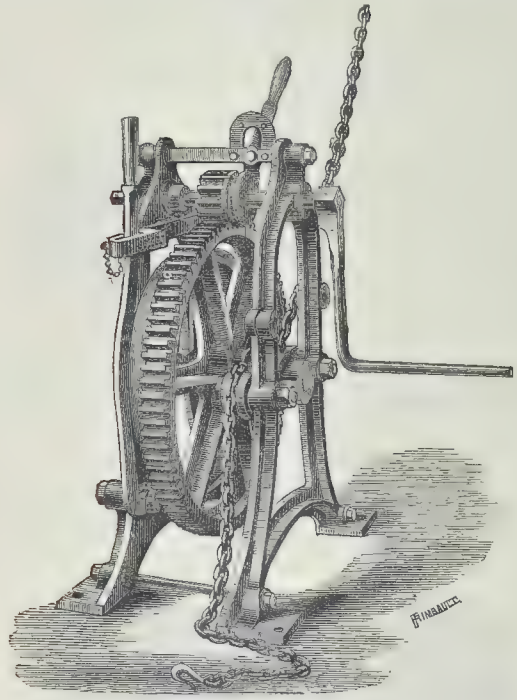
door in front fitted with band-hinges and knob. It is also provided with a smoke-consumer and coal-saver, and with an ashes-box with regulator in front. There is a sheet-iron hot-closet under oven, 11½ in. wide by 7 in. high, a cast ⌐-boiler under hot plate to hold four gallons, with loose lift-off cover and ¾-in. draw-off tap. It is 3 ft. wide, and 3 ft. high to top of oven. Amongst other goods exhibited by this firm are some cast-iron ornamental window-heads, one of the

best of them being represented by the annexed engraving. Ornamental hot-water coils, cast-iron window-sills, rain-water heads and pipes,

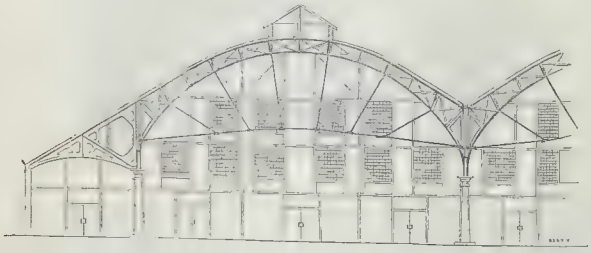


galvanised iron sinks, iron balusters and newels for staircases, and a great many other items, including a lathe-turned 20-in. garden-roller, go to complete the stock of things shown at this stand.

Messrs. Clark, Bunnett & Co. (*Stand* E 168, F 177), of Rathbone-place and Queen-street, exhibit several of their well-known specialities. A working model of their patent direct-acting hydraulic lifts is shown, and also one of their hand-power lifts. The former

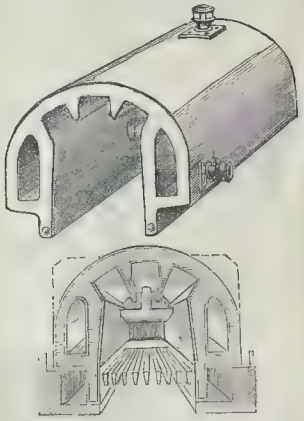


illustrates the use of the patent starting and stopping apparatus. A simple apparatus being fitted in the cabin of the lift, with the numbers of the floors indicated, the lift-attendant has only to touch the indicator to the floor he wishes to arrive at and thus releases the starting-rod,



allowing the cabin to ascend to the required floor, on arrival at which a similar movement unlocks the landing-gates giving access to the floor. On the cabin leaving this floor the gates are automatically locked. The hand-power lift is fitted with Messrs. Clark, Bunnett, & Co.'s patent safety apparatus. Should the chain or rope snap from any cause, an ingenious arrangement causes the weight of the carriage to fall upon steel-pointed levers, which spread out and strike into the guides in which the carriage travels, arresting at once the fall of the carriage. Samples of ornamental castings are shown at this stand, including fluted iron columns with foliated caps, bands, and bases, and a large casting in bronze of pilaster capital. A self-gripping crab, very strong and serviceable, is also shown. Its chief feature, as will be seen by the accompanying engraving, is that it is without the ordinary drum for the chain to wind upon, the chain in the self-gripping crab paying in and out as the crab is worked. The "Kaio Kapnos" stove, which took a silver medal at the Smoke Abatement Exhibition, South Kensington, is also exhibited. The exhibitors claim that it is a smokeless stove, though fed in the ordinary way, and we understand that several improvements in its construction have been made since the Smoke Abatement Exhibition. One of these consists in the fluting of the fire-clay backs, so as to improve the down-draught at that point. We have before spoken favourably of the stove, which, if we recollect aright, is the invention of an architect. Some large photographs are exhibited of the iron buildings constructed by this firm for the Corporation of London at Deptford, to serve as the Foreign Cattle Market. A section of a portion of these extensive buildings is shown by the wood engraving. The exhibitors also show in this way the wrought-iron portcullis gates, worked by hydraulic presses, constructed for the new Central Fish Market in Farringdon-street. These gates weigh three or four tons each, and are worked by a pair of hydraulic rams fitted each side of the entrance. A specimen is shown of Clark, Bunnett, & Co.'s patent shutters, as fitted to the new Hamburg Steam Ship Company's dock at New York; also a sample of their wood revolving shutters executed in oak, as fitted to the landing-stage at Woodside Ferry, on the Mersey. A drawing is shown of the iron storehouses constructed by this firm for the Egyptian expedition. A metallic Venetian blind, and one or two other miscellaneous exhibits, complete the display made by this well-known firm.

Mr. B. W. Warhurst (*Bay* 67 *in Arcade*), of Highgate-road, shows some powerful boilers for heating horticultural and other buildings, including the "Monarch" boiler, for heating large quantities (or over 1,000 ft.) of hot-water piping. This boiler, which is of wrought-iron, is made in two forms, the vertical or conical, and the horizontal or saddle. These boilers should be looked at by all who are not yet familiar with their merits. The same remark applies to "Ben's Boiler," of which a view and section are annexed. As will be seen, it is a

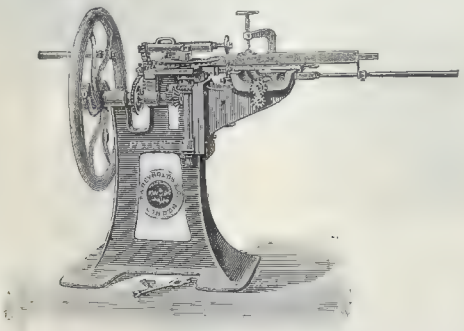


ribbed and flued saddle boiler, and it is claimed to be both effective and economical. The inventor has adopted the saddle form, as being the best for utilisation of the heat from the fuel burnt, adding to it the ribs above, so as to break up the flame and catch the heat better, with the closed or terminal end for the greatest heat to strike against and drive it into the side flues, along which it passes on each side, and then underneath. A new form of tubular cross-bridge (shown in the section in the form of an inverted T-piece), has been introduced, and, we are informed, has been found to add greatly to the heating-power and speedy circulation, as it lies on and across the fire, and has an upper outlet direct into the flow-pipe. This and the boiler first-named appear to be well adapted for heating churches, schools, and other buildings, as well as for horticultural purposes. We are told that one of "Ben's Boilers" was put in at the Army and Navy Stores, in Victoria-street, Westminster, some fifteen months ago, and that it heats nearly a mile and a half of hot-water pipes. This same boiler seems to be particularly well adapted for heating churches, where very little depth is allowable, as it only requires about 40 in. below flow-pipe for stoke-hole. The "Victor," "Little Hero," and other smaller boilers are shown by the same exhibitor. A specimen sash, glazed on Warhurst's "Eclipse" system of lead-bar glazing, is also shown here.

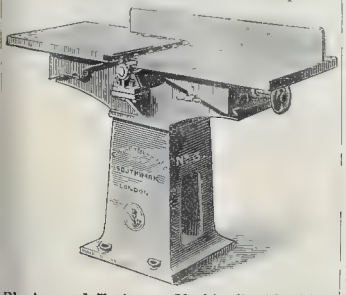
Mr. E. Houghton Brown (*Stand* 242, *South Side*), of Ball's-pond, exhibits a new and improved combined horizontal engine and mortar-mill, designed for the special use of contractors, builders, &c., the mill, engine, and boiler being all contained on a massive timber-frame mounted on wheels, so that fixing is abolished. The boiler is of the vertical cross tube type, with mounting and fittings complete. The engine is of an improved make, being horizontal, on cast iron bed-plate with crank shaft across the frame, so that a saw-bench and hoist can be worked direct from the engine, which is easily thrown out of gear with the mill and can be worked as a separate portable engine. A circular saw-bench, and a band-saw machine, are also exhibited by him.

Messrs. Jones & Morris (*Stand* E 170, F 175A), of Aberystwith, exhibit some grates and a few enamelled chimney-pieces of a serviceable nature, but they call for no detailed description.

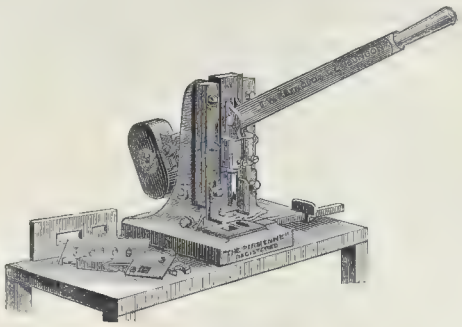
Messrs. F. W. Reynolds & Co. (*Stand* 269), of Acorn Works, Blackfriars, exhibit a large collection of wood-working machinery, both for hand and steam power, the latter being driven by one of their own steam engines. Among the novelties which they show is a patented sawing-machine which is called the "Queen." It is specially designed for hand power, and is self-feeding, so that one man can work it. It will cut wood 4½ in. thick, and with greater ease and rapidity than any other hand-power machine. The table is perfectly clear on both sides for cross-cutting to any length, no obstruction being caused by the fly-wheel. This is the special feature of the machine. The feed-motion to the circular-saw consists of a small steel star, the teeth of which project above the surface of the table, motion being communicated to it below from the saw spindle, and as the feed-star revolves the teeth of it carry the wood forward to the saw, which cuts out the marks made by the star, so that the wood is not disfigured. Besides ripping and cross-cutting, many other operations can be performed with this machine, including rabbeting, grooving, tenoning, shouldering, bevel-cutting, feather-edging, curved sawing, and boring. The general utility of the "Queen," combined with the fact that it is a hand-power machine, makes it well worthy of inspection by visitors. Messrs. Reynolds & Co. also exhibit a new pattern tenoning-fence, for use with any saw-bench. The holder in which the wood is placed is made to slide on the fence from end to end of the bench, so that a perfectly steady and true guide is formed for carrying the wood while being cut. They also have on view a new patent tenoning machine, which may be driven either by hand or steam power. This machine is shown by the accompanying engraving. The



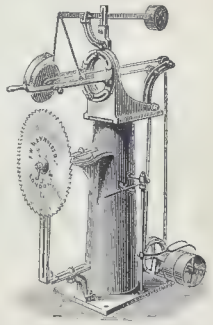
tenon is cut by two horizontal circular saws, between which is placed one or more of a series of washers to regulate the depth or thickness of the tenon. The shoulders are cut by two vertical circular-saws, which work in advance of the tonguing saws, so that the shoulders are cut first, thereby avoiding undue friction. The feed-motion is self-acting. With this machine, driven by hand-power, Messrs. Reynolds state that a man can easily cut a tenon 4½ in. by 4½ in. in one minute with perfect accuracy, the time stated including the fixing of the timber. There is also shown at this stand an "Improved



Planing and Trying-up Machine," with rising and falling tables for working timber up to 12 in. wide. Besides taking timber out of wind, this machine may be used for moulding, grooving, and tonguing, and it is cheap as well as efficient. The "Persienne" is a combined machine for punching the cord-holes in the laths, and cutting the mortises in the pulley-heads, for Venetian blinds. Either the cord-hole



punch or the mortising chisel may be immediately removed. This machine is of new pattern, and performs the work for which it has hitherto been necessary to have two separate machines. Several improvements are embodied in the machine for sharpening circular-saws, here illustrated, and as now made it can be used for grinding the knives for planing-machines. The emery-wheel can be adjusted with celerity and accuracy. Messrs. Reynolds have on their stand an apparatus for melting glue, consisting of a strong steam-chest, in which are wells for holding water to be boiled by means of either live or exhaust steam, which is admitted into the interior of the chest. The apparatus carries three glue-pots. Messrs. Reynolds also exhibit a deal saw-frame, several saw-benches, band-saw machines, planing machines, mortising machines, a 3-horse-power horizontal steam-engine, with vertical boiler (on wheels), and the portable engine which drives the machines exhibited by them.



Messrs. Hempsted & Co. (*Stand* 273, N.E. *Corner*), of Grantham, have some good specimens of wood-working machinery on view. They are characterised by solidity of construction, the framing being of the hollow column and box-frame type, designed with a view of avoiding as much as possible the necessity of expensive foundations. We understand this firm has purchased the business and whole of the patterns and modern tools of Messrs. Powis & Co., Millwall Pier, E., which they have removed to Grantham, where they have enlarged their premises with a view of making the manufacture of wood-working machinery a prominent branch of their business. Amongst their exhibits we notice a neat and compact portable vertical engine and boiler. An endless band-sawing machine exhibited is designed to allow as much room as possible between the saw and framing, so as to render the machine capable of cross-cutting wide timber. The framing of the machine, consisting of the upright column, the sole plate, and the standard supporting the saw-table, all being cast together, so as to obtain great strength and rigidity in working. The whole may be bolted to the shop-floor, thereby dispensing with brick foundations. A panel planing-machine exhibited has the framing cast in one piece. The journals are long, and run in gun-metal bearings. It is fitted with pressure rollers at each side of the cutter-blocks, to prevent vibration while under the action of the cutters, and to enable the machine to plane short lengths. This machine is supplied with a countershaft and driving-pulleys, and is likely to be found very useful where a quantity of planing, thicknessing, and surfacing of all kinds of hard and soft wood is required to be done. The same exhibitors show a circular band-sawing and tenoning machine, with boring apparatus. It will take circular-saws up to 24 in. diameter. The band-saw will cut wood up to 7 in. deep. The saw-spindle being made to rise and fall, many useful operations in joinery may be performed. It is also fitted with an improved tenoning apparatus attached to the ordinary fence, in which the wood to be tenoned is quickly secured in a vertical position; and by passing it over the saws to the end of the fence the tenon is made at one operation, the shoulders being cut by two horizontal saws. This machine has its framing cast in one piece. We may add that a series of these machines, together with other modern specimens of woodworking appliances may be seen in operation at Messrs. Hempsted & Co.'s London offices and warehouse, No. 68, Cow Cross-street, near Farringdon-street Station.

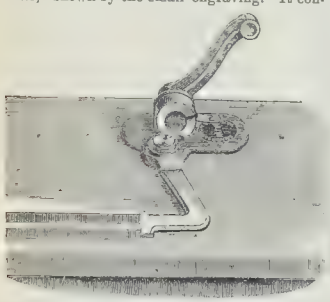
Messrs. Treggon & Co. (*Stand* D 133, F 145), of Jewin-street and Brewery-road, exhibit some excellent specimens of coppersmiths' and zinc-workers' handicraftsmanship. First and foremost is a large copper weather-vane, consisting of a ball and the four arms of the cardinal points, surmounted by a ram. This excellent piece of workmanship has been made from the designs of Messrs. Snooke & Stock, architects, for the new Ram Brewery, Wandsworth. Of zinc-work, there are shown some good dormers, one of which is of particularly good design. The portion of a moulded zinc apron-piece, as fixed on the clock-tower of the St. Pancras Railway Station, and made by the exhibitors from a design by the late Sir Gilbert Scott, is very well worth inspection by visitors; it consists of a bold and very effective floral scroll, the work having been beaten into shape by the hammer. Messrs. Treggon's zinc weather-moulding, for French and other casements, is a very useful production, and has, we are informed, been largely used in the schools under the School Board for London. Specimens of perforated and moulded zinc cornices are shown, together with patterns and models of moulded

zinc sash-bars for skylights, shop-fronts, casements, quarry-lights, aquaria, &c. Mouldings, leaves, bosses, galvanised iron wall-ties, and galvanised iron chimney-flues and cowls (including their patent "Counterblast" cowl) are also shown by Messrs. Treggon, together with wrought moulded gutters, rain-water pipes and heads, riveted steel baths, anti-damp course, felt, builders' buckets, and a variety of other miscellaneous articles.

Messrs. Salmon, Barnes, & Co. (*Bay* 58), of Ulverston and Westminster, exhibit a full-sized model of a small shop-front, fitted with their corrugated wood revolving shutter, worked by their patent balance-weight motion. Behind, or at the back of this (forming, in fact, a sort of blind to the inside of the shop window), they show, for convenience' sake, one of their curvilinear iron shutters, with spring motion. These shutters and the means adopted for raising and lowering them have now stood the test of several years' trial, with the result that the more they are known the more highly are they appreciated. They require no machinery, being so evenly balanced in whatever position they may be that they are worked with the greatest ease. They are adapted for windows of every height, and for widths up to 21 ft. 6 in. They can be worked with balance-weights at one or both ends, as circumstances may require, but weights at each end are recommended. The accompanying engraving shows a shop-front fitted with noiseless revolving shutters by this firm. Their spring



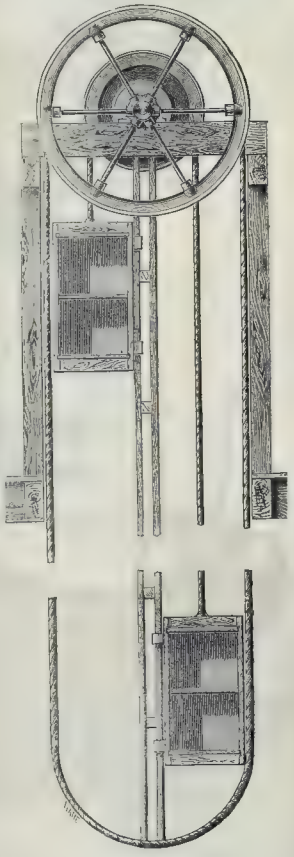
shutters are constructed on a new and improved principle, obviating certain objections which have been urged against this kind of shutter. The patent corrugated wooden shutters, of which the exhibitors are the exclusive makers, have been largely used for partitions in schools, chapels, &c., and another situation in which they have been used is in *lieu* of the too-often clumsy and cumbrous folding-doors in private houses. They have also been employed as book-case fronts for shut-up bookcases. Another very useful exhibit at this stand is Messrs. Salmon, Barnes, & Co.'s patent "Joiner's Bench-knife," shown by the small engraving. It con-



sists, as will be seen, of a small bed-plate (having two pins on the underside to drop into holes made in the top of the bench), and an arm or knife for holding the work firmly between itself and the bench-hook; this arm or knife is pushed against the work by the action of the small lever handle and cam. It is very compact, measuring only 3½ in. in width by 9 in. in length over all, and its weight is only 2 lb.

Messrs. Messenger & Co. (*Stand* 237, *S.-E. Corner*), of Loughborough, are exhibitors of horticultural buildings and heating apparatus, including a span conservatory 12 ft. by 10 ft., constructed on their patent system, the upright mullions or muntins being of cast-iron, screwed to a wood sill, and having ornamental bracket heads, to which are screwed the rafters, and which carry the plate; these bracket-heads have, in wide span houses, two lugs, one of which takes the wrought-iron tension rod, the other the principal; by means of this tension-rod and props a rafter 4 in. or 5 in. deep can be made as rigid as one 10 in. or 11 in. The roof is glazed with lead bars of the section of ordinary window lead, but of course very much stouter. This system has been adopted by Messrs. Messenger & Co. from among a large number of systems of glazing without putty, as, in their opinion, it fulfils the double demand of being both water-tight and wind-tight, and prevents loss of heating power. The roof consists of rafters some 4 ft. or 5 ft. apart, which support purlins about 3 ft. apart; over these are laid the lead bars, from purlin to purlin, and the glass is pressed into the recess of the lead bar, which is first filled with putty, and another lead bar pressed to the glass to carry it on the other side; the rest of the timbers of the roof, such as the ridge, end rafters, &c., are flashed with lead, so that the whole of the roof timbers are covered, not left exposed as in some systems of dry glazing which have been introduced. The front and roof ventilators open by means of lever tackle, one set opening the entire length of the house. Stages are shown, on one side of wood, on the other of cast-iron fronts and bearers, which carry strong slates. The heating arrangements consist of a No. 2 Patent "Loughborough" boiler and 2 to 3 in. pipes along the two sides and one end of the house. These boilers are now largely used for small houses of every description. The boiler is let into the front or side of the greenhouse, and the pipes are attached directly to it without the intervention of mains. A great saving in first cost is thus secured, as no sunk stoke-hole is necessary, nor any brick-setting. They also show their Nos. 1 and 3 "Loughborough" boilers. There are other sizes of these well-known boilers. No. 1 size will heat 50 ft. of 4-in. pipe, and No. 3, 200 ft. The smoke-flue can be either in front or on the top, as may be preferred. When on the top the house receives the heat from the flue-pipe, which is sometimes an advantage. The boilers are made with either 4-in., 3-in., or 2-in. sockets, or are drilled for wrought pipe. These boilers were awarded a silver medal by the Royal Horticultural Society last summer. Messenger & Co.'s harness-room boiler is an adaptation of their well-known patent Loughborough boiler, and is designed to supply a want for a boiler which can be placed in the harness-room, and at the same time heat a row of pipe in the coach-house, or elsewhere, and can also afford a supply of hot water. The boiler can be set either in a fire-place or stand out in the open. The sockets are placed either at the side or at back, as may be most convenient for connecting the pipes. Their hall boiler is an ornamental variety of the above, and is suitable for placing in a hall or ante-room, and can have either a coil or a row of pipes attached to it. The boiler is surrounded by ornamental iron panels. The top is covered by a marble slab, or may be formed by a perforated iron panel. A hot-water coil and coil-case, for warming buildings, &c., and Messenger & Co.'s full-way valves, are among the other exhibits at this stand. A word may be said for the "Loughborough" cinder-sifters, which are exhibited in four different sizes and makes.

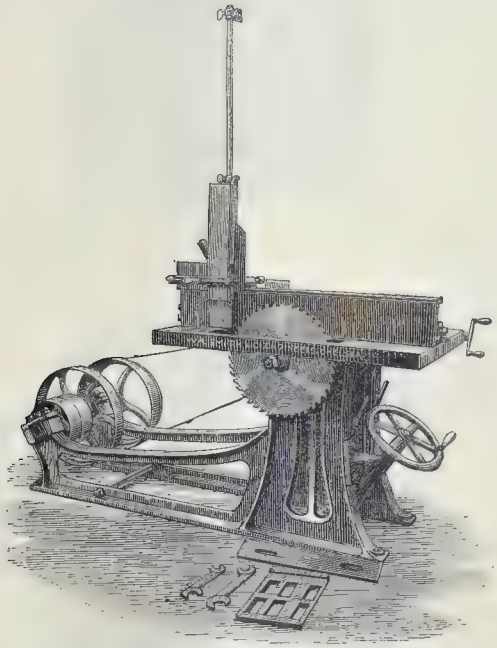
Messrs. Archibald Smith & Stevens (*Bay* 5), of Queen's-road, Battersea, and Leicester-square, exhibit a working model of their hydraulic-balance passenger lift (Stevens & Major's patent), the merits claimed for which are safety, rapidity, ease of control, simplicity, accessibility, and gradual stoppage. When this lift is worked directly off the water-main, or from a tank in an elevated position, either of which sources would give a comparatively low pressure, the balance-cylinders are so contrived as to increase the pressure of water used beneath the lift-ram, so avoiding the use of bulky and heavy rams, which require large and expensive borings. In some towns the water in the mains is under a pressure which would carry it twice or thrice the height of the buildings. In such cases, by returning the water from the lift to a tank at the top of the house, the whole of the water may be returned and utilised for domestic purposes, for, according to the exhibitors, water is not contaminated by passing through these lifts. Messrs. Smith & Stevens also exhibit one of their self-sustaining double dinner-lifts, shown by the accompanying illustration. These



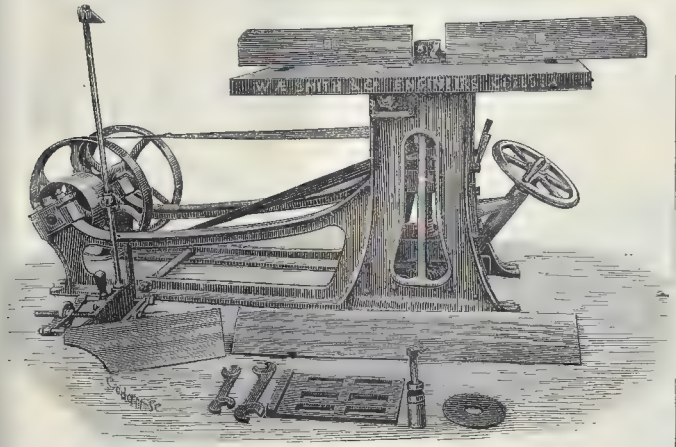
lifts, as we have before had occasion to remark, have many points to recommend them. The wheel for the lifting-rope is turned inside the V-groove to prevent the rope wearing. Among the advantages of these lifts are the following:—If the hand-rope be released the load is automatically stopped and held at the point it has reached; neither cage can

move up or down unless the hand-rope be pulled; the brake-power increases with the load; overloading cannot start the lift; no break-rope is required, and there are no springs, ratchets, catches, or cog-wheels, and the gearing is silent in action. Although they are called "dinner-lifts," they are obviously also suited for the conveyance of light goods and parcels from floor to floor of a building.

Messrs. W. Æneas Smith & Co. (*Stand* 263), of Ashburnham-road and Lot's-road, Chelsea, are exhibitors of a large variety of wood-working machinery, driven by a 12-h.p.



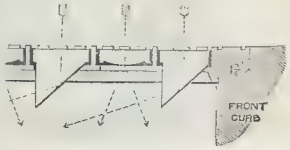
Otto gas engine, made by Messrs. Crossley Bros., of Manchester. This stand is likely to be a centre of attraction for visitors during the exhibition, for the machines will be shown at work not merely experimentally, but as they would be used in the joiners' shop, for the exhibitors have entered into a contract to make



at the exhibition the doors and other joinery work required in the erection of a number of new houses on the Cremorne estate at Chelsea. Prominent amongst the machines shown by this firm is a new combined "Joiner's Saw-bench and Vertical Spindle Moulding and Planing Machine," which has many good points. While only occupying the space of one it is virtually two distinct machines, and is capable of performing a multiplicity of operations in a very short space of time. We give views of this machine, firstly as arranged for sawing, and secondly as arranged for moulding. The cutter spindle and saw spindle are firmly seated in the main framing of the machine, and the table is made to rise and fall. The base of the machine, as will be seen, is extended, and made to receive its own countershaft, thus causing the whole machine to be self-contained, not only effecting considerable economy in cost of fixing, but maintaining truth of level and line of each part in relation to the others, thus reducing the expenditure of power to a minimum. As may be inferred, the machine may be very quickly fixed. It will rip, tenon, mitre, chamfer, groove, tongue, cross-cut, bevel-cut, stick beads and mouldings at the saw spindle, and will, on the removal of part of the fence, cut mouldings, either straight or curved, and of great variety, by the use of the vertical spindle. The fence, which is capable of rapid adjustment by quick-pitch screws and mitre wheels, is common to both saw and moulding cutter, but if desired may easily be entirely removed to enable long material to be cross-cut, or sweeps or curves to be struck with the curvilinear cutter-spindles. The machine has phosphor bronze bearings, thus enabling a speed of 4,000 revolutions to be maintained. The same firm are exhibitors of a vertical-spindle moulding and shaping machine, with countershaft combined; it will work straight and curved mouldings, and with regard to the vertical spindle, is similar to the foregoing machine. They also show a four-cutter moulding and planing machine, in which, among other improvements, is an arrangement for increasing or diminishing the thickness of the bottom cut without arresting the feed; or, if desired, the top and side cutters can be used alone, and the table made level throughout. By including the countershaft in the framing of the machine a larger base is obtained, enabling the machine to be readily fixed, as, for instance, on two deals laid longitudinally on the ground. Another machine worth attention by visitors is a fast-cutting single deal-frame, made to new patterns. It is claimed for this machine by its makers that not only will its special construction enable it to be run at a very high rate of speed, consequently cutting the timber faster and cleaner, but that, by arrangements for diminishing the friction, less power is required for the feed. Other machines shown at this stand include a massive and well-finished 30-in. band-saw machine; a hand-feed surfacing and jointing machine, with adjustable table, triangular cutter-block, and countershaft complete; a saw-sharpening machine for straight and circular saws; and a pendulum cross-cut saw, in which an improvement has been introduced by causing the countershaft to be relieved of the weight of the pendulum, consequently saving power and reducing wear.

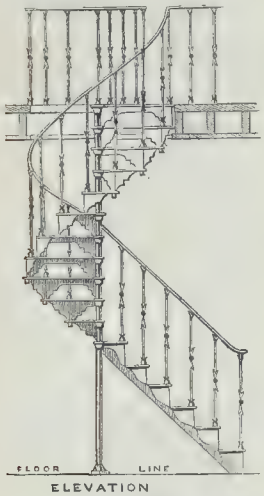
Messrs. Hayward Tyler & Co. (*Stand* B 62, C 85), of Upper Whitecross-street, show their "Full-flush Valveless Closets." This closet was noticed by us when first introduced at the International Medical and Sanitary Exhibition at South Kensington in 1881, where it was awarded the first-class prize medal, in addition to other awards to the firm. At the Brighton Health Congress in the autumn of the same year it received the silver medal. These closets have been adopted, we understand, for the University College, Liverpool, the University College, Leeds, and other buildings, &c. It is now exhibited in several forms to suit the requirements of various localities. First comes the arrangement of closet with Chandler's patent flushing cistern overhead, and water-locking arrangement placed under the seat with brass dish and pull. Then for situations where an overhead cistern cannot be used there is the "Full-flush" closet with Howard's patent regulator, the apparatus being all below the seat. To suit the needs of places where an overhead cistern and pull are required there is the full-flush closet with Hayward Tyler & Co.'s improved syphon cistern and "bell-pull." Another item shown here is Messrs. Hayward Tyler & Co.'s "Elastic Valve Closet." The first quality closets of this class are of high finish. The "Special" or "Sanitary Reform" valve closet is worthy of attention, as being produced at a price which enables it to be freely used in the place of the old-fashioned pan closet. A good form of side-outlet closet is also shown, suited for use, with the exhibitors' "Improved Syphon Cistern." Their "Bramah" high-pressure screw-down valve is suited for hot or cold water, and is made either with fan key, or with capstan-head marked "Hot" and "Cold." It is also shown with ebony milled head. Fire hydrants and fittings, bath fittings, &c., and pumps, all of good quality and finish, go to make up the remainder of the things shown at this stand.

Messrs. Hayward Bros. & Eckstein (*Stand* C 96, D 123), of Union-street, Borough, are exhibitors of their patent semi-prism reflecting lens pavement lights, a section of one of which, No. 2 B pattern, is shown herewith. The merits

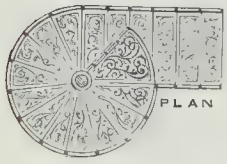


of these pavement lights are well known and appreciated by all who have used them. By their use dark basements may be made light and serviceable for many purposes, and therefore we are not surprised to hear that these lights are in increasing demand. Ventilating

appliances in the form of Hayward's Sheringham Ventilator (inlet) for the introduction of fresh air, and of Boyle's mica flap ventilators (outlet) are shown at the stand. They are very useful, and have stood the test of trial for years. The mode in which these ventilators act is shown in operation. Hayward's improved circular and straight ornamental iron staircase, with tread, riser, and spandrel in one, is also exhibited in

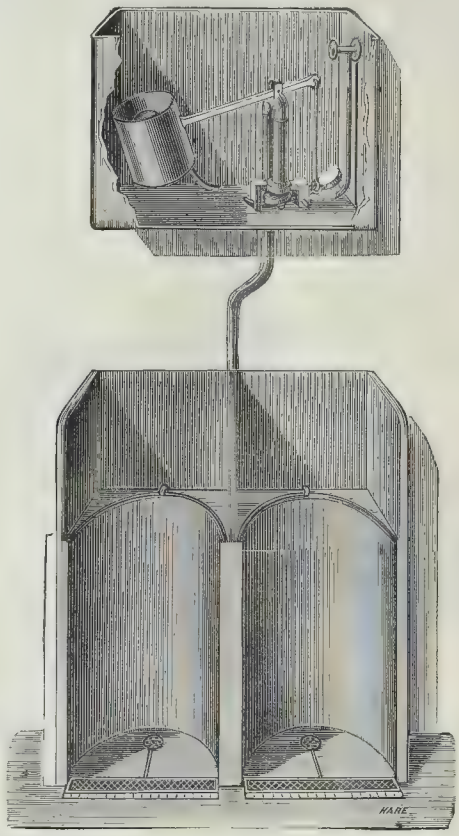


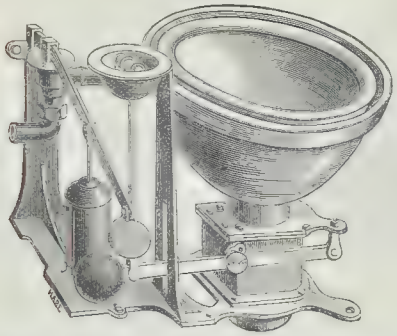
ELEVATION


PLAN

two diameters. These staircases are very light, though strong and serviceable, and in many situations where space is limited, their employment is indispensable. Coal plates and chequered plate flaps are amongst the other exhibits at this stand.

Messrs. John Bolding & Sons (*Stand* C 95, D 124), of South Molton-street, have a very good display of sanitary fittings, including their "Argosy" valve-closet, specially made to meet the requirements of positions where it is not possible to carry the trap below the floor-level. The valve-opening is on the side to the outgo, thus preventing the accumulation of fæcal matter. This closet is made with either **U** or **S** trap, with cleansing-cover. Their "Grosvenor" valve-closet, without overflow, should be looked at by visitors. It is quite a new thing in this line, and, as will be partially seen by the accompanying engraving, it gets over the difficulty of the overflow by the formation of a separate chamber outside the basin, the water flowing into which is conducted away to a warning pipe, which only comes into action should the supply-valve not shut off the water. Another very good closet made and exhibited by this firm is the "Simplex," or self-trapping overflow valve-closet. Another noteworthy closet shown here is Banner's patent closet, which is really a modification of the pan-closet, much improved, and constructed wholly of white earthenware, the basin and pan being at once removable so as to allow of the cleaning of the earthenware container. We have no space to describe this closet in detail, but merely add that it is worthy of examination by visitors who have not yet seen it. Wash-out closets in variety are shown by this firm, as well as baths, bath-fittings and plumbers' brasswork generally, lavatories, slop-sinks, and urinals. Quite a new thing is M'Gill's patent urinal, shown by the accompanying engraving. It is the invention of the clerk of works at Mr. Waterhouse's new buildings known as New Court, Carey-street, in which we understand that it has been used. The semicircular or lower portion of each compartment is made in one piece of white glazed earthenware, some 2 in. thick throughout, and 2 ft. 6 in. across. The bottom piece or half





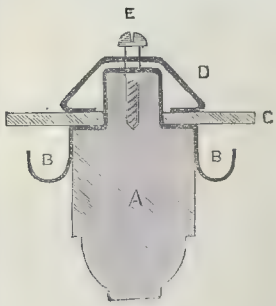


disc is also in one piece, channelled in the centre, and made to slope slightly downwards towards the back. In front of the tile slip or other edging is a copper tube, with pinholes for flushing the bottom plate, and a copper tube for the same purpose runs round the top edge of the semicircular slab. The flushing can either be continuous, or at certain intervals, which may be regulated by the use of an automatic flushing-cistern; or the flushing

apparatus may be put in motion by a treadle. The engraving also shows a double-action syphon water-waste preventer cistern, fitted with two valves, so as to ensure an after-flush. Among other things in the way of traps shown at this stand is Bolding's new patent "bottle-trap," shown by the smaller wood-cut. It appears to be specially suited for kitchen and butlers' pantry sinks. The dip is made to remove at will, and a cup is supplied to catch and prevent any foreign matter passing into the pipes.

Messrs. Pilkington & Co. (*Stand* F 196, G 230), Fish-street-hill, E.C., exhibit their well-known Poloncean asphalte for basement and other floors, roadways, stabling, and some novel designs for ornamental garden-walks, &c. Their Seyssel-Perrette asphalte for floors, corridors, tennis-courts, &c.; their patent asphalte roofing; and an entirely new production which, we are told, has been proved to resist all acids, and which is, therefore, applicable for flooring laboratories, chemical works, &c. Another material shown is white silica for corridors, terraces, basins of fountains, and all ornamental work.

Mr. C. Causley (*Bay* 4), of Shacklewell, exhibits a portable lean-to conservatroy constructed on his system of glazing without putty; this conservatory has iron standards and concrete panels below the sill. He also exhibits a section of a circular roof, glazed on the same principle. The accompanying section shows the



construction. A is the sash-bar; B B are the gutters, made of metal, to carry off water of condensation from the interior of the glass C; and D is a metal cap which, when fastened down by the screw E, securely holds the glass in place and keeps out the weather. The metal gutters, as will be seen by tracing the black line, are formed of one piece of metal, of which the cap is entirely independent. Messrs. S. & C. Causley, of Kingsland-road, exhibit at the same stand specimens of their patent extending trellis, a very convenient production.

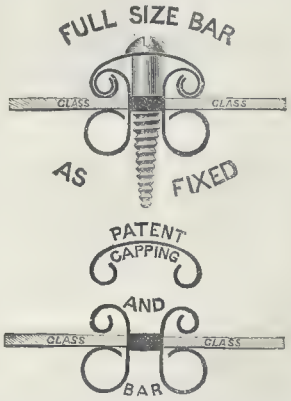
The Thames Bank Iron Company (*Bays* 2 and 3), of Upper Ground-street, Blackfriars, have a large display of builders' and general castings, including rain-water pipes and heads and connexions for the same; rain-water gutters of various designs and sections; pumps for water and sewage; fire hydrants, branch-pipes, &c.; soil and other pipes; supply cisterns in wrought and cast iron; smoke pipes and flues for ventilation; draining and road-making appliances; hot-air stoves, hot-water and steam appliances, horticultural boilers, coils and coil-cases, lamps and columns for street gas-lighting, and many other things of the kind. The castings are all very clean and good; very many of them are of satisfactory design. Their great variety is only to be gathered by looking through the thirteenth edition of the illustrated trade price-list of this firm, but builders, as well as others, may profitably linger for a few moments at the stand.

Messrs. Chambers, Monnery, & Co. (*Bay* 55, *in Arcade*), of Bishopsgate-street Without, have a very good assortment of builders' ironmongery, such as wrought and cast iron wall-ties (plain and galvanised) for hollow walls. They also have on exhibition a selection of tile and other stoves, also open and close kitcheners of new and improved make. Their "Improved Cottage Range or Kitchener" is worthy of the attention of visitors. It is self-setting, that is, it requires no brickwork or labour in fixing. It is claimed for it that it is double the weight of an ordinary London cottage-range. It has wrought bars, a brick back, and a damper which, when open, allows the smoke and flame to go all round the oven before escaping up the flue. The deep mouldings round the edges of the top-plate and ash-pan are bright, giving the range a good appearance. Altogether it appears to be a very suitable range for use in the better class of artisans' dwellings or cottage property. These exhibitors have a large show-case containing a varied assortment of cabinet-makers' and builders' brasswork, together with door furniture, &c. Bonwick's patent safety locking sash-fastener, shown by these exhibitors, appears to be a very good thing of its kind. It has no spring, and is locked by one motion. Other items, too numerous to mention, are included in the exhibits of this old-established firm.

Messrs. William Walker & Son (*Bay* 60 *in the Arcade*), of King's Lynn, exhibit as their speciality their new Patent Primings, as a ground or base for oil paints and varnish, which are claimed to be 70 per cent. cheaper than the ordinary oil and leads priming, or the usual first coat of varnish. Walker's Silicated Priming is specially prepared for use as a first coat on stone, cement, or plaster, with the view of hardening and rendering it more durable. It is also damp-resisting, and therefore serviceable for painting houses outside. The exhibitors say that these primings completely satisfy the pores of wood or other substances on which they are used, and consequently the oil is not absorbed or drawn out of the paint, and therefore the paint lasts much longer and withstands the action of the weather much better than when used on ordinary priming.

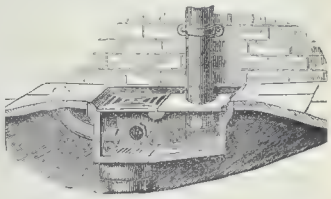
The Albissima Paint Company (*Stand* E 163, F 183), of Lime-street, are exhibiting their well-known products, which are non-poisonous, and are claimed to be unchangeable in colour. Many objections having been raised by the trade against the Albissima as not being sufficiently fine to be used for the best decorative purposes, the exhibitors have had their stand painted with Albissima in various tints, proving the extreme fineness of their material. Judged by this test, the adaptability of the material for making the finest tints possible is conclusively shown. The Company also exhibit their ready-mixed paints and varnishes.

Messrs. W. & S. Deards (*Stand* 236, *East Side*), of Harlow, Essex, exhibit a conservatory glazed with their patent "Victoria" dry glazing. The section of the bar and capping shown by the first of the two illustrations needs no further



description than is afforded by the second illustration, which shows the capping removed from the bar.

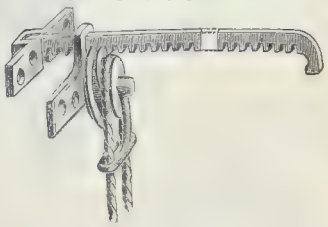
Messrs. Bellman & Ivey (*Stand* F 201, G 225), of Wigmore-street, have brought together a very good representative collection of specimens of their admirable scagliola marble, for the production of which this firm enjoys so high a reputation. The specimens include two verde-antique columns, with composite capitals; two Sienna columns with Corinthian capitals; a specimen of one of the Paonozetta columns executed by the firm for Carpenters' Hall, London-wall; portions of dados made for the Carlton Club, Hastings Town-hall, and other important buildings; and specimens of the balustrading being executed by them at the Pandora Theatre, Leicester-square. They also show the method of fixing scagliola round an iron core or column without exposing the joint. Belonging to a totally different department of work is "Bellman's Patent Gully," exhibited at the same stand, and shown in the illustration. It is made in stoneware, measures 16 in.



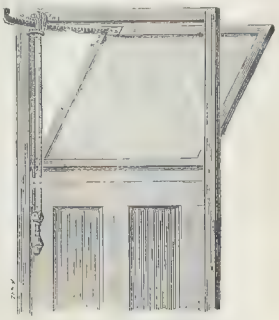
by 8½ in. by 7 in. deep, and is capable of receiving and disconnecting one rain-water pipe and three waste-pipes. The ℧ or ℘ trap used in connexion with it is attached to the pipe leading downward from the bottom of the gully. As will be seen, the gully ventilates pipes and trap, and is easy of access for cleaning. It is an admirable appliance, and should be more widely known.

Mr. D. T. Bostel (*Bay* 11), of Brighton, shows his patent "Brighton Excelsior" closets in action, including a new form, the "No. 3," with front outlet. The closets, which have met with much approval, are shown in conjunction with Bostel's syphon waste-preventing cistern. Dr. Hall's patent ventilator is also shown at this stand.

Messrs. W. & R. Leggott (*Stand* A 8, B 44), of Charles-street, Bradford, Yorks, are exhibitors of their patent adjustment for opening and closing fan-lights, skylights, ventilators, &c.



It is made in various forms, the one we illustrate being named the "Simplex." It is easily worked, and the fan-light remains locked at any angle. We add a wood-cut showing the manner

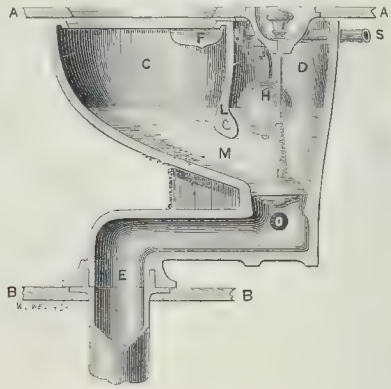


of its application to a fan-light opening outwardly.

Messrs. Frederick Walton & Co., Limited (*Stand* B 64, C 84), of Berners-street, have a very good display of their deservedly-popular material known as "Lincrusta-Walton," which (as we remarked the other day in noticing the same firm's exhibit at the Crystal Palace) is of great value and importance as a sanitary as well as a decorative covering for walls, inasmuch as it is non-absorbent to a high degree, and washable without injury. The exhibits at Islington include borders of varied and good design, to suit work in all styles. Dados, panels, friezes, and wall and ceiling coverings are shown in great variety of design, some richly and tastefully decorated in various colours, and others with the stamped ornamentation in relief on the body-colours in which the material is made. Lincrusta-Walton would seem to have an assured future in the many applications to which it can

be put, apart from its use as a material for wall and ceiling decoration,—as, for instance, in its employment for picture frames and for advertisement tablets. Tablets of this kind may be made to have a very pleasing appearance, as is evidenced by those which Messrs. Frederick Walton & Co. have made for the forthcoming Furniture Exhibition.

Messrs. Capper, Son, & Co. (*Stand* A 22, B 31), of Fenchurch-street, exhibit Pearson's "Twin Basin" water-closets, fitted with Brian Jones's patent joint for connecting the closet with the soil-pipe. This closet is made in one piece of white earthenware, and is worked without cranks; it has been largely used since its introduction a few years ago, and its practical efficiency tested by use in hospitals, workhouses, mansions, and schools. One of the latest buildings of the last-named description in which it has been introduced is the new City of London School, as we mentioned in our description of the building at the time of the opening ceremony, a few months ago. "Form C" is the one most generally used, but we give a section of "Form B," as designed for replacing old closets on soil-pipes which are



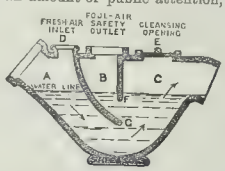
brought up to the centre of the closet-space. A is the seat, B the floor, C the main basin, D side basin, E connexion with soil-pipe, F the fan, G self-closing ball-valve, H copper ball, I a solid plunger, L the division between the basins, M the aperture connecting the basins, O discharge of overflow into main outlet, and S the service-pipe. The outlet from this closet being immediately underneath the centre of main basin, the necessity for altering the existing soil-pipe in buildings where this closet replaces others is obviated. These closets are made either with a syphon overflow (formed in the thickness of the earthenware side of the basin itself) discharging into the main outlet underneath the plunger, or with an outlet at the side of the basin, with brass union attached, through which (should an overflow occur) the surplus water, by means of an overflow-pipe, is carried off. Smith's patent folding lavatories, of one of which we give a view, are exhibited at this stand. They are



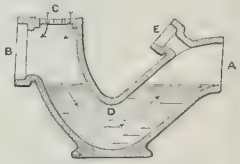
very handy and compact, and form, when folded up and out of use, a by no means bad-looking piece of furniture. For small rooms and offices, as well as for use in yachts, railway-carriages, &c., they are very well adapted. Lavatory basins and urinals, Banner's patent ventilating-cowls, and Bower's patent sewer-gas trap, are among the other exhibits at Messrs. Capper's stand.

Messrs. Ashton & Green, Limited (*Stand* D 125, E 152), of Bury-street, St. Mary Axe, occupy their old position in the hall, and make, as usual, a large and varied display. They show a number of very good marble chimney-pieces, the principal one being in Carrara statuary marble, with sculptured caryatides at the sides. Other costly mantel-pieces, in foreign marbles,—black, Sana Calla, Italian Griotte, Spanish Brocatella, and Carrara statuary carved and inlaid with Sienna, are shown, in conjunction with brass and other fenders and fireirons, and tiled hearths. Slow combustion and register grates, with tiled and electro-bronzed panels, are shown in good variety. Some serviceable enamelled slate chimney-pieces are shown; and a cast-iron mantel register, of good design, with blue and white tiles in pilasters and frieze, is likely to command favour. At this stand there is to be seen an excellent assortment of open-and-close-fire kitcheners, including one of new pattern, with tiled covings and outer moulding, and nickel-plated fittings. The special feature of this range is that it has, in addition to two ordinary ovens, a gas closet for baking, also a gas hot-plate and grill, which can be used in conjunction with the other parts of the range, or separately. This range is suitable for a club-house, hotel, or other large establishment. Also worthy of notice are Messrs. Ashton & Green's improved "Villa" kitchener, and their "Favourite" and "Speciality" ranges, now made from new and improved patterns. In another line they show their "Permanent Green" roofing-slates, as used by them at the new Royal Courts of Justice. Other varieties of slates shown here include Whitland Abbey green, Westmorland green, Bangor and Portmadoc. Models of slate tanks are also exhibited. Same patent interlocking roofing-tiles, some blue Staffordshire goods, some very good blue bricks from Pluckley, Kent, and some white facing and moulding bricks, together with fire-clay bricks, Broseley and Staffordshire tiles and quarries, go to complete a very large show of goods.

Messrs. James Stiff & Sons (*Stand* 131 E), of the London Potteries, Lambeth, have, as usual, a very good display of architectural terra-cotta work and sanitary stoneware. To deal with the latter first, we notice three very good traps, which we have described on former occasions; as, however, their great merits cannot be too widely known in these days, when sanitation is beginning to absorb something like a fair amount of public attention, we here



publish sections of them. The first one we give is Stiff's registered "Intercepter" sewer-air trap, which is intended to be fixed at any convenient and easily-accessible point between the house and the street sewer. Stoneware ventilating-pipes from B and D should be carried just above the ground-level. The sewer-air, it will be seen, is intercepted by the two water-seals F and G, with intermediate ventilation. The chamber A, into which there is a good fall from the house-drain, is thus effectually guarded against the admission of sewer-gas into it. Weaver's ventilating sewer-air trap is very simple and effective; the section here given of it is almost self-explanatory. A is the outlet to the sewer,



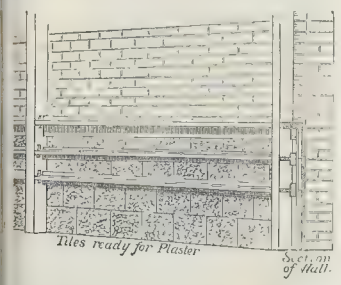
B the inlet from the house, C a fresh-air inlet, D the dip of the trap (3½ in.), and E a junction for connecting a special upright pipe for ventilating the sewer. It can be fixed at any depth to suit the drain, the air-inlet C being carried up by, means of stoneware pipes, to the level of the surface of the area or yard, where the grid may be placed to carry off surface-water. The new registered "Weatherly Disconnector Waste-water Trap," here represented in section, is designed for disconnecting the waste-



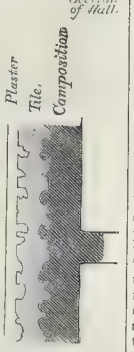
pipes of sinks, baths, lavatories, cisterns, &c., from the house-drain and public sewer. This trap may be placed in any convenient situation outside the house, and the waste-pipe should be conducted into the inlet-pipe at A. The exit-pipe D must be connected with the house-drain. A B represents a tapering siphon-shaped inlet-pipe of such a configuration as to form a deep-water seal, and, at the same time, to have a free exit at B into the upper well-ventilated part of the trap, immediately under the iron grating E E. The increased capacity and the domed shape of the pipe at B are such as to prevent the waste water being forced up through the grating, even when the pressure is greatest. The aperture B is made sufficiently large to admit the hand, thus facilitating the removal of obstructions, if such should occur, and instead of emptying its contents upon the lower pipe C D, the aperture is turned round (in a manner not shown by the section) so as to discharge the waste water into the centre of the trap. The exit-pipe C D, which dips 3 in. below the water-level F, forms a second water-seal. Any greasy matter finding its way into the trap will naturally float on the surface of the water at F, so that the exit-pipe entrance C is not liable to become clogged by it. This trap, therefore, not only breaks the connexion between the waste-water pipes and the drain, but serves as a grease-trap, the grease collecting on the surface of the water at F being readily cleared by the removal of the iron grating E E. Reverting to the terra-cotta exhibits, a conspicuous item is a figure, 6 ft. high, of an indigo-planter, intended for a public building in one of our dependencies. The entire figure, plinth and all, is in one piece. It has been modelled, we understand, by Mr. W. F. Woodington, jun., and the firing and colour (a good buff) is all that could be desired. This remark applies to all the other specimens of sculptural and architectural terra-cotta which we had time to examine at this stand. A small bas-relief panel of the same material, representing the "Angel of Instruction," holding an open book, on which are inscribed the words "Learn to do well," is designed for introduction into a niche or over a window or door of a school as an incentive (let us hope an effectual one) to the youthful mind. The terra-cotta lion exhibited at this stand we fancy we noticed last year. A large piece of enriched cornice of this material, 3 ft. high on face, is worthy of special notice. It forms part of the

main cornice of a Government building abroad. A red terra-cotta panel in relief, 4 ft. 6 in. long by 2 ft. 6 in. high, and showing griffins and a vase in relief, was designed by Mr. A. Crofts, and used in a new building in St. Mary Axe. The deep tone of the colour is produced by intense firing. Other architectural details in terra-cutta, such as capitals, archivolts, terminals, &c., are shown in a variety of designs. Among the miscellaneous exhibits we may mention some 6-in.-square glazed dado tiles, designed so as to develop various patterns when pieced together. Stiff's "Adamant" terra-cotta spandrel steps, 4 ft. 6 in. long; kitchen sinks with bright cream-colour glaze; and a number of other traps besides those we have already described, are all worthy of the attention of visitors.

Mr. William White (*Stand* 272, *North Side*), of Abergavenny, has one of the most interesting exhibits of a practical nature to be found in the Exhibition. He shows specimens of brick-walls, arches, tanks, and lintels, built of ordinary bricks and mortar, in two or three thicknesses, and cemented together by means of his patent "Hygeian-Rock Building Composition," which was favourably noticed by us last year. This composition is not only absolutely damp-proof, but possesses remarkable cementitious properties, as may be seen by any one who will inspect the severe tests to which the material is put. Mr. White claims that his cheap damp-proof wall, 7½ in. thick, is equal in strength to an ordinary 14-in. wall. The "Hygeian-Rock Impervious Wall-lining," which appears to be an effectual cure for damp walls, and which can be applied to any existing buildings, is illustrated by the annexed engravings,



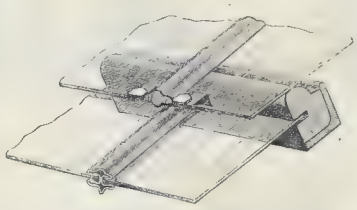
the larger of the two being an elevation, showing the frame in position for securing the tiles, while the smaller one is a section, drawn to an enlarged scale, of the wall-lining, the projecting portion shown on the right-hand side of the section representing one of the raked-out joints of the brickwork, filled, as described hereafter, with the composition. The mode of application as described by the patentee, is as follows:—



"In the first place the plaster is removed from the face of the wall, and the joints well raked out; then a cavity for the reception of the composition is formed by specially-made locked tiles (which are vertically fixed against the wall by means of a temporary frame, which can be made by any carpenter), behind which the composition is poured, in a hot liquid state; this, when cool and set, which takes place in about five minutes, fixes and locks the tiles to the face of the wall, forming an absolutely impervious lining with a honey-combed undercut surface, upon which a render of plaster or mastic cement can be placed, and the wall prepared for decoration within six days from the time of application. In this manner any wall, however wet, can be made permanently dry by the introduction of a vertical impervious lining not exceeding ½ in. in thickness."

Messrs. Howard & Sons (*Stand* D 127, C 150), of Berners-street, have carried a partition lengthwise of their holding, and on each side of this division they show what is virtually the end of a room. The floors, as might be expected by people conversant with the speciality of this firm, are covered with some excellent parquetry. In one room-end, so to speak, there is a white wood chimney-piece and over-mantel of somewhat quaint design, shown in conjunction with a dog grate, with tile hearth and covings. In the other room-end, there is a very well-made rosewood chimney-piece and over-mantel. The door leading through the partition, and the over-door, are specially designed, and differently decorated on each side. The wall-paper used is a raised flock, on talc ground, the design being identical for each half of the stand, but the colours are different. Some good furniture is shown at this stand, which is altogether it is well worthy of careful inspection.

Messrs. Johnson Bros. & Co. (*Stand* A 25, B 28), of Waterloo-place, are exhibitors of art metal-work in altar-standards, staircase-panels, lamp-brackets, balcony-panels, wrought-iron railings, and other articles. They also show a specimen of their patent "Imperishable Glazing," which entirely dispenses with the use of putty. The annexed view of it shows the construction.



The Bracknell Pottery Brick and Tile Company (*Stand* A 2, B 50), of Bracknell, Berks, and Nine Elms, exhibit roofing covered with plain and ornamental, hip, valley, and gable tiles, in red, strawberry, and dun colours, which are well worth notice. The tiles shown are all taken from general stock. Their appearance is very satisfactory, and the goods will bear inspection. The exhibitors draw special attention to their new strawberry colour. The ridge tiles are a speciality, and are good in colour and finish. Moulded bricks are another leading feature of this firm's manufacture. The works are on the London and South-Western Railway, and, we are told, cover an area of about 45 acres, containing an almost inexhaustible quantity of excellent clay.

Messrs. Jeffrey & Co. (*Stand* D 132, F 136), of Essex-road, Islington, show some non-arsenical wall-papers of good design. The two outside screens show specimens of the exhibitors' machine-printed papers, both with and without gold. These are good of their kind, and cheap. The three inside screens display examples of hand or block-printed papers, dado decorations, friezes, ceiling-papers, and flocks. These include two papers designed by Mr. J. D. Sedding, architect; one of these is a bold double-block pattern in reds. On the right-hand screen the exhibitors show an adaptation of one of their "leather" papers ("Cupid" pattern) to the purposes of a frieze, with a wall-surface in quiet tones of yellow-brown. The centre screen exhibits a decoration of sea-thistles, with dado of seaweed and frieze of flying gulls. On the left-hand screen is a floral decoration by Miss Kate Faulkner in colours and gold. Another design exhibited is a bold treatment of chrysanthemums in shades of olives, blues, and browns, giving somewhat the effect of old tapestry. It is claimed for a lacquered gold paper here exhibited that it gives the richest possible effect to be obtained in colours and gold, and that it will retain its brilliancy for many years. Messrs. Jeffrey also exhibit samples of their specialities in "embossed leather papers," hand painted, after the manner of the old Venetian and Spanish leathers. These papers are produced in continuous lengths, and can, we are informed, be supplied at about one-third the cost of real leather.

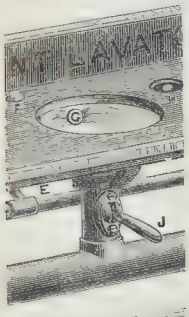
Mr. A. Tagnon (*Stand* F 129, G 227), of Gray's-inn-road, shows some marble chimney-pieces, one of them being of white statuary marble, inlaid with Sienna marble; this is in the so-called "Queen Anne" style, and is shown in conjunction with tiled stove jambs, tiled hearth, and marble fender and over-mantel. Another mantel-piece, suitable for a dining-room, has Genoa Green marble columns and black marble carved consoles, with black and gold marble mouldings on deep Rouge Griotte marble ground, with tiled marble fender and over-mantel, tiled hearth, &c. A very fine chimney-piece in the handsome grey marble known as "Belgian ⊤" (of which Mr. Tagnon and MM. Tagnon, frères, of Wellin, Belgium, are quarry-owners) is also shown at this stand. It is inlaid with black marble, and has marble fender and tiled hearth in keeping. These two chimney-pieces, we understand, have been specially made for the exhibition. Mr. Tagnon also exhibits a marble clock-case; samples of "marble parquet" flooring, and "marble tiles"; a marble larder, with tiled and painted glass door; and various specimens of different kinds of marble as applied to columns, dados, steps, &c. Included among these specimens are some "Belgian ⊤" marble columns made for St. Matthew's Church, Ealing, now being erected under the superintendence of Mr. Alfred Jowers, architect. As curiosities, Mr. Tagnon exhibits one or two marble figures of Buddha, imported from Burmah. But Mr. Tagnon aims at distinction in engineering annals, for he exhibits plans and sections of his scheme for a tunnel under the Thames near the Tower, this subway being 50 ft. wide, or more, with a headway of 20 ft. in the centre, and 16 ft. minimum headway at edge of curbing of footways, each of which is proposed to be 9 ft. wide. The roadway of the tunnel would be 58 ft. below the level of the Tower wharf, and 32 ft. wide, giving room for four rows of vehicles. The approach from the northern side of the river would be by a nearly straight roadway, passing from the Minories eastward of the Tower, and having a gradient of 1 in 36. The principal approach on the south side would be by a proposed new straight road from Bermondsey-street, having a gradient of 1 in 40. The total distance from the Minories to Bermondsey-street, including tunnel and approaches, would be, according to Mr. Tagnon, 4,874 ft., or 134 yards less than a mile. He would construct the tunnel in sections by means of coffer-dams, and of stone, marble, granite, or concrete. We have given the main points of Mr. Tagnon's proposal, which we will not criticise nor comment upon further than to say that we do not see that Mr. Tagnon has attempted to go into the question of cost. He has confessedly gone into the question with the view of getting his "Belgian T" marble used for the tunnel.

Messrs. Webb & Co. (*Stand* E 158, F 187), of Euston-road, exhibited a large variety of hearth-tiles, printed and tinted glazed tiles, dado-tiles, and geometrical encaustic floor-tiles, manufactured by Messrs. Malkin, Edge, & Co., of Burslem, for whom Messrs. Webb are the London agents. They also show a chimney-piece reproduced in *carton-pierre* from an old Georgian specimen carved in oak; a chimney-piece in *carton-pierre* newly designed after Pergolesi's style; and several other chimney-pieces of the same material, in the "Queen Anne" and other styles. They also exhibit part of a ceiling of Elizabethan character; a ceiling corner in the Cinque-Cento style; specimens of cornices, capitals, and consoles; and a variety of ceiling flowers in *carton-pierre*. At this stand are shown in operation the various stages of modelling decorative ornament in clay and plaster.

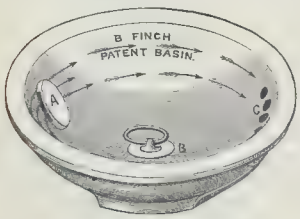
Messrs. W. Richardson & Co. (*Stand* B 72, C 77), of Darlington, are exhibitors of tubular boilers, including their patent hooded tubular boiler, for heating horticultural buildings, churches, chapels, schools, mansions, &c. In the hooded boiler the fire is entirely surrounded by horizontal cast-iron tubes, placed in such a manner that the heat acts not only upon them, but upon the wrought-iron saddle or hood which incloses them. It is claimed that by this arrangement great economy of fuel is secured, and that the fire can be kept up twelve hours or more without attention, thus rendering night stoking unnecessary. This firm are also exhibitors of horticultural buildings and their fittings. We may make special mention of their "Parisian" chain-blinds, which are made of thin wood laths, with narrow spaces between, the laths being connected together by galvanised iron chains; they are painted green, and intended to be fixed on the outside of conservatories or hot-houses. A single cord running over a pulley rolls up each blind from the bottom. They can be left fixed through the entire year, and be made to serve as protection from frost in winter as well as

giving shade in summer. They appear to be durable, and are certainly neat in appearance. We understand that they are made in Paris, so that their name is not a fanciful one. A portable glass wall-tree protector or "coping," shown by the same exhibitors, consists of a plate or ridge-piece at the top, and a rail or bearer at the bottom, made of red deal, and supported on cast-iron brackets fixed about 10 ft. apart, and glazed with ¼-in. rolled plate glass. This wall-tree protector or coping is made to overhang 2 ft. or 3 ft., and is readily fixed and removed. Richardson's improved portable garden frames, here shown, have many points worthy of notice. They are light and portable, although strong. The ribs are of cast iron. Top-ventilation for use in wet weather is obtained by a lifting ridge-cap, easily regulated to open to any height desired. The lights have wrought-iron stays for propping them open to any angle. The frames have sides and ends of wood, but they are also made for resting on brick walls.

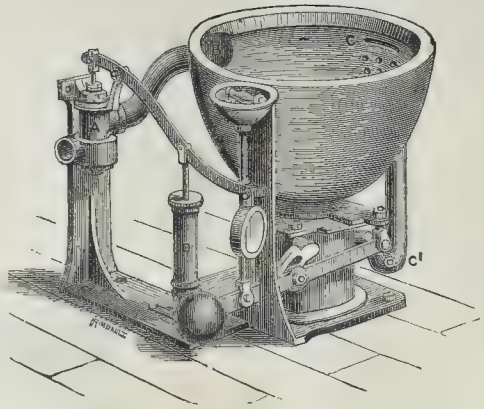
Messrs. Benjamin Finch & Co. (*Stand* 276, *King Edward's Hall*), of the Holborn Sanitary Works, have a good display of very useful and serviceable sanitary fittings. First of all, we will refer to their patent "Flush" lavatory, with 2-in. earthenware waste-plug lifted by trigger outlet. The accompanying cut shows one of a range of these basins, fitted with slate top



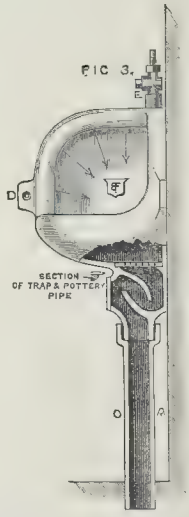
and skirting, and cast-iron standards, and with supply, overflow, and waste-pipes. The supply valves do not project above the lavatory top, and yet are perfectly accessible, and save trouble in cleaning. A great advantage of these lavatories is their cleanliness in action, consequent on the water, on entering the basin through the pottery disc G, being directed round the sides of the basin, thereby removing all scum. Another advantage which they possess is the cleanliness of the outlet plug, which, being of earthenware ground into the pottery basin, and being devoid of indiarubber or other washers, does not allow of the accumulation of filth. A quick discharge is obtained by the lifting of the plug by a rod actuated from the trigger J, which works in an eyeball joint, and is perfectly water-tight. These lavatories, we understand, have been and are being largely used by the War Office authorities for barracks, by the Post-office authorities, and the School Board for London, as well as in various large institutions, of which we may mention the new St. Paul's School at Kensington, as an instance. They seem to be well adapted for hospital use. The annexed engraving shows a view of a basin



made on the same principle as that just described, except that the plug is provided with a ring for lifting it up instead of being lifted by the trigger action already mentioned. This cut shows more clearly the way in which the water is directed round the basin by the earthenware disc, here figured A. While on the subject of lavatories, we may direct attention to the improved "tip-up" variety, with supply entering at the side of the basin through one of the pivots. This firm's patent "Flush" elastic valve water-closet is provided with the same description of flush inlet for the water as is used for their lavatory basins. It is shown at B in the accompanying cut, but it is here made



of brass instead of pottery. The cut shows a piston-regulator, D, but in the closet exhibited an improvement has been made in the supply-valve, A, so as to regulate the after-flush, so doing away with the necessity for the piston-regulator. The closet is noiseless in action, and has many good points. The same exhibitors show an excellent porcelain bath in one piece, with patent "Flush" fittings, as supplied to some of the institutions under the control of the Metropolitan Asylums Board. Among a variety of other sanitary appliances and fittings which we have not space to mention, there is shown at this stand the patent "Holborn" trapped urinal. The engraving shows one of these



appliances adapted to a corner position. It is trapped, as will be seen, immediately below the outlet grating, and not at the foot of the down-pipe, thereby reducing the liability to offensive smells to a minimum. The trap is provided with a brass inspection-door in front for cleaning. The urinal as exhibited is fitted with a treadle-action water supply, but it can, of course, be used in connexion with any description of supply valve.

Messrs. Miller, Little, & Co. (*Stand* B 65, C 83), of Devonshire-street, Portland-place, exhibit a large variety of tiles, all of them painted under the glaze. They are suitable for mantels, stove linings, dados, and, in fact, for every purpose to which decorative tile work is applicable. The designs are of varied character, and include ornamental and conventional treatments, as well as those of a floral and realistic character. Bird and fish designs, figure subjects, heads of painters, poets, &c., and panels illustrating various incidents, are also shown, executed in tile-work of this description. It is claimed by the exhibitors that the advantages of tiles painted under the glaze are,—increased durability, owing to the protection afforded by the glaze covering the painting; and softness and harmony of effect, caused by the colours flowing into the glaze, which also gives them increased depth and brilliancy. We were informed that many of the specimens shown have been executed from the designs of Mr. Lewis F. Day. At this stand there is also exhibited some stained and painted glass for domestic purposes, suitable for halls, staircase windows, blinds, fire-screens, &c. Some specimens of decorative painting, consisting of panels for doors, cabinets, screens, and friezes, are also shown. The exhibitors call special attention to the decorations on Lincrusta and Japanese gold-paper. Some tapestry painting shown at this stand is worth notice. This is a method of obtaining decorative effect which, under certain conditions and restrictions, pointed out by us some little time back, may be employed with advantage. Some of the work of this kind here shown is stated to be painted on a specially-woven tissue with dyes, which are afterwards "fixed," thus rendering the work washable. Painted vases and plaques for decorative purposes are also exhibited by this firm.

Mr. W. Burley (*Stand* A 11, B 41), of London-wall, exhibits some useful little appliances, including two new patent sash-fasteners and the patent "Simplex Ratchet Short Muslin-Blind Tightener," a simple contrivance designed to enable the strings or tapes on which short muslin blinds are fixed to be kept "taut," and therefore straight, without the use of rods, laths, &c. No doubt it will do this by constant tightening-up when the top edge of the curtain begins to sag, but the cords or tapes will have to be made strong enough to withstand the tension. Among other articles shown by the same exhibitor are his safety casement and window latch, with loose key, for locking windows; Young's patent cord holdfast for Venetian blinds; and Young's patent roller-blind furniture.

Mr. S. D. Phelps (*Stand* B 71), of Cambridge, exhibits a few good specimens of wrought-iron work, including a panel, 3 ft. 7 in. by 2 ft. 8 in., suitable for a balcony. This panel was exhibited at the Albert Hall, South Kensington, in 1881, when a certificate of merit was awarded to Messrs. Sydney & Charles Phelps, by whom it was designed and forged. The design is mainly after the style of old German work of the sixteenth and seventeenth centuries, of which the interlacing of round iron, pierced and swollen, is one of the characteristics, as seen at Nuremberg and in other places; a side panel for a gate or screen, and a specimen of stair-rail, both in early eighteenth-century Renaissance style, are among the other specimens shown, besides a lamp-bracket of late seventeenth-century style; a candelabrum for three candles, suggested by old German work; wall candle scones, cabinet hinges, and a pair of chest-handles suggested by Spanish seventeenth-century work.

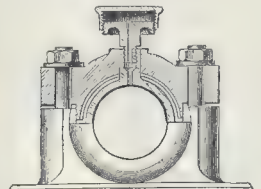
Messrs. J. T. Gent & Co. (*Stand* F 212, G 215), of Leicester, are exhibitors of electric and pneumatic bells and cognate appliances and fittings, including burglar-alarms, watchmen's tell-tale clocks, and lightning-conductors. The annexed engraving shows five distinct arrangements for making the door of a house or room give an alarm if attacked by burglars. A and B are mechanical bells, so arranged that if placed against a door or hung to the usual door-chain any movement of the door will ring an alarm-bell. C shows the well-known door-



trigger, and D Gent's thief-detector, both arranged to ring an electric bell placed in some other part of the building. E shows Major Leadbetter's patent burglar-alarm, which consists of a thread or cord, which may be placed in any position inside or outside a building, and connected by a flexible conductor to an alarm bell in any desired position.

Messrs. Brunton & Trier (*Stand* 253), of Great George-street, Westminster, exhibit Trier's new patent grindstone dresser, which will true a 4-ft. grindstone on face and edges in a few minutes, without dust. The cutter, which never requires sharpening, is made of thin sheet steel, stamped in the form of a cone; it cannot wear blunt, lasts for a long time, and when worn out is replaced at a small cost. The dresser is driven by a steam-engine, which, with its boiler, is exhibited by Mr. E. P. Bastin, of West Drayton. At the same stand Messrs. Trier Bros. exhibit Stauffer's patent lubricators, one of which is here shown detached, and on a





smaller scale as applied to a bearing. The lubricator is filled with Stauffer's lubricant, a compound which, it is said, neither gums nor clogs, never freezes, and does not melt at a lower temperature than 212° Fahr. The lubricators can be applied to top, bottom, or side of bearing, as may be most convenient. The lubricator consists of two parts,—a lower part, which is screwed on to the bearing, and an upper part or top, which is filled with the lubricant and screwed on, thus forcing the latter into the oil-channels. To lubricate afresh it is only necessary to give the lubricator a whole or half-turn. Very light bearings only need the lubricator to be screwed down once or twice a month, medium bearings (shafting, &c.) weekly or fortnightly, according to circumstances, loose pulleys once or twice a week, and heavy or high-speed shafts once or twice a day.

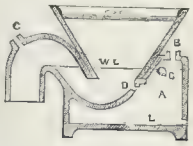
Mr. C. E. Zimdars (*Stand* C 80), of Gray's-Inn-road, is an exhibitor of his patent pneumatic bells, which have been used in the new Royal Courts of Justice, and in many other public buildings. He also shows some electric bells, which have been used in many large mansions and other buildings. Visitors will thus be enabled to make their choice between the pneumatic and electric systems.

Mr. R. W. Hitchins (*Stand* E 170, F 175), of Shacklewell-lane, Dalston, exhibits various specimens illustrating the applications and modes of manufacture of Hitchins's patent plastering, including recent improvements for resisting fire and damp and for preventing the tranmission of sound. The capabilities of one variety of this plaster to resist fire were recently demonstrated by some public experiments lately described by us. This material appears to have a large field of usefulness before it, and as a protective covering for iron girders and columns it would do much to prevent the "treacherous" behaviour of ironwork under fire,—behaviour which, if not dreaded by Captain Shaw and his brave men, does much to impede their efforts to minimise damage by fire in buildings where unprotected ironwork is largely used for structural purposes. An arch, a pilaster, and a panel of ornamental work of Moorish design, are shown executed in another variety of this material.

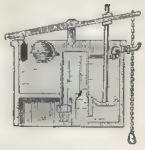
Messrs. Allen & Genge (*Bay* 75 *in Arcade*), of Devonshire-street, Theobald's-road, are exhibitors of canvas and plaster work in the shape of plain and enriched cornices and over-doors, as fixed at the London and South-Western Bank, Peckham, under the direction of Messrs. J. & J. S. Edmeston, architects. They also show a panelled ceiling, complete, and dentil cornice for lobby, at Messrs. George Rowney & Co.'s premises, Percy-street, Tottenham Court-road (Messrs. Ebbetts & Cobb, architects). Fluted pilasters, caps, enriched centre-flowers, ornaments, &c., are among the other items on this stand.

Messrs. F. Leroy & Co. (*Stand* E 143), of Gray-street, E., show a small boiler covered with their patent non-conducting composition: also pipes covered with the same. One pipe exhibits the mode in which the composition is applied; another, a curved pipe, shows the composition finished, painted, grained, and varnished. This composition is useful not only for preventing loss of heat in boilers and steam-pipes, but for preventing the freezing of cold water pipes and tanks. It has been used for these latter purposes, we are told, at University College Hospital, and at several other institutions of a kindred nature.

Messrs. Brazier & Son (*Stand* A 16, B 37), of Blackfriars-road, show a variety of sanitary appliances, including their patent "self-acting aromatic and deodorising water-closet and drain purifier." It is shown in the section given herewith. WL shows the water-line; A is a



chamber for camphor and lime; B a plug-hole for charging it; C a connexion for a ventilating pipe; D connexion between trap and chamber; G the camphor, floating at the top of the water in the chamber; and L the lime lying at the bottom of the chamber. Another exhibit shown at this stand is Brazier's double-chamber



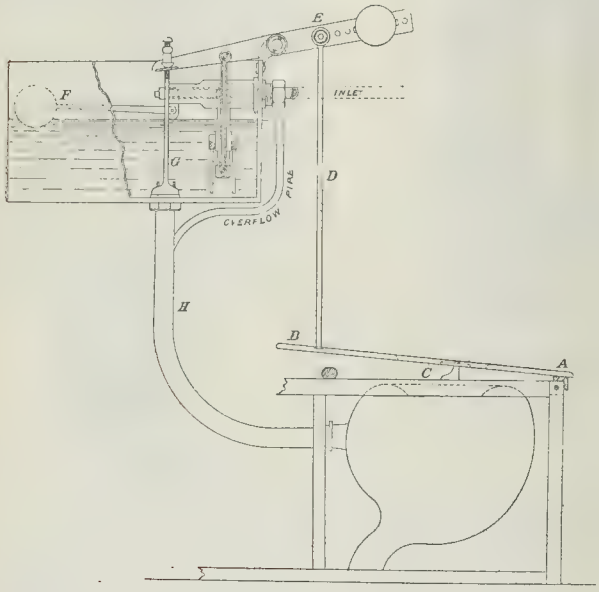
siphon water-waste preventer, which gives a very good flush. It will be seen from the section that upon pulling the handle the plunger depresses the water, and drives it over the siphon-bend and starts the syphon.

Mr. John Owen (*Stand* A 138), of Glogue Brick and Tile Works, Whitland, South Wales, exhibits the Glogue Brick, which claims to surpass every known brick in compactness and strength. It is stated to be almost impervious to water, and to resist great extremes of cold. From the test of Mr. D. Kirkaldy we are informed that this brick stood a crushing strain far in excess of any other known brick —the crushing strain being 1,056 tons to the superficial foot, the resistance to pressure being equal to best granite. If this be so, the brick is peculiarly adapted for engineering purposes, for foundations, tunnels, arches, and other important building works.

The Antiseptic Apparatus Manufacturing Company (*Stand* A 23, B 30), of Queen Victoria-Street, show the "Acme" antiseptic syphon water-waste preventer, constructed on the usual syphon system, having a compartment to contain a powerful inodorous disinfectant, one charge of which is injected into the water each time the chain or handle is touched. The chain does not require holding down, one pull being sufficient to empty the full quantity of disinfected water into the closet or urinal.

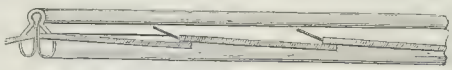
Mr. Alexander Dick (*Stand* A 21, B 32), Cannon-street, exhibits metal cabinet furniture, house and door fittings, &c., in "Delta" metal, which is described as an improved brass, but "as much superior to it as phosphor-bronze is to ordinary gun-metal, and as steel is to iron." It can, we are told, be made as tough as wrought iron, and as strong and hard as mild steel. It can be forged and rolled hot, and will stand being worked and drawn into wire when cold. When melted, Delta metal runs very freely, and perfectly sound castings of fine close grain can be produced from it. Its colour resembles that of gold alloyed with silver; it takes a high polish, and when exposed to the atmosphere will tarnish less than brass. The prices of Delta metal,—ingots, sheets, rods, and wire,—are but little in advance of those of the best brass, and vary slightly with the composition of the metal. The uses to which this new alloy can be applied are very numerous. Its great strength, durability, and hardness recommend it for all kinds of engineering work.

Mr. A. Dorrett (*Stand* B 68), of Chichester-road, Portsmouth, exhibits the "Excelsior Silent Hydraulic Water Closet Apparatus," which is claimed to be perfectly automatic in action. It is the patented invention of Mr. Thomas C. Summers, retired engineer R.N. The seat has an oscillating movement, like an ordinary one in its upper parts; it may be used with any approved pan. By sitting upon its front edge it becomes slightly depressed, but enough to elevate the back to such an extent as to give the necessary motion to the rods and levers, which are adjusted in such a manner that it shall close the flushing valve before the hydraulic twin pistons have passed in their descent the inlet orifices in the cylinder, into

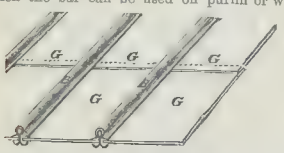


which two small pipes are inserted, conducting the inflow of water to within half an inch of the bottom of the cistern—filling it quite noiselessly until it reaches the water-line, when the double-action valvular piston stops the further inflow by the action of the ball-float. The cistern may be connected with the water-main where a constant supply is afforded, and otherwise with a storage-tank. Upon the front edge of the seat being released, the action becomes reversed, closing the inlet first, afterwards opening the flush-valve, thereby flushing the pan with two gallons of water—neither more nor less—quite emptying the cistern, in which state it must remain until the seat is again depressed at its front edge; it is not, therefore, liable to damage by the action of frost. The cistern is provided with an overflow pipe, shown in our diagram, in which the apparatus is supposed to be in use.

Messrs. W. Lawrance & Son (*Stand* A 4, B 48), of Datchworth, Stevenage, exhibit a small greenhouse glazed with their patent metal sash-bar, of which we illustrate a side section,



showing the glass. We also give a view of a piece of glass roof glazed on this system, by which the bar can be used on purlin or with



lap glass for the roof. The bar can also be used for vertical glazing.

The Yale Lock Manufacturing Co. (*Stand* E 166), of Stamford, Conn., U.S.A., exhibit a selection from their manufactures. They claim to have been the first to introduce flat keys, in connexion with locks adapted to general purposes, twenty-five years ago. In the United States this form of key, made of cold rolled steel, has, we are told, superseded nearly all others. We understand that no two locks are made alike unless specially ordered, the permutation being almost infinite. It is claimed for these locks that they are unpickable.

Mr. C. D. Phillips (*Stand* B 53, C 93), of Newport, Mon., exhibits his patent "lock-jaw" tile. The patentee claims for this tile that it makes a weatherproof roof, and is at the same time most economical. The peculiar name of "lock-jaw is given to it on account of the manner in which the tiles lock into each other on both sides, top and bottom, thereby making a fast-joint. The tiles are now made in two patterns, the original lock-jaw tile and the new pattern called the double grip tile. This has a double joint at the sides. There is also to be seen on this stand, by the same exhibitor, an assortment of finials, crests, and other terra cotta work, manufactured for him by the Pencoed Brick and Tile Co.

Messrs. Thomas Smith & Co. (*Bay* 25), Canal Potteries, Old Kent-road, exhibit samples of sanitary ware, including glazed stoneware drain-pipes and connections; Herbert J. Jones's patent drain-pipes, syphons, traps, D-traps, water-closet pans, yard gullies, road gullies, sewage carriers, damp-proof course, air-bricks, invert blocks for the bottoms of brick sewers; white glazed stoneware kitchen sinks, terra-cotta chimney-tops and terminals, glazed stoneware garden edging, domestic and commercial stoneware vessels in salt, glazed, and enamelled ware; stoneware chemical apparatus and water filters.

The Turner Gas Engine Company (*Bay* 15), of St. Albans, Herts, exhibit a 2-horse-power gas engine, height 6 ft. 6 in., the space occupied being about 4 ft. by 4 ft. The Turner gas engines are now being made by the company at the works especially constructed for the purpose by the patentee, Mr. F. W. Turner, whose services are retained as engineer and manager. The engine is of the most simple construction, consisting only of the cylinder, two slide valves, and the fly-wheel, mounted on a cast-iron central column. An ignition of the gases is secured at every rotation, whereby great regularity of working is ensured. The cylinder is surrounded with water, which keeps the working valves cool and prevents unpleasant heating in the room. The valves can be removed, cleaned, and replaced in a few minutes by an unskilled person; only ordinary gas is used, and no special meter or gas main is required. These engines can be made to heat (while working) a quantity of water in a tank placed any convenient distance from them, to be used for baths, washing, &c.

Mr. M. T. Medway (*Stand* 264 A, *West End*), of Rolt-street, Deptford, exhibits a small warehouse lift, fitted with H. A. Davis's patent wedge safety apparatus, which may be seen tested there in any position. These lifts are noiseless in action, and easily worked. Mr. Medway also exhibits a double dinner-lift, as used in hotels, restaurants, &c. Also single dinner-lifts, as used in private houses. Also double lift for letters, papers, messages, &c., which may be used in printing offices and other establishments.

Messrs. Studd, Abrahams, & Co. (*Bay* 21), of Kettering, exhibit builders' machinery and plant, their chief exhibit being a combined mortar-mill and engine with 6 ft. pan, and a mortar-mill only with 7 ft. pan. These mills have several features rendering them worthy of notice. In the ordinary mill, when the pan revolves the whole weight of pan, false bottoms, rollers, driving-wheel and spindle, and materials being mixed is carried on a step bearing under the pan. This is in a very awkward position to get at, and, wearing down very rapidly, is a constant source of annoyance and expense. In the mills shown by Messrs. Studd, Abrahams, & Co., this bearing is entirely dispensed with, and they say that experience has proved that the mills will run for years without adjustment. Each mill is fitted with two pairs of scrapers, which not only turn the mortar over twice every revolution, mixing it thoroughly, but also discharge the mixed mortar direct into a barrow or truck. This self-delivering arrangement effects a great saving in time, labour, and shovels. Both mills are mounted on carriages constructed of wrought-iron girders combining strength and lightness.

The Patent Embossed Tapestry Company (*Stand* A 18, B 35, F 179), of Chancery-lane, are exhibitors of what they represent as being an entirely new manufacture for the decoration of walls and other surfaces. It has been patented in England, France, and America, and has for its object the production of a material impervious to moisture, and artistic in appearance. It is stated that this material, being throughout the process of manufacture prepared and finished in oil colours only, may (unlike paperhangings) be washed and cleaned to any extent, thereby causing rooms covered with it to be always pure and healthful; it is, therefore (the patentees urge), especially applicable to sleeping-rooms, and to the lining of railway and steamboat saloons, and other public apartments, independently of its artistic character. The raised or embossed part is solidly filled in with oil cement. The material can be made in any colour or arrangement of colours without adding greatly to the cost, excepting only when gold or silver is employed, and it may be hung as an ordinary paperhanging, finished complete, without the inconvenience and delay necessary in after-painting upon the walls, as raised flock or other materials so often require.

Messrs. Edgar Aldous & Son (*Stand* 258, West End), Queen's-road, Peckham, exhibit their ventilators for buildings, ships, railway carriages, sewers, and sinks, showing a method of extracting foul air and sewer gas, apparatus being proof against down draught, also taking smoke from yachts' and ships' cabins, whether they may be going before or against the wind, without the necessity of turning the fly on the stoves' funnel.

The Patent Victoria Stone Company (*Bay* 22), of Kingsland-road, exhibit their Victoria stone-paving as laid in London footways. A staircase; window-head, 8 ft. 9 in. long by 16 in. by 5 in.; mullion and sill; coping 4 in. thick, double-throated and weathered; coping with ramp; railway platform coping; springer stones for large reservoir; small door-head and window-head; one pair vases and pines; sinks, &c.

Messrs. Doulton & Co. (*Bay* 51 *in Gallery, South Side*), are exhibiting radiating tile-stoves, terra-cotta fenders and hearths, and a variety of other goods, as to which we can do no more this week than to direct the special attention of visitors to them. Next week we shall notice them in detail, together with those of a number of other exhibitors.

The Builder.

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ILLUSTRATIONS.

London Street Architecture: a House in Oxford-street.—Mr. E. Marks, Architect 502
Ashcroft Buildings, Liverpool (Double-page Engraving).—Messrs. Hoult & Wise, Architects 504
German Castles and Bourgs: The Marienburg, near Hanover (Double-page Engraving).—Herren Hase & Oppler, Architects 506, 507
Design for Reredos, St. Mary's, Newington 511

CONTENTS.

Babylonian Explorations 489
Architecture among the Poets 491
The Latest on the Lighting of Greek Temples 492
Organ-Cases and Organs 494
Public Works 495
Westminster Hall, Past and Present: London and Middlesex Archæological Society 496
The Destruction of the National Theatre in Berlin 497
The Caucasian Museum in Tiflis 497
Further Notes at the Building Trades Exhibition 498
Edinburgh Architectural Association 499
A Prosperous House and Land Company 499
German Castles and Bourgs: The Marienburg, near Hanover 500
Ashcroft Buildings, Liverpool 500
London Street Architecture: No. 360, Oxford-street 500
Reredos, St. Mary's, Newington 500
Matlock Bath Water Supply 500
Italy 513
Sanitary Progress in Ireland and the Legal Powers of Sanitary Authorities in regard to Houses 517
The London, Chatham, and Dover Company's New Bridge and Station Works at Blackfriars 517
The Spohr Monument 518
Foreign Notes 518
Foreign Competitions 518
Building Patent Record 518
Case under Metropolitan Building Act: Fee for Irregular Building Removed: Fletcher v. The Pinxton Coal Co 518
Suggestions for the Conduct of Architectural Competitions: Adopted by the Royal Institute of British Architects 519
Rightness in Art 519
"The Decoration of the Central Hall, Houses of Parliament" 519
Gratitude: St. Paul's Church, Camden Square 520
Buildings between Leadenhall Market and Leadenhall street 520
Books: Colyer's Hydraulic Steam and Hand Power Lifting and Pressing Machinery (Spon): Perry's Practical Mechanics (Cassell) 520
The New Market for West London 520
Miscellanea 520

Babylonian Explorations.

IN Babylonia, as in Egypt the foundation of a temple was the birth of a city. The establishment of a shrine to some favourite deity by some pious king formed a nucleus round which in time grew up a city under the protection of the local deity. As Memphis, the ancient Egyptian capital, grew up beneath the shadow of the temple of Phthah, founded by the great Menes, so Ur of the Chaldees grew round the temple of Ur, the Moon-god, and Sippara round the walls of the shrine first erected in honour of the bright Sun-god. At the time when Menes and his pious followers were laying the foundation-stones of the temple of the Creation-god Phthah, which formed the germ of the city of the "White Wall," or Memphis, a Chaldean king, the Romulus of the empire, was engaged in founding on the banks of the Euphrates the city which in after time became the Chaldean Heliopolis. A temple, whose foundation, according to its own records, must be placed at least "3,800" years before the Christian year, and which has during the whole period of its existence been one of the most favoured shrines of the temple land of Babylonia, must indeed be a treasure-house alike to the historian and the archæologist. The record which thus carries us back to the threshold of history is brief, but its importance cannot be too highly valued. In a cylinder recently brought to England by Mr. Rassam from the ruins of the temple of the Sun-god at Abbo Hubba, the ancient Sippara, and which was written by Nabonidus, the last of the Babylonian kings, probably about the year 550 B.C., we are told that when repairing the temple of the Sun-god in this ancient city, he excavated to the depth of 18 cubits, or about 30 ft., into the foundation of the temple, in order to recover the earliest records. He was rewarded in his search by the recovery of the inscribed cylinder of Naram-Sin, the son of Sargon I., who reigned, he says, 3,200 years before his time. Remote as this date places the foundation of the temple, the reign of Sargon and his son Naram-Sin cannot be regarded as the threshold of Babylonian history; for the monuments and records extant in our museums of these kings show that prior to their rule there had been many centuries of national life and development.

The discovery of the site of this ancient temple and the vast ruins of the city which grew up beneath its shadow has already been described in these columns*, but the explorer had at that time uncovered but little of the vast series of halls and corridors, temples, palaces, and offices which formed the citadel of this most ancient Chaldean city. During his last expedition to Babylonia Mr. Rassam has chiefly directed his attention to a thorough exploration of this ancient edifice, and the result has been the recovery of much that is of the highest importance to the archæologist and architect. During the expedition of 1879 and 1880 only a few chambers were uncovered and these not in any connected sequence, so that but a faint idea could be formed of the plan and arrangement of the various edifices forming the Acropolis. The work of the last year however has however uncovered nearly one-half of the buried edifices, and the carefully-prepared plan which the explorer has allowed us to inspect shows for the first time the regular and systematic arrangement of the component parts. Mr. Rassam has himself published a brief account of his work among the ancient cities of Chaldea, but no true estimate of the extent and importance of his work could be formed until the inscribed records and monuments which he had recovered had been deciphered and examined. With these before us we are able to say that the work accomplished during the last expedition, though furnishing no such striking example of ancient art as the Ballawat gates, nevertheless is more important than that of any preceding year. New and important additions are made to this history of the empires of Assyria and Babylonia, and lacunæ, long sources of great confusion, are filled up. The curious memorial stones found in the record office of the temple furnish us with remarkable examples of Babylonian sculpture and symbolic art. But the discoveries made on this site gain an additional importance from the fact that, unlike those made at Nineveh or Nimroud, they are not confined to records of royal and kingly personages, but the great number of private documents, legal and commercial, as well as the tithe rolls and registers of the temple, give us an insight into the social and religious life of the empire at a most interesting period in the history. The great block of sacred and secular edifices which formed the Acropolis of the city of Sippara, consisting of temples, priests' quarters, and schools, together with royal residences and the Government offices, covered an area about 3,800 yards in circuity, the whole being enclosed in a quadrangular block by a strongly-built wall.

The block is placed with the angles to the cardinal points, the south-east and north-western faces being the longest, running 1,500 yards each. Entering the excavations by the southern corner, we find ourselves in the great quadrangle, a large portion of which has been uncovered by the workmen. The whole of this south-eastern face and the greater portion of the central block of the building have been uncovered, and more than 130 chambers with the corridors and squares have been cleared of *débris*. The chambers arranged along the south-east face of the great quadrangle give us a good idea of the construction of the building. The length of the face is 300 ft., the wall being broken at intervals of every 10 ft., by projecting buttresses, the whole being faced with the finest kiln-burned bricks, some of them inscribed with royal names. The six doorways which open into this quadrangle give entrance to a series of ten chambers, which from their size and arrangement were, in all probability, the dwellings of the priests. The chambers are all of the plainest construction, and, on the average, they are generally twice as long as broad. This most striking feature, however, of this block of rooms is the enormous solidity of the walls. The external walls towards the quadrangle are all 10 ft. thick, built of sun-dried bricks with external and internal facings of kiln-burnt bricks. In some cases, however, even this thickness is exceeded, and in one small chamber, whose dimensions are 12 ft. 6 in. by 20 ft., and which was probably a treasury or store-room, the walls are 25 ft. thick on each side. The rooms are usually constructed in pairs, a large ante-room, with a doorway leading into the central court being the public room, a smaller chamber leading out of it used as a private chamber and sleeping-room. Passing along this south-eastern face of the great quadrangle, we come to a pair of rooms of unusual size and highly-finished construction. Entering by a doorway about 6 ft. wide, we find ourselves in a room or corridor of strange proportion. This chamber is 75 ft. long, with a width of only 17 ft. 6 in. It has opening out of it a small inner chamber 15 ft. square. It was in this room that a most interesting and valuable series of records were found, which enable us to gain a considerable knowledge of the history and nature of the temple, and other buildings. In this chamber which his workmen thoroughly excavated, Mr. Rassam found the memorial-stone of King Nebuchadnezzar I. (B.C. 1150), the curious sculptures on which we have already described,* and two other monuments of a similar class, both of them extremely interesting on account of the sculptured bas-reliefs which decorate them, and the inscribed records they furnish. The first of these is a curious square block, bearing a much mutilated inscription of Mili-sipak, a Kassite king who ruled in Babylonia in

* See *Builder*, vol. xlii., p. 473; vol. xliii., p. 546.

* See *Builder*, p. 10, *ante*.

the fourteenth century before the Christian era. The second record is a finely-cut block of black basalt, with sculptured panels, and bearing a long inscription, dated in the reigns of Nabu-ukina-abal and Ninip-kudurutzar, two Babylonian kings whose names were unknown to us until these records were unearthed by Mr. Rassam, and whose reigns are to be placed in the eleventh century before the Christian era. In the same chamber were found records of Nebuchadnezzar II. (B.C. 605), and Nabonidus (B.C. 555), both of whom were most lavish benefactors and restorers of this favoured shrine.

Before proceeding to examine these records we will complete our tour of the excavations. The wall opposite the doorway by which we entered this record-chamber divides it from a second and smaller courtyard, round which are grouped a series of twelve chambers. This courtyard is 75 ft. square, and the whole block bears a most remarkable correspondence to *khans* or blocks of commercial buildings in Baghdad or Hillah. The fact that this block was the registry or chancellerie of the temple is proved by the discovery of more than ten thousand inscribed tablets in one of the large chambers opening into the court. These tablets contain lists of the tithes, dues, and various financial transactions of the temple authorities, and form an almost complete series of memoranda, &c., from B.C. 660-400. Returning to the great court from which we started, and which is in all probability to be identified with the "Court of Bel or Belus," mentioned in the inscription of Nabubaliddina (B.C. 885) which was found in the temple by Mr. Rassam in 1880, we cross the court to examine the great central block. This block, about a dozen chambers of which have been excavated, is, like the main building, protected by an outer buttressed wall of kiln-burned brick. The chambers are arranged in pairs, and open into a central area probably about 150 ft. square. The decorations of some of these chambers were peculiar, the walls being coated with plaster and painted black and white. From this mode of ornamentation it is probable that here was situated the temple of Anunit, the Anatis of the Classics, who was the goddess of the morning and evening star, and whose temple, by its black and white decorations, symbolised her dual attributes. The temple of the Sun-god, the most ancient of the edifices of Sippara, was situated on the north side of this courtyard, and surrounded by several chambers.

To the north-west of the temple of the Sun-god, and about 100 ft. away, was a large block of some twenty chambers, irregular in plan, but which, from the records found, were probably the royal residence, occupied, as we know from the inscribed tablets by Nebuchadnezzar Nabonidus and his son, Belshazzar, — the Belsarutzar of the inscriptions,—Cyrus, and Darius Hystaspis. In the northern and eastern portion of the mounds several other groups of chambers have been uncovered, but their relationship to the others is obscure until further excavations have served to connect them with the more thoroughly explored portions. The great temple, whose ruins are now open to us, and whose lavish supply of records invite us to learn its history, formed a great centre of Babylonian life, and all the changes of the kingdom have left their records upon its walls or in the record chambers.

The most flourishing periods in the temple's history appear to have been: first, in the Middle Ages, that is, from the fourteenth to the tenth century before the Christian era, the time when Assyria was just rising into power; and secondly, during the period of the later Babylonian empire, from B.C. 625—538, when the pious priest-kings Nebuchadnezzar II. and Nabonidus richly endowed its treasury and restored its ruined halls and shrines.

From the fourteenth century until the latter part of the eleventh century, the kingdom of Babylonia was ruled by a dynasty of Kassite or Northern Elamite kings, who had intermarried with Babylonian royal personages and founded the dynasty which Berosus called Chaldean. Among this race the demonology and fetish worship, which had formed the basis of the religion of Babylonia, lingered on, and we find their monuments and inscriptions revealing this superstitious belief in demons and spirits. The memorial-stone of Nebuchadnezzar I., which we have already described, exhibited many examples of quaint representation of the demons and gods who were invoked to protect the memorial. For quaint and grotesque symbolism this record is, however, far surpassed by the memorial-stone of the Kassite king, Mili-Sipak, now exhibited in the Assyrian side-room in the British Museum. From this we gain some idea of the composite figures described by Berosus as in existence before the creation of man, for more extraordinary combinations of human and animal life it is difficult to imagine. Two, however, are particularly interesting. The first is the figure of a serpent-woman; the upper part of the figure is that of a woman winged and full breasted, like the figures of Artemis; the lower extremities are formed of the tails of two serpents intertwined, and terminating in bird-like claws. This curious figure, not unknown in Western grotesque art, is certainly strange to Babylonian mythological symbolism, and it would be interesting if the inscription, unfortunately very mutilated,—had preserved the name of this demon. It, in all probability, represents the Kir-kir-Tiamat, or "Serpent of the Sea," the female demon of darkness with which Merodach fights in the creation legends. This creature was feminine in gender, and had the attributes of a serpent, such as are here figured. Another curious figure, and one which afterwards found its way into Western art, is that of a combination of Pegasus and the Centaur,—a winged horse with the fore part of a human body drawing the bow. This curious Hippo-Sagittarius forms an interesting figure, together with the Scorpion Sagittarius, which occurs on the stone of Nebuchadnezzar.

These monuments of the Kassite kings of the fourteenth century before the Christian era show that the demonology and fetish worship had survived among these people, and had not, like that of the Babylonians, yielded to the purer creed of the Semites. Indeed, it is most probable that the Yezdis, or Devil Worshippers of Hindostan, are a survival of these ancient people, as their dual creed and the worship of the evil spirit seem to correspond to many of the tenets of the Kassi. That the serpent was regarded as the opponent of the great gods, and so invoked to curse the evil-doer, is shown by a passage on the Michaux stone in the Louvre, where Zergina, the owner of certain land, states that on this stone he has placed the emblems of the "spirits of the great gods and of the serpent god," who are to curse with an irremovable curse the person who injures the landmark. The monuments recovered by Mr. Rassam of this period from the temple at Sippara show how this belief in the power of the gods and spirits was current among the common people. Every legal or commercial document of any importance had attached to it certain imprecatory clauses, and among the inscriptions recovered during this last expedition of Mr. Rassam we have a very curious example of this class in the deed of dower of a woman named Gula-Sarbat, the wife of a man named Samas-iddina-Suma. This inscription is engraved on a large basalt boulder, and is accompanied by several interesting sculptures. On the obverse we have a series of four panels, filled with representations of demons similar to those on the stones of Nebuchadnezzar I.; but on the obverse we have figures of the chief parties mentioned in the contract. Above the first figure is inscribed the legend, "The figure of Nabu-ukina-abla, the established king, king of Babylon."

The king is clad in a long and very richly-embroidered robe, upon which we have representations of the worship of the sacred tree by the Anunaki or spirits, and other mythological scenes. The hem is decorated with a flower border and fringed. The king wears on his head a tall cap somewhat similar to that of the Greek priests, richly embroidered and decorated like the robe. The long hair and beard are curled in the style of the Assyrian Court. Like the figures of Merodach-nadin-akhi (B.C. 1120), in the British Museum, the king is represented as wearing shoes, made of some plaited material, probably grass or rushes, similar to the slippers of the Arabs about Baghdad. These shoes were evidently a mark of rank, for we see that the courtier, Ardu-Sisnabi, who stands before the king, wears sandals and not shoes. He carries a bow in his hand, while behind him walks his daughter, the woman Gula-Sarbat, whose deed of dower is inscribed on the stone. Ardu-Sisnabi is clad in a long robe, quite plain, bound round the waste with a broad girdle. He carries in one hand a bow ready strung, and in the other two arrows. His daughter also wears a plain robe, skull cap, and the only decoration or ornament being a massive pair of gold earrings. She bears in her hands some offering for the king.

Without entering into all the complicated details of the inscription, the subject matter is this. The King Nabu-ukina-abla had given an estate to the man Ardu-Sisnabi, the son of Adraddas. There appears to have been an entail or deed of inalienation upon the land, similar to the law of Jubilee return among the Jews upon the estate, and this was only overcome by an addition of 240 pieces of silver to the price paid for the land, making in all 687 pieces of silver. This document is extremely interesting to the student of ancient Babylonian legislation, and also serves to throw light upon many of the legal decisions and terms current in the Talmud. Among the parties to the deeds are priests of the temple of Anunit and of the Sun-god, and it is on account of their participation in the proceedings that the document was placed in the temple treasury.

The two great temples at Sippara were called respectively Bit Parra, "the house of Light," and Bit Ul Bar, "the house of the Star," the former being dedicated to the Sun-god and situated, as Mr. Rassam's explorations have shown, in the centre of the mound. The latter was, in all probability, placed on the north-west side of the great courtyard. An extremely interesting fragment of an astronomical inscription recently discovered by Mr. Pinches, of the British Museum, serves to show that the ancient Babylonians had moved the cardinal points 45 deg., so that the Babylonian east was north-east, and the west south-west. By this interesting discovery we see that the temple discovered by Mr. Rassam,—indeed, all the great temple chambers at Babylon, Borsippa (Bois Nimrud), Ballawat, and Nineveh,—are built east and west, the shrine or cella being at the east end. The goddess Anunit, — the Anatis of the classical writers, whose temple was the second great fane in Sippara,—was "the great goddess" in the Babylonian Pantheon, and the origin of the great Asiatic mother-goddess whose worship extends over the whole Eastern world. Her attributes, as recorded in the inscription of Nabonidus, found by Mr. Rassam, are "lady of battle," "bearer of the bow and mace," "the great mother," she who, with the rising and setting sun, gladdens the heart of the king.

In Assyria, her worship was absorbed into that of the great Istar, as in Phœnicia into that of Ashtaroth, or in the land of the Hittite it became that of Ate, Atargatis, or Artemis. On account of her astronomical character as the planet Venus, the morning and evening star, the temple built for her at Sippara was decorated with black and white, and she is called "the companion of the Sun-god," "the sister of the Sun-god," "the daughter of the Moon-god." These epithets all show the importance of the shrine discovered by Mr. Rassam, and when some of the numerous religious inscriptions are examined it is to be hoped that much light will be thrown on this important element in Babylonian worship.

It would seem to have been Mr. Rassam's mission during this last expedition to succeed where others had failed. No ruin amid the thousands of mounds which stud the plains of Babylonia is so familiar to students as the "Birs Nimrud" or "tower of Nimrod," situated to the west of the ruins of Babylon, and on the right bank of the Euphrates. From the days of Benjamin of Tudela until the present time all explorers and travellers have visited it, and many attempts have been made to explore its ruins; but until this last expedition of Mr. Rassam's the vast mass of *débris* and vitrified brickwork has remained an unsolved problem. After repeated attempts the workmen came upon traces of extensive buildings, more than eighty chambers having been uncovered beneath the shadow of the great mound upon a kind of flat form leading up to it. The buildings were evidently part of the great temple of Nebo, which formed the Acropolis of the city of Borsippa, of which the Birs Nimrud and adjacent mounds mark the ruins. The city of Borsippa, the twin of Babylon, was founded certainly as early as the year B.C. 2750, when the shrine was restored by Khammuragas, a Kassite king, an inscription recording such a work of restoration being preserved in the Louvre. The explorations carried out by Mr. Rassam have laid open a number of chambers, the cheif being a large banqueting-hall, over 90 ft. in length, with ante-chambers leading

into it. This was evidently part of the palace built by Nebuchadnezzar, and afterwards enlarged by Nabonidus. This chamber had been decorated with enamelled bricks similar to those found in the Egyptian temple at Tel El Yahoudeh and at Khorsabad.

The explorations which Mr. Rassam has carried out during this last expedition have served to show that beneath the mounds in Babylonia lie buried treasures which far exceed in importance and antiquity those yet recovered from Assyria. It is to be hoped that the trustees of the British Museum and the Government will relax no effort that may lead to the continuation of the work, which, if properly and efficiently carried out, will furnish results far exceeding the dreams of archæologists, and restore to us whole chapters in the world's history.

ARCHITECTURE AMONG THE POETS.

THERE are two senses in which one may find some interest in the manner in which architecture has been referred to by poets. Such references may, in the first place, throw historical light on the manner in which the art of architecture was regarded at a certain period, and even on the practical facts in regard to the buildings of the age referred to. An incidental reference from a poet forms a kind of unconscious and unpremeditated testimony, sometimes, which is more significant than more definite and intentional historic evidence might be. The other kind of interest is of a more purely intellectual nature; it is that which arises from the employment by the poet of images drawn from architecture, or from the application of poetry to give vivid and picturesque descriptions of architecture. In both cases we are pleased by finding architecture drawn from a semi-practical to a purely poetic sphere, which dignifies it for the moment to an exceptional degree. For as poetry is the most pure exercise of thought and imagination in its highest form, for the poet to draw upon architectural images to heighten the force of his expressions is to put architecture and the associations connected with it to a very high use, and one entirely distinct from the prosaic side of the subject; and, on the other hand, for the poet to employ his power of language and imagery to describe architectural beauty for its own sake, is often a means of suggesting to us new lights on the subject, as well as a proof of the really high interest of the art in itself.

If we begin to look through the pages of poetry for such allusions, however, we shall find that, as with landscape, the taste for architectural picturesqueness, as a subject worth reference and description in poetry, is a comparatively modern one. From a poet's point of view, in fact, architecture is generally a part of a scene, a feature in the landscape, and the feeling for landscape is essentially a modern one. Some modern poets, however, as we shall have occasion to observe, have evinced in their writings a considerable interest in architecture for its own sake, by a number of very effective and picturesque allusions to, and descriptions of, architecture and architectural details. But if we look through the oldest poet we know,—Homer,—we find not only that the references to architecture are very few, but that they are curiously artificial, and hardly convey to our minds the idea of any real possible building. They seem to be the references, in short, of an age of goldsmith's work, in which everything is imagined as of metal, and mostly of the precious metals. When Ulysses comes to the palace of Nausicaa's father, for instance, we have one of the very few bits of anything like detailed description of architecture in the Homeric poems (in the Iliad there is not one reference that can be called descriptive), but it is evidently an entirely fanciful description, illustrating the semi-barbaric taste of the age, speaking of silver columns with brazen bases, the walls of massy brass, &c., the lintels of silver; and the probability is that the poet was merely indulging his luxuriant fancy in this way, conscious that buildings in poetry, like castles in the air, may be produced regardless of expense. Remarkable is the contrast between this and the most striking of the few references in Virgil to architecture,—the passage, namely, in which he describes how, during the sack of Troy, the outer doors of Priam's palace were broken through, and how the long corridors and halls suddenly appeared to view, in strange contrast with the tumult and clamour in the streets:—

> "Ipse inter primos, correptâ dura bipenni
> Limina perrumpit, postesque a cardine vellit
> Æratos; jamque excisâ trabe firma cavavit
> Robora, et ingentem lato dedit ore fenestram;
> Apparet domus intus, et atria longa patescunt;
> Apparent Priami et veterum penetralia regum,
> Armatosque vident stantes in limine primo."*
> *Æneid*, book ii.

This is in quite a different tone from the Homeric architecture; it is the thought of a poet of a civilised age, accustomed himself to frequent great houses with long vistas through ranges of rooms, and introducing into his poem architecture as it appeared in his own experience. It may be thought by some that the Homeric description, though it must be false as to the facts indicated in the idea of walls and columns of solid brass and silver, may be true as to the appearance, and may be only his way of describing the plating of the walls and columns with precious metal, which very probably was a practice to some extent, judging from the great abundance of gold which must have been available and in use at that time. But this does not tally with the description, nor could even gold and silver plating have been carried out in a palace so large as we are evidently intended to suppose that of the king of Phæacia to be. And it is noticeable that we find the same tendency towards gold and silver architecture in other ancient descriptions. Every one will remember the description of the celestial city in the twenty-second chapter of the Book of Revelations,—the "walls of jasper," the city and streets "of pure gold, like unto clear glass," the courses of the walls set with precious stones, and the gates each of a single pearl. This gorgeous imagination, which probably belongs to the third or fourth century of the Christian era, seems in keeping with that taste for rich and gorgeous effect in gilding and colour which was to be exemplified not so very much later in the Byzantine church architecture. In the Book of Revelations, however, there is hardly a pretence at a description drawn from any real model; the gold is "transparent"; the materials are drawn from an imagination which set no bounds to the beauty even of mere material in the heavenly city. But it is significant to find, in reference to this Homeric description, that when we turn to Chaucer we find, in his few and brief architectural references, just the same taste for metal architecture, as if this were a natural tendency in poets of an early and unsophisticated school of poetry. In the "Assembly of Foules" the poet says:—

> "And upon pillars great of jasper long,
> I sawe a temple of brass y-founded strong";

and in the "Court of Love" he finds the castle wherein dwelt the king of love,—

> "For I beheld the toures high and strong,
> And high pinnacles, large of hight and long,
> With plate of gold bespred on every side,
> And precious stones, the stone werke for to hide.
> * * * * *
> No saphire in Inde, ne rubie rich of price,
> There lacked than, nor emeraud so grene."

The latter point resembles the idea in the Book of Revelations, but it will be observed that Chaucer † is more practical here, and distinctly describes the gold and precious stones as *appliqués* only, to hide the stone, not as integral parts of the structure. In his description of the Temple of Mars, in "The Knightes Tale," he apparently chooses his materials out of an idea of what should be in keeping with the character of the deity therein housed:—

> "Ther stood the temple of Mars armipotent,
> Wrought all of burnedt steele, of which th' entree
> Was longe and streite, and gastly for to see.
> * * * * *
> The northern light in at the dore shone,
> For window on the wall ne was ther none
> Thurgh which men mighten any light discerne.
> The dore was all of athament eterne,
> Ycleneched overthwart and endelong,
> With yren tough, and, for to make it strong,
> Every piler the temple to sustene
> Was tonne-gret, of yren bright and shene."

The point, that there was no light but through the door, is noticeable: Chaucer had no notion of a hypæthral temple evidently. But it shows how little poets in Chaucer's day thought of drawing upon actual architecture in their poetical descriptions, that Chaucer, living in the midst of the great Gothic building age, not quite in its noblest but in its richest phase, and with the monuments of its greatest style still comparatively new around him, never refers in any way to the beauty of the Mediæval cathedrals. The "Knightes Tale" is told on the pilgrimage to the lovely cathedral at Salisbury, then almost in its pristine beauty; but the only architectural images are of these temples with steel pillars, and so on. The fact is doubly significant. It confirms, on the one hand, the opinion which has been sometimes suggested, that the sentiment which we have in regard to the Mediæval cathedrals did not exist in the age which built them. Chaucer reflects the spirit of the society of his day in a hundred ways, but enthusiasm for cathedral architecture appears nowhere in his writings; the only direct reference to Mediæval building is in the practical remark put into the mouth of a monk, in defence of his exacting demands on one of his parishioners,—

> "By God, we owe yit fortie pound for stones,"

a significant indication of the light in which these great ecclesiastical building achievements may have been regarded by the laity, whose mouthpiece Chaucer is always; the clergy, the "regulars" at least, are only marks for his satire. What is also to be observed in regard to these references of Chaucer's is that they seem to imply an acquaintance, in some way or other, with Classic forms of architecture, for the words convey that idea; the iron pillars "tonne-gret," *i.e.*, of a ton weight, must have been single columns to be regarded as one piece; not built-up piers. There is a little bit of decorative work alluded to in the same poem, which seems more Gothic in character, and as if taken from some Mediæval shrine. Theseus made three "oratories,"—one to Venus, one to Mars,—

> "And northward, in a touret on the wall,
> Of alabaster white and red corall,
> An oratorie riche for to see,
> In worship of Diane of chastitee."

Chaucer may be expected, in fact, to mix up suggestions of pagan architecture (as far as he had any hint of it) with Christian, just as he and other Mediæval poets mingled Classical with Scriptural images. There is, again in the same poem, the longest and most elaborate of the "Canterbury Tales," a description of the amphitheatre made for the combat between Palamon and Arcite to take place in, which is interesting as indicating a very comprehensive idea in Chaucer's mind as to the requirements for doing the thing really well:—

> "The circuite a mile was about,
> Walled of stone, and diched all without.
> Round was the shape in manner of a compas,
> Full of degrees, the hight of sixty pas,"—

(This appears to refer to what would be now called the *section* of the amphitheatre, which was such as to rise to the height of sixty paces on the exterior limit. He goes on to say how the seats were arranged so that no spectator should intercept the view from another),—

> "That when a man was set on o degree,
> Him letted not his felaw for to see.
> Estward ther stood a gate of marbel white,
> Westward right swiche another in th' opposite.
> And shortly to concluden, swiche a place
> Was never in erthe, in so litel a space,
> For in the land ther n'as no craftes man
> That geometric or arsmetrike can,
> Ne portreiour, ne kerver of images,
> That Theseus ne yaf him mete and wages,
> The theatre for to maken and devise."

Chaucer here shows the complete idea of architecture as the result of the combined forces of the geometer and the artist. This poem is unquestionably Chaucer himself. The famous description of the palace of glass in "Chaucer's Dream" is too often quoted to need citation, and its authenticity is questioned; but the passage quoted above seems to come, not inappropriately, from "Geoffrey Chaucer, clerk of workes."

When we look at Spenser, who, as has been often observed, affected an obsolete style, and imitated to some extent the style and orthography of the Chaucer school, we find in his few touches of architecture just the same characteristics as in the Chaucerian poems. Sometimes he repeats the purely bullion architecture, as we may call it,—indeed, he uses that very phrase ("Faerie Queene, iii. 1. 32):—

> "The roiall riches and exceeding cost
> Of every pillur and of every post,
> Which all of parest bullion framed were,
> And with great perles and pretious stoues embost;
> That the bright glitter of their beames cleare
> Did sparkle forth great light, and glorious did
> appeare."

* "He himself" (Automedon) "among the foremost breaks through the entrance with his two-handed axe, and tears from the hinges the brass-covered doors; now he has cut into the heart of the lintel itself, and left only a huge wide-gaping opening; the long halls of the mansion lie open to view; the interior of the house, the private chambers of Priam and of the ancient kings are laid bare, and behold armed men standing at their very doors."

† The authorship of both the poems quoted is, in fact, doubtful; but they belong to the Chaucerian epoch, and it is convenient to class them as Chaucer's, in default of any other known author.

‡ Burnished.

This is very sugar-candy architecture. At another time he seems a little more practical, and is content with merely overlaying the building materials with precious metals (*Ibid.*, i. 4. 4); but this on examination turns out to be only an allegory, to show the false display of Duessa's Castle :—

"A stately palace built of squared bricke,
Which cunningly was without mortar laid,
Whose walls were high, but nothing strong or thick,
And golden foile all over them displaied
That purest skye with brightnesse they dismaid;
High lifted up were many loftie towres,
And goodly galleries far over laid,
Full of faire windowes and delightful bowres;
And on the top a diall told the timely howres.

It was a goodly heape for to behould,
And spake the praises of the workman's witt;
But full great pittie, that so faire a mould
Did on so weak foundation ever sitt:
For on a sandie hill, that still did flitt
And fall away, it mounted was full hie:
That every breath of heaven shaked itt:
And all the under partes, that few could spie,
Were ruinous and old, but painted cunningly."

It would not be difficult to find some Duessa's Castles, out of Fairyland, to fit part at least of this description; but to the actual facts of architecture there is not a single reference in Spenser's poem, beyond the occasional mention of castles as frequently recurring phenomena.

The transition from Spenser to Milton is more natural than to Shakspeare, although a little out of chronology. Milton's stronger and more practical mind was less given to mere toys of illustration than Spenser, yet he in his epic is carried away, not unnaturally, into the same architectural ideas as those which the Book of Revelations suggests; a celestial architecture of gold and precious stones sparkles also in his Heaven, and even in the opposite region, where the structure rose beside the burning lake,—

"Built like a temple, where pilasters round
Were set, and Doric pillars overlaid
With golden architrave; nor did there want
Cornice or frieze, with bossy sculptures graven;
The roof was fretted gold."

Milton, who knew the whole range of classic and Italian literature, was of course familiar with the designations of the main parts of the temple, cornice, frieze, &c.; but the most notable expression in the above quotation is that of the "bossy sculptures," for the epithet shows that Milton was alive to the decorative effect of sculpture as a part of the architecture, as supplying a "bossy" surface in contrast with the smooth surface of other portions of the building. The use of the expression implies a critical eye for effect. The Gate of Heaven, in book iii., is described more in the vague and purely ideal manner in which John Martin used to paint; the gate is seen at the apex of the vast flight of steps, "degrees magnificent," ascending to the wall of Heaven, "at top whereof" (*i.e.* of the steps) -

"But far more rich, appear'd
The work as of a kingly palace-gate,
With frontispiece of diamond and gold,
Embellish'd; thick with sparkling orient gems
The portal shone, inimitable on earth
By model or by shading pencil drawn."

The phrase "inimitable on earth," is obviously a kind of excuse on the part of the poet for his inability to give any more precise description, he prefers to leave it vague. The idea, at best, is somewhat poor and tawdry; so is the description of the royal seat at which the rebel angels mustered,—

"With pyramids and towers
From diamond quarries hewn and rocks of gold."

In "Paradise Regained" we have the effort to describe, not celestial but terrestrial architecture, that of Rome and Greece, in the vision of "all the kingdoms of this world and the glory of them" shown to the Saviour from the lofty mountain; but the architectural vision of the Tempter is not very clear, and, acting as showman to the view of ancient Rome, he describes architectural features which certainly were not really there,—

"There the Capitol thou seest
Above the rest lifting his stately head
On the Tarpeian rock, her citadel
Impregnable, and there Mount Palatine,
The imperial palace, compass huge, and high
The structure, skill of noblest architects,
With *gilded battlements*, conspicuous far,
Turrets, and terraces, and *glittering spires*."

It is worth while to notice this falsity of impression about ancient Roman architecture, because we shall see in another number with what admirable truth and vigour the impression of it is conveyed by a living poet who really understands the subject. Milton shows his practical turn of mind, however, in describing the demolition of the Philistian Theatre by Samson; he takes care to account, as far as he can, for the fact that Samson should have been able by one effort to bring down the whole building; it was, he tells us,—

"a spacious theatre,
Half round, on two main pillars vaulted high,"

and the idea in his mind seems to have been that of a vault carried over from the side walls, and meeting on coupled columns in the axis of the theatre; a construction which, on a small scale (and the theatre was to hold only "the Philistian lords,"—the vulgar stood without), is not impossible, though, of course, more easily conceivable if we imagine it as not "half-round," but an amphitheatre with a central pier, on the same principle as some of the Mediæval chapter-houses. This does not seem to have occurred to Milton, but it is creditable to the logical side of his character as a poet, that he evidently felt the necessity of making the catastrophe practicable, and endeavoured to explain how it was so. Milton, however, does give descriptions of actual architectural effects, in a way that Chaucer and Spenser never attempt; as not only in the too well-known passage in "Il Penseroso" describing the cathedral and its cloisters and its vaulted roof and stained windows (which in later days Milton would probably have helped to break down), but in the charming bit of landscape in "L'Allegro," in which we see towers and battlements,—

"Bosom'd high and tufted trees,"

A passage showing that Milton appreciated the beautiful effect of architecture of the castle type half seen amid thick foliage, as painters love to show it.

Our great poet *par excellence* is little troubled with architectural fancies; he cared more for the people than for the houses they lived in or the churches they worshipped in; and the allusions of any kind to architecture are few and far between. There is no hint of "local colour" in the scenery of the "Merchant of Venice," for instance, beyond the mere use of the word Rialto and the reference to a gondola; there is Southern passion enough in some of the characters, but nothing of it in the surroundings; and the one direct architectural reference or illustration is one that is completely English, and has been before quoted as showing how little stone building was indulged in then,—

"Should I go to church
And see the holy edifice of stone,
And not bethink me straight of dangerous rocks,"

as if it were only in church-going that he were likely to see a stone building. This shows emphatically how Shakspeare drew his scenic ideas from what was before his eyes; one would have supposed that the slightest information he could have gained about Venice would have shown how inapplicable was such a simile to the scene and the speaker, living in a city full of stone palaces. Shakspeare seems to have attached a special idea of dignity and spaciousness to the word "temple," which he brings in when he wishes to be specially dignified, as in the magnificent expression of good wishes to the city in "Coriolanus,"—

"The honour'd gods
Keep Rome in safety, and the chairs of Justice
Supplied with worthy men! Plant love among us!
Throng our large temples with the shows of peace,
And not our streets with war!"

and again in the well-known and still finer passage in the "Tempest," where he brings in the "solemn temples" and "cloud-capped towers" (the latter expression a splendid hyperbole) as images of the most lasting and immovable things on earth. But in Shakspeare, also, it is to be observed, we find, for the first time in our review, the use of architectural imagery, not merely descriptive, but to heighten poetic expression. Of this, which is the highest use to which poetry can put architecture, we find two examples, one in an exquisite line in the sonnets, where he compares the leafless trees in winter to

"Bare ruined choirs, where late the sweet birds sang."

The other in a beautiful speech of *Valentine's*, in that very unequal play, "The Two Gentlemen of Verona" (act v., sc. 4) :—

"O thou that dost inhabit in my breast,
Leave not the mansion so long tenantless;
Lest, growing ruinous, the building fall,
And leave no memory of what it was!"

This is a noble poetic use of architectural imagery, and in a very high strain; it is the more to be regretted that he spoils it immediately after in the next line, with one of his "conceits" :—

"Repair me with thy presence, Silvia,"

the unfortunate word "repair" immediately suggesting a contract for repairs. That might be one of the lines that Jonson wished Shakspeare had "blotted." It is again observable that Verona, the city the very name of which is so full of architectural suggestiveness to the modern poet or reader, suggests nothing whatever to Shakspeare: it was Verona to him, a place on the map, "and it was nothing more."

In looking over some of the less-known English poets, we shall find some interesting and curious architectural reflections: "You shall see anon."

THE LATEST ON THE LIGHTING OF GREEK TEMPLES.

A NEW publication by Mr. Fergusson* always promises materials for thought, provocations of controversy, presentations of novel views that sometimes startle us as paradoxical, sometimes as rather more than paradoxical, but which quite as frequently force us to a studious revision of our most settled opinions, or capture our convictions straight off, and carry us willingly away into new fields of fruitful speculation. A writer who has the unhesitating courage of his opinions is always inspiriting, and all the more when those opinions are exceptionally courageous, and in neither of these respects will there ever have been any complaint to make of Mr. Fergusson. Least of all is there any disappointment prepared for us in the present *brochure*.

"The Parthenon" is the leading title given to "An Essay on the Mode in which Light was introduced into Greek and Roman Temples," and with all appropriateness; for though confessedly "but a small portion of the book is devoted directly to the description of the Parthenon," all the discussions it contains are collateral to the question which is chiefly interesting,—in what manner was the noblest work of Hellenic genius in architecture completed so as fitly and adequately to display the noblest example of plastic art, the statue of Athene, of ivory and gold, by Phidias, the appropriate housing of which was the purpose of the structure. Until this problem is solved uncertainty must hover about our conception of the degree to which the Athenian architects succeeded in producing a truly noble effect within the temple; in designing an interior of such majesty of proportion and grace as to be worthy of the unrivalled dignity of the exterior, and of the personified genius of the nation.

It is too well known that the ravages of time and barbarism have left us no direct monumental evidence to control or guide speculation; we are also grudged any literary record. In templar as in naval architecture,—as to the lighting of a naos and as to the arrangement of the banks of oars of a trireme,—a paragraph or two of a few lines by Livy, Vitruvius, Pausanias, or Julius Pollux that would not have taken them one sentence out of their way, would have saved us all the difficulty. The ship arsenal of Philo, as we have lately seen, was thoroughly lighted by window openings in both side and end walls, and provided with shutters which were of bronze, no doubt for security. There were windows in the western wall of the Erechtheum which would light one-half of the double temple; the very small temples, usually Ionic, were certainly sufficiently lighted from the entrance-door; and this may even have been the case with the opisthodomus of the Parthenon, which was used as a treasury, and was less deep than wide. But it is certain that windows were never inserted in the walls either on front or flank of the larger peristylar temples, which were divided within by rows of columns, in some cases supporting galleries, and were far too deep to receive sufficient illumination through the doorway, even though this had not been darkened by a pronaos in front of it, as well as by the exterior colonnade. The supposition that darkness was tolerated within them unless for the precarious glimmer of lamps or the flare of smoky torches has been thought worth putting forward, but it is not worth discussing. The requisite light of day, therefore, in these instances must have been admitted from above through the roof; in the latitudes in question very moderate openings are sufficient, so diffusive is the sunlight; but whatever may be the

* The Parthenon; an Essay on the Mode by which Light was introduced into Greek and Roman Temples. By Jas. Fergusson, F.R.S., &c. London: John Murray. 1883.

restriction of opening when the employment of neither glass nor even of translucent stone is to be assumed, the question of the most appropriate place for the openings is seriously complicated by the difficulty of keeping out heavy downfall of rain and snow in ordinary cases, and especially in the not unfrequent cases of storms of wind of tempestuous violence. The reports of those who have had experience of scaffolding on the Acropolis oblige us to take driving winds of great force and sudden gusts into very serious consideration.

One of Mr. Fergusson's conclusions,—changing his order of enumeration,—is that "Corinthian temples were, as a rule, lighted by hypæthra or pseudo-hypæthra." Vitruvius speaks of an hypæthral temple, of which that of Jupiter Olympius at Athens is his example, as "open to the sky in the middle." As the breadth of the nave here was nearly 100 ft., it is tempting to infer that the difficulty of roofing it was relieved by a central open court, or *cortile*; a sacred area free to the sky. The interpretation adopted by Mr. Fergusson, and fully illustrated in the first plate, is that the opening to the sky was intermediate between the portico and naos, above a pronaos, of such width as to allow light to penetrate to the naos through a vertical opening in the cross-wall,—as if, in fact, through an east window. The structural requirements of the problem, as thus dealt with, are worked out with surprising ingenuity and resource; the arrangement is clearly quite possible; to what extent it is either probable or plausible could only be appreciated after full hearing of counter arguments which cannot be at present either anticipated or taken for granted. The challenge is given fairly and frankly enough, and claims a response in like spirit.

Another conclusion recommended for acceptance is, that "no temple in the ancient world with the solitary exception of the Pantheon at Rome,—was lighted by a horizontal as contradistinguished from a vertical, opening." This is a thesis which it seems desperate to maintain in its full generality, considering how far we are from possessing details and descriptions of all the temples in the ancient world. Even if we reduce the universality of the *dictum*, it grates somewhat harshly, though it may be only on hasty assumptions, traditions, and prejudices. Difficulties as to inlet of weather apart, it is impossible to imagine a large area and lofty apartment more perfectly and beautifully lighted than the Pantheon by the light that flows in through the comparatively small circular opening at the crown of its cupola. The coffering of the dome interiorly between the ribs, is a direct transference from the lacunaria of the horizontal ceilings of Greek architecture; and imitation in this respect may be not unfairly held to suggest that the curvilinear opening is also a modified transference from a central rectangular opening between crossing beams. Nay, it may be said that we have representations of such openings in horizontal ceilings. It is difficult to interpret otherwise the ceiling, Plate 55, of Wood's Palmyra, which shows an oblong divided into small coffers, with the exception of two blank squares, each equal to sixteen of the smaller, and occupied by what are apparently representations of the couple to whom the tomb pertained, with the open sky beyond them. In Plate 16 we have examples from recesses in a small temple. Here a circle is inserted in a large central square, and that it is to be taken as representing an opening to the sky, is made clearer by a surrounding border decorated with the signs of the Zodiac. A rock-cut model of a temple at Cyrene from Captain Beechey's Travels, may be pressed into the service of this argument, though engraved by Mr. Fergusson, p. 45, in a different connexion. It represents a peripteral temple, bearing on the roof, across the ridge and equidistant from either front, a flat slab, which covers a portion of the tiles on either side. This is regarded by Mr. Fergusson as a representation, perhaps carelessly copied, of an attic; but it is quite open to be regarded as the frame of a square, within which were contrived, it may be several, openings carried down to the lacunaria of a flat ceiling. Such a margin might evidently be made available for the accommodation and working of a shutter. There seems to be very much in favour of managing a top light and a single light, or at least light from a single direction, when it was a matter of importance to display worthily the very noblest masterpiece of Greek sculpture,—in favour, that is, of light admitted, not from one side of it, or from both sides, but on the line of the very axis of the naos. So much for conjecture and speculation in this direction; for he will be daring indeed who will pretend to have laid by this process a basis for certainty. When the argument so far is looked at with most indulgence or most predilection, the consciousness still remains that the storm-gods have to be reckoned with. Doubtless, when we consider the ingenuity and perfect skill in execution, of which the Greeks have left an example in the marble tiling of the temple at Bassæ, we are called upon to credit them with being equal to contrivances which should on occasion preclude the entrance of storm-waters from without, or deal with them so as to carry them off harmlessly from within. But as regards our own position, until we can suggest forms of contrivances for one or other of these contingencies, which shall recommend themselves as both practicable and consistent with beauty, it is clear that we are left with the unsolved knot of the problem still on our hands. That a central opening would involve a disagreeable break in the ridge-line of the roof,—a broken-backed effect,—is not to be apprehended. The slope of the Greek roof is so moderate that the parapet of the opening of which the Cyrene tomb gives a model, might easily equal, or even slightly exceed, the ridge-line in height. It may even be believed that some advantage would accrue from the horizontal border of the opening being visible from certain aspects of the building, and in consequence taken for granted mentally from all. A manifest expression of a provision for lighting an apartment so spacious as the naos of the Parthenon, behind its enveloping colonnade, seems necessary to preclude the unpleasant suggestion that it must be a dark chamber.

The main conclusion which Mr. Fergusson arrives at as to the lighting of all Grecian Doric peristylar temples, is obtained in a very different direction, and enforced by arguments which he has "no fear that anything will be discovered to invalidate." He believes it possible to prove, in fact, that light was admitted to these by clearstories; and if proved it may be, it will certainly be by such arguments and illustrations as he marshals and accumulates. In two plates, sections are provided of restorations of the Parthenon at Athens and Apollo at Bassæ, which exhibit, with unhesitating decision and directness the application of this principle. In the temple at Bassæ openings of the breadth of two of the marble tiles are placed conjecturally over the ceiled spaces between the Ionic columns of the naos and the side wall; any rain-water or melting snow that might enter here directly from above would fall on the inclined surface of a stone, which is introduced to cover the lacunaria stone, and discharge by a perforated channel into the ambulatory. The light admitted in this manner through the roof-opening would pass to the naos diffusively, though obliquely, through vertical clearstory windows opened from space to space above the sculptured frieze. That these arrangements would give sufficient light to the naos there can be no reasonable doubt, and as little that they would admit of easy protection from the violence of the weather, even in this peculiarly bleak district of Arcadia. There is not wanting even a glimpse of partial confirmation from monumental remains. Two fragments of marble tiling were found, and drawn by the original explorers of the ruins, which presented a moderately-raised ridge round a central perforation, slightly rounded off at the corners. There appears to be no alternative but to assign the openings on the slope of the roof thus plainly indicated either to the position given to them by Mr. Fergusson, or else to place them nearer to the ridge, where they would come over the body of the naos between the lateral ranges of Ionic columns. It requires some courage to undertake to maintain the feasibility of either of these adjustments in view of all the difficulties; but it would require, probably, most courage to contest the superior feasibility of Mr. Fergusson's preference. He is, however, content to treat one inconvenience lightly which we cannot but think that he would have done well and be equal to grapple with; that is, the discharge of storm-water which would often be neither trifling nor of brief continuance, into the ambulatory.

The clearstory opening which Mr. Fergusson proposes, is accurately described by him as an internal metope; but whether he can make good his appropriation to it of the Greek word *opaion* may be more doubtful. Plutarch, in the life of Pericles, speaks of the *opaion* of the great hall of the mysteries of Eleusis as an architectural work of importance; and if the word is to be applied to roofs and openings of less importance, it must, at least, be appropriated to the perforation of the roof or ceiling, whether connected with a clearstory or not. In a fragment of Diphilus, a poet of the new comedy, we have part of the speech of a youth who says that he is peeping through the *opaion* tile to catch a sight of a pretty girl. The lexicographer Photuis explains this tile as a chimney-pot; such seems a fair translation of his phrase, but its title would apply accurately to the perforated marble tile of the Phigaleian temple.

The section of the restored Parthenon shows the application of the same system to the larger temple, and perhaps under somewhat less embarrassing circumstances. The space at command for the clearstory is but pinched at Bassæ, but the dimensions of the Parthenon allow a proportionally greater height, as some will no doubt say, to play with. The difficulty as to discharge of rain-water remains; and it is open to serious question how far the great work of Phidias would be advantaged by exposure to cross lights from either side. That the naos of the Parthenon had an open roof like a Mediæval basilica, that its construction was largely under obligations to bronze, and that the underside of the marble tiles was exposed, all these and some others are suggestions which give such a wrench to long-cherished, if it must be so, to preconceived opinions and prejudices, that it will not surprise any, unless it may be the accomplished author, if "the boldest holds his breath for a time." The author, indeed, must have some indulgence for human weakness. He himself may well be inspired with confidence in a novel theory from the experience on which he may well be congratulated, that in many another instance he has only had to wait, whether patiently or not, for the lapse of time, to find that conjectures quite as surprising, as boldly hazarded and not less vehemently contested, than these are ever likely to be, have come at last to be accepted quite as universally as any reasonable man can expect in this world a theory to be that is merely reasonable. Students of architecture may therefore congratulate themselves on having among them, on having at their head, a writer who does not spare himself when a crisis occurs in a cause which all have at heart. It may be safely said that the question as to the lighting of Greek temples is brought by this book as near to solution as any question can be, that is only susceptible of absolute decision by the discovery of ancient remains, ancient representations, or ancient literary testimony that admits of no ambiguity. It is not likely, and indeed it is not to be desired, that Mr. Fergusson's conclusions should remain undisputed. The more freely and frankly they are put to the test the better. He himself anticipates that his views may be characterised "ingenious, but improbable"; but, in that case, he is fully entitled to challenge the production of a counter suggestion which, whether equally ingenious or not, has the greater merit of being more probable. For ourselves we have so far endeavoured to hold the balance even, as befits those whose function it is to welcome arguments from any quarter that are likely to advance knowledge by new acquisitions, to diffuse what is already known, or to stimulate curiosity and give tone to healthy and honest controversy.

Surveyorship, Deal.—At a meeting of the Town Council of the borough of Deal, held on the 5th of April inst.; the principal business transacted was the election of a surveyor from the nine candidates, selected at a previous meeting, viz.:—Mr. Buckham (Hereford), Mr. Dryland (Folkestone), Mr. Dunkenfield (Rochdale), Mr. Hills (London), Mr. Wakeham (King's Lynn), and Messrs. Redman, Hayman, Stunt, and Collins (local men). Each candidate appeared before the Council, and was examined as to his general acquaintance with municipal work, road-making, &c. Eventually it was resolved that Mr. Alfred Dryland be elected as Surveyor and Inspector of Nuisances. Mr. Dryland is at present employed as assistant to the Borough Engineer of Folkestone (Mr. A. W. Conquest), with whom he served his articles. There were 100 candidates for the appointment.

ORGAN-CASES AND ORGANS.

THAT so little study should have been given to the subject of organ-cases by the architects and archæologists of the "Revival" is indeed strange. It is true that the Elder Pugin designed very elegant organ-cases for Jesus Chapel, Cambridge, and Ushaw College, near Durham (the latter was never executed), and that several good cases have recently been erected from designs of the late Sir G. Scott, Mr. G. F. Bodley, A.R.A., Mr. Somers Clarke, and the Rev. F. H. Sutton; also that we have had publications upon the subject by Mr. Sutton and others; that papers have been read before the Architectural Association by Mr. Somers Clarke, and Mr. H. W. Brewer, and a drawing of the splendid old organ-case in the Cathedral of Hertogenbosch (Bois-le-Duc), by the last-named gentleman, accompanied by remarks upon ancient cases existing in Holland and Germany, was published a few years back in the *Builder*; yet it may certainly be said that no single article of church furniture has received so little attention, and for this reason alone, if for no other, we gladly welcome such a work as that by Mr. Hill, just now published.* But when we add that the book in question is carefully written and illustrated by nearly forty photo-lithographs, folio size, reproduced from drawings made specially for the work by Mr. Hill himself, and that many of the organ-cases sketched have never before been illustrated, the great value of the book both to the professional architect and the archæologist can scarcely be over-rated. It is, in fact, the only "text book" upon the subject yet published, and thus supplies a want which has long been felt by all who have had their attention called to this very important and necessary article of church furniture.

What, at once, strikes us in turning over the leaves of Mr. Hill's handsomely got-up volume is the extraordinary variety displayed in the ancient designs, the perfectly marvellous originality, and almost endless power of invention displayed by the Mediæval and Renaissance architects in their treatment of the organ-case. In fact, their remarkable versatility and power are nowhere more conspicuous; and, what makes the matter somewhat remarkable, is the fact that nearly all the existing examples date from a period which we are in the habit of regarding as marking the decline of art.

The earliest organ-case supposed to exist in any European church is to be seen at Sion, in Switzerland. Mr. Hill considers that it dates from the close of the fourteenth century. The instrument is small, only about 12 ft. high and 6 ft. wide; the pipes are arranged in two square "towers," and a gable, situated between them. The "shades" are formed by compositions of rather elegant curvilinear tracery. The front of the organ is provided with shutters richly painted, the subjects depicted being Our Lord and St. Mary Magdalen on one side, and St. Catherine kneeling before the Virgin Mary and the Divine infant, on the other. The lower portion of the case is plain in construction, but painted with a kind of scroll pattern. It will be noticed that here, as in nearly all the organ-cases illustrated and described by Mr. Hill, the upper portion of the case is bracketed out at the sides, over the lower portion, or "trunk," of the organ. The next example in point of date is the Church of Alcala de Henares, in Spain. This is a rather larger and more elaborate case than that at Sion. The front is composed of a central tower and two "flats" filled with pipes, and crowned by three open-work spires. Like the Sion example we have here also the shutters or doors, but no decoration is shown upon them. Unlike the Sion case, however, this is not bracketed over at the sides, so that the "trunk" and upper portion of the case are of the same width, and a comparison of the two designs will, we think, convince every one how much the Sion case gains by this treatment. The only other Mediæval case illustrated by Mr. Hill which does not possess this bracketing-out is the grand case of the organ in Perpignan Cathedral. Now, as Perpignan was formerly in Spain, and as these are the only two cases illustrated from that country, it seems probable to us that the absence of this very general feature is a peculiarity of Spanish organ-cases. Mr. Hill speaks highly of Spanish organ-cases, but we must confess that we like the two Spanish examples less than most others given in the book. The absence of the corbelling, or bracketing-over at the sides, gives the instrument a square, heavy, clumsy look.

The cases at Sion and Alcala both enclose very small instruments, but as the size and requirements of the organ demanded greater space, the Mediæval architects were quite prepared to meet the demand upon their powers of invention, and we find towards the close of the fifteenth century the truly magnificent organ-cases of Dortmund and Strasbourg. The former is one of the most valuable examples given by Mr. Hill; it consists of three large semicircular towers, separated by flats. The upper portion of the case very boldly corbelled out at the sides, the pipe shades are finely carved with pierced foliage, and the whole is is crowned by lofty open crestings; the trunk is richly panelled and carved, and the whole is supported upon a surprisingly rich wooden gallery. The organ-case is thoroughly Gothic, but the gallery has a touch of Renaissance about it. Mr. Hill considers the two to be of about the same date, but we cannot help thinking that, although the projecting semi-hexagonal portion of the loft may be coeval with the organ-case, the two flat portions at the sides are some half-century later.

What makes the Dortmund case so interesting is the fact that it would exactly adapt itself to our present wants; it could, in fact, contain a moderately-sized organ, just such a one as would be required in an ordinary parochial church.

A few years later in date than the Dortmund case is the magnificent example in the Marien-kirche at Lübeck, an immense instrument, 80 ft. high and 40 ft. wide, enclosed in a case adorned with a profusion of splendid tracery, carving, and decoration, filling up the whole west end of the church. We often, nowadays, hear architects complain that they have to accommodate large organs in their churches. Yet in the year 1504, the old German architects or builders were not daunted at having to find room and design a case for an instrument at least four times the size of those over which our present architects raise such difficulties. Mr. Hill very properly does not confine his descriptions and illustrations to Gothic organ-cases, but carries his subject down through the Renaissance period to the year 1740, the latest example, in point of date, being that from the Cathedral of Wurzburg, in Bavaria. The numerous superb Renaissance examples given, must justify the course pursued, even to the most exclusive admirers of Gothic architecture. Grander examples of church furniture than the great Renaissance organ-cases of the Cathedrals of Le Mans, St. Brieuc, and Hertogenbosch, or those from the churches of Argentan, Caudebec, St. Bertrand de Comminges, Augsburg, and Stralsund, could not be conceived, and it is certainly deeply to be regretted that either the opportunity or the ability to design such works appears to be now wanting. As Mr. Hill observes, nothing can be imagined more dismal and wretched, both in point of design and construction, than the general run of organ-cases erected in our churches and music-rooms. The author makes some remarks upon this subject which we will quote in his own words:—

"The present Gothic revival has practically done nothing towards promoting a more intimate knowledge of the true characteristics of these ancient works of art (organ-cases), for the modern Gothic case is nearly always the most miserable caricature of Mediæval work; and as for Renaissance examples, they are almost invariably considered out of place in a Gothic church, and are thus never studied with a view to their being adopted as models for architects of the present day. . . . . Many good organs were built in England during the seventeenth and eighteenth centuries, and good cases were made to enclose them, and yet it can scarcely be denied that, at the present time, the organ-case is one of the most miserable and inconsistent pieces of work that has resulted from the late revival of ecclesiastical art. It is very rarely that any attempt whatever is made to surround the instrument with woodwork of architectural importance. But when this is the case, complete failure is almost invariably the result, through want of knowledge, on the part of the architect, of the true principles which govern the beautiful designs exhibited by these ancient examples of woodwork."

Of course, as Mr. Hill points out, there are others who are still more to blame than architects, and these are those bodies called "organ committees," who, anxious to get all they possibly can for their money, simply accept the tender of that organ-builder "who can *give them the greatest number of stops*." There are, however, numerous other reasons for the present very unsatisfactory state of things to which we will allude, and the principal one is certainly the present practice of bundling away an organ into a dark hole at the side of the chancel called an "organ-chamber"! As long as the organ was placed in the western gallery. The authorities knew that an organ-case was necessary, and *must be paid for*; but directly the instrument is hidden away in one of those abominations called the "organ-chamber." It is obvious that any ornamentation or carving is simply thrown away, and this has led by degrees to the absurd notion that "a church-organ ought not to have a case at all," and the present four-post bedstead arrangement has come to be looked upon as something very "chaste" and "elegant," instead of being regarded, as it ought to be, as a mean, paltry makeshift; but so attached have some people become to this "four-poster" arrangement, that even when money is given for an organ-case it is too often expended in sticking up angels on the top of the posts, a few wriggles of brass or iron work in between them, and painting the pipes in lollypop patterns. A most ridiculous superstition has seized people that it is *wrong to put a cornice or canopy over the top of the pipes of an organ!* And thus in nearly all new organs we see the tops of the pipes exposed, forming a most hideous outline, and giving the spectators the impression of an instrument in course of destruction. Now, if there is one thing which the ancient designers insisted upon more than anything else, it is that the instrument should be crowned by a canopy or a cornice; and there is no single example of an ancient stationary organ where this feature is wanting. The exquisite Gothic organ-case at Jutfaas, in Holland (of which Mr. Hill gives a remarkably-careful drawing), is crowned by a mass of magnificent canopy-work nearly double the height of the organ itself.

Although in some examples the tops of the pipes are visible, yet they always have a shade and cornice above them, so that the pipes never by any chance whatever form the outline of the top of the organ-case. The reason is evident. An organ-case is supposed to *enclose* an organ, and not to be a rack or stand for the pipes alone. It should be distinctly understood that the cornice or canopy above the pipes of an organ does not in any way injure the tone of the instrument, but, on the contrary, rather improves it, if properly arranged.

The fact must also not be overlooked when considering the difficulties of obtaining well-designed organ-cases, that organists and organ-builders both begrudge every farthing of money spent upon the outside of the instrument. We have often ourselves, when speaking about organ-cases, heard organists make some such exclamation as the following:—"Oh, bother your crockets and cornices, give me a good open diapason on the great, or a fine reed on the pedal!" Of course, this is all very narrow-minded, but we have all heard the expression, "There's nothing like leather."

If we are ever again to have fine organ-cases, one of two things must take place,—either we must return to the western organ-gallery and have the choir and organ in the old-fashioned position, or some other important situation must be found for the instrument. Mr. Statham has proposed a shallow transept, and Mr. Brewer would place the organ upon an open arch between the nave and chancel. Mr. Somers Clarke has placed the organ in St. Martin's, Brighton, in a gallery corbelled out at the side of the chancel, and the arrangement well suits the church in question, but this could only be done in a very wide and spacious building. All those gentlemen who have given special attention to this question agree in denouncing and condemning the organ-chamber, yet we fear it will be years before we get rid of this most unfortunate feature of modern ecclesiastical architecture. Not only has the organ-chamber led to the abandonment of the organ-case, but it has become a most costly substitute for it. People are apt to say, "Yes, an organ-case is certainly a handsome piece of furniture, but then, you see, it costs a good deal of money." Now, it never seems to suggest itself to people who speak in this way, that an organ-chamber also costs a good deal of money. They seem to

* The Organ-Cases and Organs of the Middle Ages and Renaissance. By A. G. Hill, B.A., F.S.A.

forget entirely that the walls, windows, arches, and roof of an organ-chamber cannot be constructed for nothing; there can, in short, be no doubt whatever that the money now expended upon an organ-chamber would amply suffice for a very magnificent case.

Not only are we now neglecting the construction of organ-cases, but we are absolutely, according to Mr. Hill, destroying ancient ones. A remarkably fine fifteenth-century Gothic case, at Rhenan, near Utrecht, has only just been pulled down, and the noble Renaissance organ-case at St. Mary's, Dijon, is being taken away; and even in England, numerous examples of excellent Renaissance work have been destroyed or removed within the last few years. This is the more to be regretted because this country is very poor in examples of old organ-cases. The solitary Mediæval example which we possess is at New Radnor, in Wales, and there are only two or three Early Renaissance cases to be found. They exist at Tewkesbury Abbey and Framlingham Church, Suffolk. Mr. Hill illustrates the organ-case at Gloucester Cathedral, the choir-front of which dates from the year 1579, and is therefore one of the earliest examples remaining in England. Also King's College, Cambridge, which dates from the year 1605, and Exeter Cathedral, 1665. The old organ at Hatfield House, which is contemporary with that of King's College, Cambridge, is mentioned by Mr. Hill and one or two others which were in existence a few years back; but whether they have been improved or "restored" away is doubtful.

We may mention that Mr. Hill has given a list of the stops of several of the most celebrated organs, especially that of Harlem, and also an historical chapter, which is of considerable interest, though this portion of the work is kept down, as the subject has been treated at considerable length by Hopkins and Ranbault and other writers. The fact must not be overlooked that Mr. Hill comes before the public as a thoroughly practical writer, who is able to speak from personal experience, as he is one of the representatives of the oldest firm of organ-builders in this country. Hitherto when artists or archæologists have advocated the external adornment of the organ, and placing the noble instrument in a conspicuous position, they have been looked upon as dreamers,—as men without practical experience, who would sacrifice the inside of the instrument to mere external embellishment; but here is an organ-builder of vast experience, a member of a firm which has supplied our churches and chapels with organs for nearly two centuries, strongly advocating the most minute attention being given to the designing of the organ-case. Surely this ought to convince "practical people" that, even from their own practical point of view, the matter deserves attention. Artists will scarcely need such an argument to convince them that the exterior of a musical instrument ought to be made beautiful; and when we mention the fact that there are organ-cases in existence which are adorned with decorative paintings from the hands of Paolo Veronese, Carlo Urbino, the Holbeins, Burgkmeyer, and Zeitbloom, we have said enough to show that no artist ought to consider it beneath his dignity to paint the outside of an organ.

PUBLIC WORKS.

The public works of a great nation are at once the badge of civilisation, and the gauge of the height at which that civilisation has arrived. Too often do noble monumental works outlast that wave of progress, the summit of which was marked by their erection, and survive in ruins only as mute witnesses of the greater ruin that has overtaken the institutions which were their contemporaries, and the polities which formed their cradle.

The noblest public works, we can hardly hesitate to admit, are those, of an architectural character, which have been raised by a nation for memorial purposes, or for the maintenance of religious worship. In these, whether reared by monarchs,—as during the many long centuries of Egyptian grandeur,—or by people,—as during the brief and fickle splendour of the Greek republics,—the idea of what we now call economy is altogether wanting. We cannot conceive of a temple of Minerva or of Juno built by contract, any more than we can entertain the thought of advertising for the lowest tender for a dozen copies of the Venus of Milo, "to sample." Sound, substantial, splendid work, on which the architect would only be too proud to inscribe his name, in the confidence that it would go down to posterity, as that of the artist from whom a consummate work had been demanded by the nation, and who had worthily responded to the demand,—such is the highest type of public work. In our day this class of work is rare. Churches and cathedrals,—although we are not so far behindhand with the great church-building ages as was the case fifty years ago,—are rarely now reared as national works; and, with the exception of monuments pure and simple, such as that yet under discussion at Rome to the memory of King Victor Emanuel, theatres and harbours are, perhaps, the only great public works which are now erected at the cost and will of the nation.

But with the subtle change effected in manners and habits by what we call the civilisation of the day, the economic element—hostile as it is to monumental grandeur,—has become a factor in most public works. And when that is the case, it is so sure, sooner or later, to become the principal factor, that it is of the first importance to clear the ground as to the true nature of the economy proposed. How powerful is this influence may be illustrated by the fact that in the past fifty years the English people have laid out 750,000,000*l.* in improving only one kind of public communication. How important it is that the economic problem should be impartially wrought out, is to be understood when we add that the investors have only received 4½ per cent. on this large sum, at the same time that the corresponding class of investors in France are receiving 5½ per cent. on the equivalent outlay.

It is thus clear that there is room for a public service of no ordinary nature to be rendered by the scientific press, in the investigation and publication of those economical data that really characterise any proposed public work of magnitude. As the man who makes two blades of corn grow where one grew before is a national benefactor, so is the man who conceives, designs, and brings to intellectual birth the project of a new and remunerative public enterprise. And precisely as far as such a man is entitled to public gratitude, so should those be held up to public reprobation who, in hasty greed, or even hasty blunder, lead their fellows into investments which, from the controlling features of the case, must fail in economic remuneration.

Some few years ago it was the fancy that other people could make better use of our money than we can ourselves, that served as the safety-valve, or leakage tap, by means of which we relieved ourselves of any accumulation of wealth. Foreign loans were the favourite investments. Eight, ten, twelve,—how much per cent. did they not promise to pay? How often did we, and some few other honest journals, point out the risk of foreign loans? The risk is over now; for they have pretty well run themselves out by this time. So well has the nature of foreign loans come to be understood, that foreign borrowers are content for a time to hold their peace.

But instead of foreign loans, there has been an attempt to float colossal foreign enterprises,—so colossal, indeed, that they rely for their economic authority simply on their magnitude, or on that of the names of those who advocate them. Thus to dis-insulate England, or to dissever North and South America, would be an enterprise so gigantic that it is taken for granted that it must be an economic success. Who would propose to lay out fifty or a hundred millions of other people's money without the certitude that it would insure a good return? Who indeed? And so, on the strength of just that single argument, the subscriptions of the public are asked for, and to some extent, it is said, received.

We must not forget that a very great stimulus to this grandiose style of asking for money has been afforded by the result of the immense revolution in our mercantile transport that has been effected by the re-opening of the ancient junction of the Mediterranean with the Red Sea. From 1873 to 1882 the total of the traffic receipts on the railways of the United Kingdom rose from 51·3 to 63·8 millions sterling, or by 24½ per cent. During the same period the traffic receipts on the Suez Canal rose from 915,893*l.* to 2,421,835*l.*, or by 26½ fold,—that is to say, twelve times as fast as the former. Again, with regard to the former, the capital increased as fast as did the income, so that the shareholder was really none the better for the great increase of business. As to the latter by the close of 1879 the 500-franc shares were, quoted at 1,320 francs, while the 5,000-franc shares of the "Founders" were valued at no less than 380,000 francs apiece.

It must, however, be borne in mind that it is not a matter of every-day occurrence to open a new route between Europe and Asia. The Suez Canal has been a great success, in spite of, not in consequence of, its enormous and disproportionate cost. The tolls of the world's traffic may pay a good interest on 20,000,000*l.*, but the mere fact of the outlay of 20,000,000*l.* will not insure the receipt of tolls. It is this fact which is so steadily kept in the background by the projectors of some of those colossal schemes of which we desire to elicit a few data before the public are coaxed out of their money.

The Channel Tunnel is one of them. Nothing that has occurred in running the driftways on the French and on the English coast has at all weakened our adverse opinion as to the physical possibility of that project. In this, of course, we may be wrong. But as to the fact that the tunnel, if completed, would never pay a farthing on its capital, there is no room for a moment's hesitation. And therefore the advocates of the tunnel have, not unwisely, been altogether silent on this part of the case.

Again, with regard to the project for the creation of a new Mediterranean Sea, the very magnitude of the undertaking is put forward as perhaps the sole proof of its value. It is probable that English capital will not seek investment in what the French call the "Chotts" of Tunis. But that is not so much what we are now regarding. The question, from our point of view, is,—are the economic results so sure as to justify the demand from the European public, or, for the matter of that, from the French nation, of a large and indefinite sum? There are one or two considerations to which we ask for a moment's attention.

In many parts of the world we see the effects of great geological changes within periods of time that may not, perhaps, have reached back beyond the historic era. The filling up of the former entrance of the Nile into the Red Sea is one of these. The depression of that part of the Jordan Valley now occupied by the Dead Sea to 1,300 ft. below the level of the Mediterranean, is another. The uprising of certain parts of Africa is a third. How closely the elevation of the line of hills that skirt the southern coast of the Mediterranean is connected with that of certain parts of Africa that were once covered with the sea may be in doubt. But we do find, side by side, the low hills referred to, and the hollows or dry bottoms known as the "shattut," from the Arabic word "shatt," a shore. It is the idea of some French projectors to divert the water of the Mediterranean into these shatts, and thus artificially to reverse the change which has been here effected by Nature herself.

We must wait for further details before venturing an opinion as to the physical possibility of such an undertaking. But it may be well to mention one or two points, which will not be affected by the state of the share market. In any attempt to admit a large body of water into a new basin two great and opposing difficulties have to be met. One of them is due to the too rapid, and the other to the too slow, current of water that is produced. If the water is made to run at too high a speed, it will plough up the sides and bottom of the channel, and finally choke it. If it does not run fast enough, the limit of basin that can be filled is restricted.

The evaporation that would go on from the Tunis lake, if made, is considerable. In the same latitude in Palestine, the whole stream of the Jordan is evaporated from the surface of the Dead Sea, and the amount of that evaporation has been estimated at 15 ft. of water per annum. At a constant temperature of 70° Fahr., according to Dalton's table, the evaporation from a still surface of water is nearly 16·5 per feet per annum; and this is increased by any movement of the wind. It will thus be within the mark to estimate the evaporation from the new lake at three mètres (or 118 in.) per annum. This rate of evaporation from an area of 1,200 square miles, would exhaust a supply of 9,000 milliards (millions of millions) of metric tons of water per annum. This is equal to 285 metric tons per second, or six times the average flow of the Thames.

The river thus required for the supply of evaporation alone will be only about a fourth of that

required to fill the before-mentioned area, if we allow a year for that process. To admit a current of 1,430 metric tons per second, at the velocity of flow of 1 ft. per second, would require a channel 715 mètres wide by two mètres deep. And to keep up that velocity the head of water for the distance regulating the flow must be ·01553 ft., which is about the inclination of the upper part of the River Jordan.

"In the neighbourhood of Tozeur," we are now told, "an inlet for the sea to the depressed portions of the desert can be obtained by cutting through intervening land only 9 kilomètres in breadth and 70 mètres in depth, 60 mètres of this depth consisting merely of sand." Allowing the lower 10 mètres to stand perpendicular and the sand at 2 to 1, these figures would give a total content of 515,000,000 cubic mètres of excavation, of which 64,350,000 cubic mètres would be rock and the rest sand. This quantity would, however, be diminished in the ratio in which the flow of the water is increased. Thus, at a velocity of 2 ft. per second the quantity of cutting may be reduced by one-half. But in this case the fall of the channel must be increased to ·06211 ft. per foot. If a rocky channel be made, the speed may be proportionately increased, but can only be so increased by additional fall. For 3 ft. per second the requisite head is ·13975 ft., a fall which it may be dangerous to obtain.

At all events, the first matter for the projectors to clear up is the fall which they are able to maintain in getting through their nine kilomètres of hilly ground. When that is clear, it will be possible to calculate how far the estimate of 500,000,000 of cubic mètres of cutting can be reduced. And then it will be necessary to adduce the returns *per contra* from which the benefit to the capitalists is to be derived. Even at Suez Canal prices for sand excavation, allowing nothing for the extra cost of rock, the cutting above indicated would cost 20,000,000*l*, and such a cutting would certainly cost three or four times as much, per cubic yard, as the canal.

The above is only an instance, although it is a striking one, of the manner in which projects are brought before the public at a venture, and accepted, too often, on trust. What can seem more simple, to the ordinary view, than to let water into a hole? On the one hand is the sea, illimitable in its supply; on the other hand a hollow of so many miles area, say 50 ft. below the level of the sea. It is true that it is six or seven miles off, but what of that? If a gap is cut in the intervening hill, of course the water will flow through. Such is the case presented to the public.

The engineer, however, knows that water will no more flow without the pressure of head than it will run uphill. He knows what that head must be, as matter of theory, and also knows how, in the case of the Ganges Canal, the adoption of the best theory available had disastrous results in practice. He can, therefore, by asking one or two questions as to depth and distance, put points on the i's of the speculator, and distinguish at once between the plausible and the physically impossible. And, such being the case, what are we to think of the wisdom of those persons who would jump at a new speculation without first providing themselves with that impartial scientific advice which, in such a case as we have cited, can at once determine what is and what is not within the limits of physical possibility? The limits of financial possibility should form the subject of subsequent discussion.

The Architects' Benevolent Society.—At the meeting of the Architectural Association on the 6th inst., it was unanimously resolved, on the motion of Mr. J. Douglass Mathews, seconded by Mr. Cole A. Adams, to subscribe ten guineas per annum from the funds of the Association to the Architects' Benevolent Society. Mr. Mathews, in making the proposition, referred to the suggestion contained in the last annual report of the Society that the various architectural societies of the country should be invited to contribute to its funds, and it was in response to that suggestion that he moved his resolution, so that the Association might set an example to other societies. The Association had, in past years, opened subscription lists on behalf of the society, but now that the funds permitted it, it was much the better course to give a fixed annual donation.

WESTMINSTER HALL, PAST AND PRESENT.

LONDON AND MIDDLESEX ARCHEOLOGICAL SOCIETY.

At the usual monthly meeting of this society, held on Monday evening last, Mr. Alfred White, F.S.A., Vice-President, in the chair,

Mr. E. W. Brabrook, F.S.A., read an interesting paper, dealing with the history of "Westminster Hall and the Courts adjacent." It was illustrated by a number of interesting prints, plans, and drawings, lent by Messrs. J. E. Price and Thurston.

Mr. Henry Poole, for many years the Abbey Mason, followed with an equally interesting paper on "Westminster Hall in its Architectural Aspect." In the first part of this paper, which dwelt with the early recollections of the author's boyhood and youth as to Westminster Hall, Mr. Poole said,—Up to 1818 the Courts of King's Bench and Chancery were held in a cancellated wooden enclosure, erected on a raised platform at the south end of the interior of the Hall. It projected nearly 40 ft. from that south wall, and occupied the whole width of the southernmost bay of King Richard II.'s building, which, up to the time of the great fire of 1834, was the southern limit of the Hall, that is, inclusive of the wide piers and arch between, with the large window within them. This wooden enclosure rose to a little above the springing line of the south window. It enclosed two large courts, between which was a passage, reached by a flight of steps, opening into the two courts east and west, with a higher ascent southward beneath the great window, thus connecting the Hall with the Houses of Lords and Commons. For additional access southwards, and on the floor of the Hall were side passages against the walls, through two openings in the thick wall, communicating with other passages, one leading into Old Palace-yard. The inclosure presented a pseudo-Gothic front, answering to what is now called the Batty Langley style of A.D. 1700. In the centre was an arched doorway, and on each side a semi-octagonal breast, having three windows and two stories. Taken altogether, it was by no means bad of its kind. I well remember its demolition in 1820, and afterwards I myself helped to remove the massive flight of steps, which remained *in situ* till the preparations in the Hall began to be made for the coronation of George IV. At and previously to that time the Hall was surrounded on three sides by buildings. At the south end were the Parliamentary buildings. On the east side were the Cloister Court of St. Stephen's Chapel, the Speaker's House, and Court and some official houses. The north front had been cleared of attachments which had once spoiled it. The west side was invested by some ancient Elizabethan buildings used as offices of the Exchequer, and south of them were the Courts of Law, with apartments forming the long western frontage of the King's Bench Record Office. This western frontage had been erected by William Kent, the architect of the Board of Works, about 1740; it was a range of buildings in the Italian style, with a handsome frontage towards St. Margaret's-street, having three bays, each of five windows. It had also a flank façade towards Old Palace-yard, extending to the older front of the Houses of Parliament. At the junction of these façades was a square corner tower with western and southern windows. The great fire of 1834 destroyed this tower and the flank building. Kent's building was evidently designed for subsequent extension northward, by adding a square tower similar to that at the southern end, and a flank building to connect that tower with the northern front of the Hall. This is indicated, so far as the tower is concerned, by a pretty drawing made in 1793, as engraved in the *Gentleman's Magazine*, which shows the frontage as far as Kent had carried it, but leaving an area of about 40 ft. square occupied only by the judges' stables and coach-houses, of which the drawing shows their wooden gates and tiled roofs. This spot became occupied by the intended tower, built by Soane eighty years afterwards. The old Courts of Law inside and west of the Hall had become unfit for the constantly increasing judicial business of the great metropolis. In 1820 Mr. Soane (afterwards Sir John) was appointed by the Government as Architect of the New Courts of Law. He at once made a plan and designed an elevation in the Italian style, and proceeded to carry it out, having probably previously obtained the approbation of the judges and law officers. But this plan and elevation were criticised by some influential members of Parliament. This led to the appointment of a small "Committee of Taste," as it was called, and to a reduction of the plan and an alteration of the design, of which only the northern square tower was retained for the sake of symmetry with Kent's southern tower. The remainder of the elevation was altered from the Italian to the Gothic style of King Richard II. This was thought at the time to be a severe rebuke to Mr. Soane, for it at once led to a demolition of much of the building which he had carried up on his own plan, and in the Italian style. Soane was certainly not the man to bear calmly such or any interference. I well remember seeing him gently thrust aside a chief clerk in the Foreign Office who ventured to make a suggestion while he was planning, with his clerk of works, some important alterations to the building in Downing-street, when Canning was succeeding Lord Castlereagh as Foreign Minister. It is not unlikely (and I think I remember a rumour) that other assistance was obtained by the Committee of Taste for the Gothic elevation beyond the square tower. The elder Pugin was then becoming well known, and as he, about two years afterwards, published a beautiful drawing of the building as it was carried out, it seems probable that this was the original design approved by the said Committee of Taste. This engraving is now to be seen in Crace's collection of prints in the King's Library at the British Museum. Between the back of the buildings of Kent and the west wall of the Great Hall, Soane was required to build the new Law Courts, on a space of about 240 ft. long and 60 ft. wide. With this very limited area, between high buildings on all sides, he overcame difficulties in respect of light, ventilation, and access to the courts, which at the conclusion of the works was a theme of approbation and admiration. All the interior was of the Italian style, and had his own individuality stamped upon it, and it was well suited to the purposes and dignity of the courts, although it seems to have had few imitators. His models and drawings were excellent. Many of the former of the most refined character I have seen and admired in the works of Mr. Palmer, the modeller and plasterer of Smith-square, and also his models for the grand royal entrance to the House of Lords, which he executed only a few years afterwards. Mr. Soane began by making several doorways in the western wall of the Hall, opening into a corridor outside of that wall, extending the whole length of it, and under the arched flyers between the attached buttresses and the wall. In connexion with this corridor he built, most ingeniously, eight courts on the ground-floor, with other courts and rooms above. The six large buttresses sadly obstructed his operations, but he managed to retain them and to case them in as walls. In the formation of the long corridor the whole outer surface of the western wall between and above the doors was lined with thin ashlar. Wherever an ancient Norman buttress came in the way, that also was cased with thin ashlar. By this means a series of piers were made, and at their tops were made as abutments for large arches segmental and pointed. Thus was gained a wall surface consistent with the ancient work, and while it appeared as a wall arcade, it served as a support to the flat which covered the corridor. In some cases the Norman buttresses have had their lower parts cut wholly away, and the parts above have had massive stone corbels inserted to support those upper parts. In one or two instances the Norman buttress has wholly disappeared.

In the second portion of his paper, which dealt with the clearance of the site of the old Law Courts and the prospects of the restoration of the west side of the Hall, Mr. Poole said,—The removal of the buildings on the west side of the Hall has revealed parts of the long-hidden detached buttresses of King Richard II. Five of the flyers of the connected-arch buttresses appear to be in fair preservation and tolerably complete. The restoration needful will be considerable; but it may probably be effected without the removal of any one of the structures. The pinnacles of all all are entirely lost; but Brayley and Britton's excellent work, "The Palace of Westminster," shows a corresponding buttress then existing in the Speaker's Court, on the east side of the Hall, with the pinnacle included; this buttress was necessarily removed

by Sir Charles Barry, as it was useless and in the way of his works of the new Palace. At present none of the lower parts of these buttresses are exposed, for the contractor has not been allowed to approach too near to the ancient structure. Of the five Norman buttresses, which were intermediate with the detached buttresses of Richard II., only two remain; and of the others against which the arched flyers abutted the lower parts have been destroyed, and their upper parts have been left, and in most cases converted into corbels through which the flyers interpenetrate and are incorporated. It is satisfactory to find that the archivolts of the flying-buttresses are in good condition, and that their springers are exposed. The archivolts rest on moulded corbels, under which are grotesque animals with wings or legs, and seem to be almost perfect, or requiring but little repair. It may be hoped that the sixth, the southernmost detached buttress, will be found in part, at least its footing. One of the doorways cut through, that under the second window from the north end has been abandoned, and so the wall-surface in the Hall having been restored, the opening has been concealed. The question naturally arises now as to what will be done with the large area about to be cleared, and what will be done towards the completion of the wall and other parts. The external display of the windows on the western side, joined to the view of what of the five arched flying buttresses is seen, is already very grand; and when the windows are in the evening dimly illuminated from the gas-lights within the Hall, the effect is most pleasing. The parapet of the wall has been lowered, in former times, to the greatest extent possible; it is now apparently but a little above the gutter, and it is covered by a common coping of stone. Thus the enormous surface of the roof of slate has become fully exposed, from ridge almost to drip, except that there are the modern excrescences of dormer windows, which, although useful in throwing light into the interior, and on to the timber-work inside the roof, are, whether seen from the outside or from within, inconsistent and intrusive. The absence of a parapet is the cause of this unsatisfactory appearance of the building on both west and east exteriors. The authority for a proper restoration of the parapet is to be found in Hollar's prints. In these the parapets are shown adorned with grand battlements, resting evidently on a bold string-course of stone. These two features at once give propriety as well as beauty to the roof, and there seems to be no alternative but to carry out that restoration. The same old drawings show that the ancient roof was covered with lead in wide sheets, with roll-junctions. This fact is confirmed by a censorious letter, written in 1750 to the *London Gazette*, protesting vigorously against the removal of the lead from the roof of Westminster Hall and the substitution of slate for it, as proposed by the Board of Works. Nevertheless, in August of that year the lead was removed, and its weight of 10,000 pounds was reported. The writer in the *Gazette* charged the authorities with bad motives. The restoration of the Norman buttresses,—or, rather, those which Richard II. built in and covered, but reproduced when he built the six detached buttresses and their adjuncts,—should also form a portion of the new work. The full restoration of the wall must, of necessity, take place, inclusive of the filling with ashlar all Soane's doorways, both outside and in. It might not be inopportune to retain one of these doorways as a western access. A similar access to the nave of the Abbey from the north green there, is an improvement to the front towards the public way. The full development of the six detached buttresses and of the ten Norman buttresses will necessitate the lowering of the ground,—down, perhaps, to the level of the floor of the Hall,—thus undwarfing the western wall and restoring its original height and dignity. The effect of a sunken garden or grass-plot there will be quite as pleasing as that which surrounds the Natural History Museum at South Kensington. There are many, perhaps, who would prefer to abolish the dormer windows because they are modern and intrusive. If they can be hidden outside to a great extent by the proposed battlemented parapet it will be well; but the interior of the Hall requires as much light as it has at present, and the beautiful roof was, I remember, brought pleasantly into view when the diffused light of these twenty-four dormers was gained. The beautiful heraldic stained glass of Willament, in the south window, has darkened that end of the Hall by diminishing the daylight to more than half its quantity.

In the third part of his paper, Mr. Poole dealt with Westminster Hall as built by Rufus and altered and added to by Richard II. He observed that the appearance of the Hall when built by King William Rufus, may have been of the simplest character, with the present walls on the four sides, with triplicate doorways at the north end, the central a grand one. When the north end was examined by Mr. Sydney Smirke indications of this triple entrance were seen. There were in each side wall twelve large Norman windows, nearly in the positions of the present windows; and between these were twelve small windows, making altogether forty-eight. In the repairs carried out by Sir Robert Smirke, assisted by his younger brother Sydney (afterwards Sir Sydney), the interesting remains of the windows were brought to light. Mr. Sydney Smirke wrote a very elaborate account of them accompanied by drawings, all of which have a place in the *Archæologia* (of 1834, '5, and '6). Every window was of the Norman type having a circular head and pillared jambs. The large windows had annulets in the middle of their jamb pillars. With the lower range of these pillars the small window-pillars were coincident. Each jamb of the small windows had two pillars in front and two behind them (see illustration, plate 40, p. 492, Brayley). The interior of this window-wall was pierced by a low passage, arched over, continuing through all the piers. This passage may have been continuous also throughout the north and south ends, for at the south-west corner there existed indications of a Norman arch, which may have been one of a range of windows at the south end. How the Hall of Rufus was covered there is no evidence. Shingles were used in other parts of the palace. Mr. Sydney Smirke has suggested that the roof was in three spans, supported by pillars. In such a case the middle span would be both wider and higher than the sides. The market-halls of Rouen, of a little later date, are thus constructed, the intermediate floor and also the roof being upheld by a range of pillars. The two Smirkes sought earnestly for some signs of supports under the floor, but with no result.

An interesting discussion followed, the speakers being the chairman, Mr. Thomas Lambert, F.S.A., Mr. J. E. Price, F.S.A., and other gentlemen, and the thanks of the meeting were accorded to the readers of the papers.

THE DESTRUCTION OF THE NATIONAL THEATRE IN BERLIN.

Within the space of an hour, between twelve and one o'clock on the morning of the 4th inst., the National Theatre, the largest edifice of the kind in Berlin, was completely destroyed. The fire, which broke out at a time when there were fortunately only two or three people on the premises, waged with such violence that the Berlin Fire-brigade, though quickly summoned, was powerless to save either the building or any of its contents, and all they could do was to turn their hose on the neighbouring houses to protect them from the flames, which they succeeded in doing. The conflagration was at first attributed to an incendiary, as the precautions which had been taken against fire were believed to be so complete that danger from such causes was thought to be practically *nil*. The inquiries which have been instituted have, however, shown that this confidence was ill-founded, and that the conjecture or suspicion of the disaster being due to arson was equally baseless. The fire arose from the following circumstances:—On the roof of the theatre above the loft and soffits there were four safety windows or apertures, with lids, which were constantly kept closed by a mechanical arrangement with counter-weights. These worked automatically, so that in case of an outbreak of fire the lids would open of themselves, the object being to let out the smoke, so as to save the actors and others who might be on the stage from being suffocated. In the morning of the fire one of these apertures had been opened for the sake of ventilating the theatre. Close to the apertures there was a chimney, which runs up from the fireplace of the kitchen of the theatre. It is believed that as the fire was alight, some sparks flew from the chimney into the open aperture, and so set the soffits on fire, as the loft under the roof was all of very dry timber, which was unprotected by impregnation with any uninflammable preparation, or by any other means. This view is supported by the evidence of witnesses who saw the smoke and flames at the first outbreak of the fire issuing from one of the apertures in question. The iron curtain which, since the Ring Theatre fire of Vienna had been fixed in front of the stage at the National Theatre, was down at the time of the fire, but proved of no practical service in arresting the flames. There is no doubt the fire broke out in the stage half of the theatre, and the progress of the fire was so rapid and the heat so intense that the iron curtain was unable to withstand it. The metal was partly melted, and in a very few minutes the entire auditorium was in flames. Unfortunately several collections of books, pictures, manuscripts, and theatrical requisites, which can never be replaced, were destroyed, along with everything else in the theatre. The building was well insured, and the loss, about 12,000*l.*, will fall on the Berlin City and the Magdeburg Associations.

THE CAUCASIAN MUSEUM IN TIFLIS.

In September, 1881, the fifth Congress of Archæologists of the Russian Empire was held in Tiflis, an ancient Asiatic city, known since the time of Cyrus, and now capital of the Russian province of Trans-Caucasia. The Grand Duke Michael, the Governor-General, had given 15,000 roubles for excavations in preparation for the Congress, and a nearly equal sum was granted for the entertainment of visitors from a distance, who came in considerable numbers, and who were all lodged as guests in the Grand Duke's palace. To this Congress the Caucasian Museum owes much of its present importance. A new story has been added to the extensive museum building, and the interior has been furnished and decorated at a cost of 22,000 roubles. Some of the interior decorations, such as the frescos in the great entrance-hall and the large ethnographic groups, deserve more than a passing notice. The director of the Museum, Dr. G. Radde, says:—"One of the greatest difficulties I had to solve was to find what would be the most appropriate decorations for the grand staircase hall. I decided in favour of having Persian ornamentation, and some large wall-paintings consisting of scenes derived from ancient Caucasian legends. I also desired to have two historically celebrated personages faithfully copied from the frescos in the Gelathi Monastery. These were King David the Renewer, and the Empress Thamara." Dr. Radde obtained sketches from painters in Düsseldorf, Vienna, and Rome, for the subjects of a legendary character, and eventually the sketches of Herr Franz Simm, of Rome, were accepted. The artist arrived during April in Tiflis, and in the course of ten weeks, with the assistance of his wife, who is also devoted to art, he completed the whole of the frescos in the grand hall. The subjects of these paintings are as follow:—(1) Prometheus chained to the rock, attacked by the eagle, and bewailed by the Oceanides; (2) Noah planting the vine; (3) The arrival of the Argonauts in Colchis, and Jason and Medea in the Temple of Hekate; (4) Two Amazons; (5) The Empress Thamara and King David the Renewer. These paintings, though executed in so short a time, are admired as excellent works of art, both as regards colouring, composition, and fidelity to tradition.

One of the most valuable sections of the Museum is that of the large ethnographic groups, which present a complete picture of the very numerous and various races of men who have peopled the Caucasus regions from the earliest periods down to the present day. Altogether the existence of this Museum, and the assembly of a scientific congress of Europeans in Tiflis, testify to the gratifying progress civilisation has been making in that part of Asia in recent years. Indeed, visitors to Tiflis agree that the handsome new buildings rising up there impart to it the appearance rather of a European than an Asiatic city.

A Free Library for Darlington.—At a meeting of the town council of Darlington, a letter was read from Sir Joseph Pease, M.P., offering to erect a building for a free library at a cost of 5,000*l.*, and to furnish the same provided the Free Library Act were adopted.

FURTHER NOTES AT THE BUILDING TRADES' EXHIBITION.

To the particulars of this exhibition given in our special supplement last week we now add the following brief notices of some exhibits which, for want of time and space, we were precluded from mentioning last week.

Messrs. R. F. Dale & Co. (*Bay* 1), of Bear-lane, Southwark, are exhibitors of plumbers' brasswork of good quality, as well as beer-engines, pumps, and water-closets. The latter include wash-out and valve closets, and pan-closets with earthenware containers. A speciality here exhibited, the "European" side-outlet valve closet, has some good points. Syphon and other water waste-preventing cisterns, baths and bath fittings, lavatories, and urinals, go to complete a large and useful display.

The Eureka Concrete Company (*Bay* 6), of West Kensington, show some good work in their material, including steps, area-copings, dormer windows, panels, and balusters,—the moulded work coming out very sharp and clean. A red concrete door, the panels of which are decorated with "Lincrusta-Walton," and a staircase landing, 9 ft. by 6 ft. 9 in., by 5 in. thick (and which is stated to be without any stiffening-iron), are amongst the other items shown at this stand.

Messrs. Joseph Kaye & Co. (*Bay* 7), of High Holborn, exhibit their patent locks and door furniture, which appear to be simple and efficient, and in other respects worthy of notice.

Messrs. T. & W. Farmiloe (*Bay* 9), of Westminster, exhibit plumbers' brasswork of their own manufacture, in great variety and excellence. Their patent "Westminster" valveless water-waste preventer is simple in construction and efficient in action. The "Simplex" valve-closet of the same exhibitors, and their "Elastic" valve-closet, to use with water-waste preventer, are worthy of notice. The same may be said of Harsant's patent "Eccentric" rubberless water-waste preventer, for use in conjunction with closet apparatus. This contrivance consists of a sort of stirrup arrangement, which, on the handle being pulled up to its full height, releases the valve-lever and automatically turns off the water. A bellows-regulator is also provided to this closet. Some deep-well pumps, one or two baths, and several lengths of drawn lead 4-in. and 6-in. soil-pipe, made in 12-ft. and 14-ft. lengths (unusually long), are among the many other useful exhibits of this well-known firm.

Mr. Samuel Owen (*Bay* 11), of Fann-street, Aldersgate-street, shows bath-fittings and other brasswork, and the "Comfortable" bath, which is of peculiar form.

Messrs. E. & C. Braby (*Bays* 12 and 13), of Belvedere-road and Kilburn, have a large display of good and useful chimney-pieces in marbles and enamelled slate. Among other manufactured slate goods they exhibit spirit-vats, butter-blocks, tanks, filters, a vegetable-dresser (for washing and preparing vegetables required in an hotel or other large establishment), shop fascias, &c. They have also on view a good assortment of bricks, tiles, slates, stoneware pipes, sinks, &c. The red facing bricks from the East Acton brickworks are good in colour and texture, and the same may be said of the red and white Suffolks, and of the ridge and other tiles exhibited. At the same stand are shown some excellent specimens of work done with Howe & Co.'s Carlisle plaster of Paris, for which Messrs. Braby are the sole London agents. This plaster, we are informed, is manufactured in quite a different way to the ordinary method. It is slow in setting, and guaranteed not to "give" in the slightest degree when once "set." Its capabilities are shown by the very beautiful casts exhibited from natural leaves, fruits, &c., and from the Elkington "Victory" shield and other *objets d'art*, made in this material for the authorities of the South Kensington Museum.

Mr. Paul Pfeiderer (*Bay* 16), of Upper Ground-street, Blackfriars, shows a "Universal" kneading and mixing machine in operation, making putty for Messrs. T. & W. Farmiloe. A slight variation in the form of the blades is made when the machine is used for bread-making. It is applicable for use in the manufacture of printing-ink, lubricating grease, emery-wheel composition, and of carbons for the electric light. A useful and simple sifting and straining machine is shown at the same stand.

The Sneyd Colliery and Brickworks Company (*Bay* 20), of Burslem, exhibit white and coloured glazed bricks, characterised by excellence of quality and trueness of shape.

The Woolpit Brick and Tile Company (*Bay* 23), of Woolpit, Suffolk, and Moorgate-street, exhibit some very good dark and light red facing bricks, red and white rubbers, hard red facings, and red moulded bricks. They will all bear inspection. Some white and salmon-coloured paving tiles shown at this stand are also worthy of notice by visitors.

Mr John Matthews (*Bay* 24), of the Royal Pottery, Weston-super-Mare, shows Poole's patent bonding-roll roofing tile, in red and dun colours. This tile is well worthy of attention, and to enable visitors to judge of its effect a specimen of roofing laid with it covers the standing-ground allotted to the exhibitor.

Messrs. Thomas Smith & Co. (*Bay* 25), of Canal Potteries, Old Kent-road, deserve a word or two of mention in addition to what was said of their exhibits last week. Among their sanitary stoneware goods worthy of attention is their improved ventilating and syphon trap, with inspection-hole and cap and socket for ventilating-pipe. A stoneware street gully, with catch-pit, an improved yard gully, Herbert Jones's patent drain-pipes, chemical apparatus in stoneware, and water-filters, are among other items which may be singled out as specially well worth notice.

Messrs. A. Lusty & Co. (*Bay* 26), of Elthorne-road, are exhibitors of wood-working machinery and engineers' sundries. At the same stand Mr. S. Ransom shows models and specimens of some very good staircase work.

Messrs. W. Udal & Co. (*Stand* A 5, B 47), of Birmingham and Charterhouse-street, show some door and cabinet brasswork and Bruce's fanlight-opener, a simple and effective apparatus.

Messrs. Young & Buss (*Stand* A 6, B 46), of Blandford-street, are exhibitors of electric bells and burglar alarms; they also show a useful electric alarm for fixing underneath a door-mat or on the threshold of a shop, so as to give warning when a person enters.

Mr. George Porter (*Stand* A 9, B 43), of Cullum-street, shows his patent pneumatic bells, in which the use of india-rubber bags is dispensed with.

Mr. John Stones (*Stand* A 12), Ulverstone, exhibits a Stones' patent safety hoist, for prevention of accidents arising from persons falling down well-holes, revolving shutters or sliding doors being employed to close the openings on the cage leaving them, the shutters or doors being worked automatically with the hoists. This invention can be applied to any number of openings on the same or different floors of new or existing hoists, worked by hydraulic, steam, gas, or hand power.

The Silicate Zopissa Composition and Granitic Paint Company (*Stand* A 13, B 40), of Fish-street, exhibit samples of work showing the applicability of their materials for use under varying conditions.

The Galvano-Mercurial Silvering Company (*Stand* A 17, B 36), of Wells-street, Hackney, exhibit reflectors silvered by the galvano-mercurial process, and "albatrine," a species of opalescent glass for use in lieu of white glazed tiles.

Messrs. Smith & Turner (*Stand* A 26, B 27), show, among a variety of other things, Ben. Turner's patent adjustable regulating door-spring. Many door-springs hitherto made are liable to get out of order if allowed to throw the door beyond the half-circle, to prevent which a stop is generally placed on the floor, which when the door is thrown open strikes the door, produces a jar, and causes a fracture. Ben. Turner's patent adjustable regulating door-spring throws the door considerably beyond the half-circle; there is no friction, consequently little wear. The spring cannot be wrenched or jarred, therefore it cannot be broken; it is stronger when closed, and gradually loses strength as the door is opened; can be made to stand open at right angles if required: it is most easily fixed, and can be regulated to any strength, and adjusted to any centre, and the whole of the inside taken out without unhanging the door. Ben. Turner's "improved adjustable slam spring" and "improved ball door porter or holder" are handy contrivances. The great advantage of the slam spring is, that it can be adjusted to any tension, so that when the door falls-to it prevents noise and holds it firmly when closed. In using the ordinary slam spring the door will often either stand a few inches open or come-to with a bang; all this is obviated by the adjustable screw being tightened or loosened as required. An "improved patent water bar," exhibited at this stand, is worthy of especial notice.

Mr. Alfred Newman (*Stand* B 45), of Maddox-street, is an exhibitor of some very good wrought-iron work. Most of the articles shown at this stand are characterised by much ingenuity, albeit suitability, of design, and the workmanship is excellent in character.

The Universal Ventilating and Sanitary Engineering Company (*Stand* B 54, C 92) exhibit Stevens's patented galvanised and terra-cotta chimney-tops, for the prevention of down-draught. These appliances, we understand, are now used in all station-buildings of the Metropolitan Police force. Stevens's exhaust ventilators, made upon the same principle, only with a vacuum chamber larger in proportion to the size of the shaft than is the case with the chimney-top, is simple in construction and efficient in action, judging by the testimony of the users. Stevens's drawer inlet-ventilator is an admirable appliance for admitting external air through a wall in larger or smaller volume, subject to easy regulation. We spoke of its merits when it was shown in a former exhibition.

Messrs. Ewart & Son (*Stand* B 63, South Centre), of Euston-road, make a very good show of ornamental stamped and moulded zinc-work for cornices, gutters, crestings, &c. There are some good finials in the collection, and the ventilating ceiling-plates shown by the same exhibitors may be, under proper conditions, of great service for purposes of ventilation.

The Bower-Barff Rustless Iron Company (*Stand* B 73, C 76), are exhibitors of various specimens of cast and wrought ironwork protected by the patented processes of Professor Barff and Messrs. G. & A. S. Bower. There now seems to be some hope of these valuable processes coming into general use, for we note that several large firms are using them, and we learn that the Company is now erecting furnaces in Southwark which will shortly be in operation to treat general ironwork for the London trade.

Messrs. John Warner & Sons (*Stand* C 97, D 122), of the Crescent Foundry, Cripplegate, have a good representative collection of their manufactures, including brass lift and force-pumps, cottage pumps, baths, lavatories, and water-closets. Among their specialities in the last-named line we may mention their "Villa" closet, their "Spring-valve" closet, and a pan-closet with earthenware container. Wash-out closets are also shown on this stand, as well as specimens of plumbers' brasswork.

The Patent Waterproof Paper and Canvas Company (*Stand* C 109, D 114), of Willesden, have what is undoubtedly one of the most interesting exhibits in the hall, viz., their "Willesden Paper," in some of its numerous applications for external and internal work. This material, which is made in several thicknesses, in rolls of continuous length, and 54 in. wide, is applicable for external roofing in lieu of galvanised iron or felt, for under-lining slates, tiles, &c., for fixing against damp walls, and for many other purposes. It is, of course, waterproof, and we are assured that many structures covered with it have stood exposure to all weathers for the last six years without injury. It is claimed for it that it is the cheapest of all roof-coverings, as no boards are required, the paper being battened down directly upon the rafters. One of the uses of the material is for water-pipes, some of which, destined for the Cape Diamond Fields, are exhibited. We may add that the two large central transepts (90 ft. by 50 ft.), and all the covered ways, as well as the large fish-market (100 ft. by 50 ft.) of the Great International Fisheries Exhibition to be opened at South Kensington next month, are roofed with the "Willesden paper."

The Indestructible Paint Company (*Stand* D 129, E 148), of Cannon-street, exhibit their well-known preparations, including their patent enamel paint, patent stone solution, and indestructible paint. The enamel paint can be used so as to dry either with an enamel or glossy surface, or "flat." It has been very largely used on public works and in hospitals and other buildings; we name the Holborn Viaduct and the new Hospital for Consumption at Brompton as instances. Browning's patent enamel solution, for the preservation of stone,

brick, and cement work, is colourless, and appears to have successfully passed the ordeal of tests extending over a period of ten years. It is claimed for the indestructible paint that it resists the action of alkalies and acids. It appears to be admirably adapted for iron structures, roofing, gas-lamps, &c., but we notice that it is made in three colours only,—bronze-green, chocolate, and black.

Messrs. James Slater & Co. (*Stand* D 130, E 147), of High Holborn, exhibit some gas cooking ovens, gas-heated circulating boilers, gas-heating roasting ovens, and hot-plates, suited to the needs of large establishments.

Messrs. Stanley Bros. (*Stand* E 142), of Nuneaton, are exhibitors of some very good Staffordshire blue goods, together with red, brown, and buff tiles, ridges, and finials. These goods are all self-coloured, being made of four different strata of clay. The colour is in all cases good, and the shapes are true. Vases, terminals, and chimney-tops are shown in each colour. A useful air-brick, with the openings of greater area on the interior than externally, is shown at this stand; and among the stoneware goods is a simple ventilating sewer-gas trap.

Messrs. H. C. Webb & Co. (*Stand* E 140), exhibit specimens of Webb's patent "diachromatised" woodwork, in the form of floor tiles or blocks, door-panels, &c. The patterns extend right through the surface of the wood, and the process appears to be one of much importance, and to have advanced in exactitude since it was first exhibited a year or two since.

Messrs. Broad & Co. (*Stand* E 154 and F 191), have a useful show of Oldham and other bricks, including Suffolk reds, hard facing-bricks, and red diapers, string-courses, medallions, moulded bricks, and blue Staffordshire goods. Smith's patent dovetail brick, with dovetail recess for the insertion and building-in of wood plug to which to attach joinery work, is useful. Some good quarry tiles, with smooth face, are shown by these exhibitors. Broad & Co.'s improved inspection gully, made in enamelled stoneware, and with galvanised iron grid, deserves the attention of visitors. It has an inspection inlet enabling the trap to be easily cleansed, and affording ready access to the drain. The movable cap is luted or sealed with Russian tallow or some similar substance when *in situ*. The bottom of the trap is rounded, so as to afford an easy flush.

Messrs. Ritchie & Co. (*Stand* E 159, F 186), of St. Switbin's-lane, show their now well-known patent "'Lux-Calor' hygienic condensing gas-stove," which is well spoken of for use in conservatories and other situations; that it is innoxious to vegetable life appears to be well attested.

Messrs. A. L. Moore & Co. (*Stand* E 162), of Southampton-row, Holborn, show some specimens of stained glass executed by them, and a number of drawings of stained glass and other decorative work carried out by them.

Messrs. Fredk. Jones & Co. (*Stand* E 164, F 182), of Ryland-road, Kentish-town, are exhibitors of slag wool or silicate cotton, the indestructibility and non-conducting properties of which render it applicable to a large number of uses, many of which are illustrated by the exhibitors.

Messrs. C. Kite & Co. (*Stand* F 181), of Chalton-street, Somers-town, exhibit Kite's patent exhaust roof ventilator, which appears to be very efficient. Kite's chimney-breast ventilator, for extracting the vitiated air from rooms, is constructed on the principle of the exhaust ventilator, but is let in through the wall of the chimney-breast so as to have an outlet into the flue. A working model, showing this and other ventilators in action, is worth attention. Kite's fresh-air inlet ventilator, and the inlet and exhaust ventilators for soil-pipes, by the same maker, also demand notice, as well as his patent chimney-caps, which have been largely used in public buildings.

The Madeley Wood Company (*Stand* E 167, F 178), of Ironbridge, show some very excellent Broseley roofing tiles, crests, finials, &c., also buff facing bricks, paving squares, &c., which will commend themselves to all who examine them.

Messrs. Thomas Andrews & Son (*Stand* E 169, F 178), of East Molesey, show an American walnut chimney-piece and over-mantel, and a piece of staircase work. These, and some sashes and framed doors which are exhibited by the same firm, are well made.

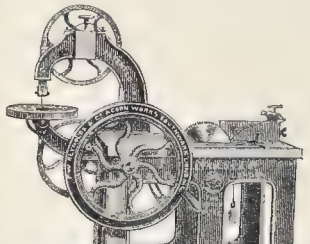
Messrs. George Waller & Co. (*Stand* F 174), of Holland-street, Blackfriars, exhibit many of their well-known specialities in wrought and cast ironwork for sewerage and other purposes, such as ventilating-grids, flushing-boxes, gully-grates, penstocks, and manhole-covers, such as Latham's patent manhole-cover, which we have noticed on a former occasion. Soil-pipe ventilators, inspection-boxes, street orderly-bins, and many other appliances needed by sewerage engineers and borough-surveyors (not to omit mention of a complete set of gully-cleaning tools), are shown by this firm.

Messrs. Verity Bros. (*Stand* F 172 and F 172A), of Call-lane, Leeds, show mortising and band-sawing machines, but they make a speciality of their window fasteners, openers, and fittings. Among the latter is a very good casement stay. Their patent interlocking fanlight pivot, their patent chain hopper or fanlight opener, their patent opener for lantern lights, and Waller's patent rack and worm motion skylight-opener, are all very useful appliances, and may be seen and tested in action.

Messrs. Charles Drake & Co., Limited (*Stand* F 194, G 232) are exhibitors of their patented specialities in concrete work, including their marble mosaic concrete, which is shown in varied applications, one of the most notable being as a moulding or frame for the proscenium opening of the new "Grand" Theatre, Islington, now being erected on the site of the burnt-down "Philharmonic."

Messrs. E. P. Bastin & Co. (*Stand* F 198, G 228), of West Drayton, show their folding back-covers, for brickmakers, also brick-moulds and other appliances used in the manufacture of bricks.

Messrs. F. W. Reynolds & Co. (*Stand* 269), of Acorn Works, Blackfriars, exhibit, as we mentioned last week, a large collection of woodworking machinery, including the new "Queen" sawing machine, a view of which is given here.



The engraving did not reach us in time to accompany the detailed description of it given by us last week (see Supplement, p. 479). The machine is specially designed for hand power, and is self-feeding, so that one man can work it.

Messrs. George Richards & Co. (*Stand* 244, *South Side*), of Manchester, have a large display of woodworking machinery in operation, including a high-speed jig-saw, making 1,200 strokes per minute, and a band-saw machine with "phantom" or "spider" wheels, somewhat similar to those used for bicycles. Most of the wood-cutting machines shown by these exhibitors appear, from a cursory examination, to be simple in design and solid in construction.

Messrs. R. W. Hale & Co. (*Stand* 245), of Chalton-street, Somers Town, exhibit some good perforated zinc-work and a few miniature zinc flats showing some improved methods of laying zinc roofs with lock joints. These should be seen by architects and builders.

Messrs. Hopkinson & Prince (*Stand* 248), exhibit the "Wordsworth" gas-engine (one of the latest things in this line) and some good wood-working machinery.

Messrs. Butters Bros. (*Stand* 249), show some good and useful plant for builders and contractors' use, including a concrete-mixer capable of mixing 100 cubic yards per day of nine hours.

Messrs. Doulton & Co. (*Bay* 51 *in Gallery*), of Lambeth, exhibit their radiating tile stoves and combined radiating tile stoves and fire-grates. A glazed terra-cotta mantelpiece, with stove arrangement in which no iron need be used, and the patent open grate, entirely of clay, are very good in effect, and may be fixed in any existing chimney-opening. This firm have also on view some wooden mantelpieces of good character, with tile-decorations.

The Albion Concrete Works (*Bay* 62 *in Arcade*), of Haymerle-road, Old Kent-road, are exhibitors of some good red concrete moulded work for cornices, cills, string-courses, lintels, &c.

Messrs. Joseph Brindley & Co. (*Bay* 64 *in Arcade*), show enamelled slate chimney-pieces and other goods in the same material, in great variety and very good of their kind.

Messrs. S. Oppenheim & Co. (*Bay* 71 *in Arcade*), of Hainolz, near Hanover, have on view specimens of their glass, flint, and emery paper and cloth; the paper made by this firm is in continuous rolls, and is very good and even in quality. Messrs. Muller, Uhlich, & Co., of King William-street, are the agents for the manufacturers.

Mr. Albert M. Woolf (*Bay* 72 *in Arcade*), of New Bond-street, exhibits Schlesinger's firestone paper and cloth, which is asserted to be twice as durable as the best glass paper.

Mr. William Brass, Junior (*Stand* 284, *King Edward's Hall*), of Old-street, exhibits his recently-patented reflecting pavement, stallboard, and other lights, for the illumination of basements, cellars, &c. The invention is the outcome of an attempt to supply a want which the inventor had experienced, and as a practical builder he has been able to meet the want in a very simple way. Mr. Brass's improved pavement light consists, in brief, of a strong iron grating, glazed with white crystal glass, 1 in. thick. Beneath this the reflectors (which consist of long narrow strips of silvered fluted glass) are arranged one behind another, and hung on centres. They are simultaneously actuated by cords, rods, or other appliances so as to be readily adjusted to any desired angle. This invention should be looked at by visitors.

In conclusion, we may note that we hear from Mr. Shrapnel, the energetic secretary of the exhibition, that up to the time of our going to press this exhibition has been much more largely visited than either of the three Building Exhibitions which have preceded it. The exhibition will remain open until ten p.m. this Saturday, the 14th, and is to be visited in the afternoon by the Lord Mayor and Sheriffs, in state.

EDINBURGH ARCHITECTURAL ASSOCIATION.

On the 7th inst. about fifty members visited the interesting Collegiate Church at Seton. The features of the structure were fully described in a paper prepared by Mr. Hippolyte J. Blanc, architect, Edinburgh, and its details compared with similar work existing in various parts of Scotland. The edifice was afterwards carefully examined. The company next proceeded to the ruin of Preston Tower. The keep of an ancient fortalice, its origin is involved in obscurity, but Sir Walter Scott supposed it to have been an outpost of the Earl of Home in those remote times when that family ruled with princely authority over the whole south-eastern district of Scotland. The castle to which this keep belonged was burned by the Earl of Hertford in 1544, and again in 1650 by Oliver Cromwell, after the battle of Dunbar. Preston Cross, an interesting erection in the immediate neighbourhood, said to have been acquired by the Chapmen of the Lothians in 1636, and recognised by their descendants still as a centre of merrymaking and interchange of salutations every year on the 1st of July, was examined, and its features described; after which the mansions of Hamilton and Northfield, close by, were visited.

A PROSPEROUS HOUSE AND LAND COMPANY.

At the annual meeting of the Imperial Property Investment Company, which was held last week, the Chairman stated that the Company had had no difficulty in selling or letting land during the year. He added that they had built 90 houses, sold 114, and had now on hand 145. A dividend at the rate of 10 per cent. per annum was declared, and a bonus of 15 per cent., and the Chairman stated that the directors had decided to issue 40,210 more shares, increasing the subscribed capital to 200,000*l.*, which would be offered *pro rata* to the existing shareholders at 5s. per share premium. It seems a large increase all at once.

GERMAN CASTLES AND BOURGS.

THE MARIENBURG, NEAR HANOVER.

In journeying south by rail from Hanover, the eye of the traveller, after passing Nordstemmen Junction, is attracted by a striking complex of buildings to the right, situated on high ground, and offering a commanding view of the surrounding country, the valley of the Leine. This extremely picturesque cluster of gables, towers, and turrets is the Marienburg, which bears the name of the Dowager ex-Queen of Hanover, and was erected for her by her husband, the late King George V. The building is of a light sandstone, and was begun soon after 1860, at first after plans by that eminent architect, Herr Hase, who intended it merely as a small château in a strictly Gothic style. The present aspect of the Schloss is the work of the late Baurath Oppler. The latter has displayed a great taste for artistic decoration, especially in the interior of the buildings, which, notwithstanding the simple style of the whole, is tastefully adorned. The rooms of the ex-Queen and the library, placed in one of the towers, are especially noticeable. The events of the year 1866 prevented the completion of the Rittersaal (Barons' Hall) and the decoration of the Morning Hall.

It would not have appeared strange if the artistic adornment, which had been entrusted to the painters, Knille and Gey, and had already been commenced by them, had been interrupted at that time. But the Queen was too high-minded to leave the work unfinished. At least, she insisted that the Morning Hall and the Dining Hall should be completed so far as the frescos were concerned. The painting of the Barons' Hall, which was to have received representations of Thuringian history, was abandoned; but the Morning Hall is adorned by frescos illustrating Thuringian folklore. The principal paintings are "Barbarossa in the Kyffhäuser," and "Venus and Tannhäuser," the latter similar in some respects to that placed by the master-hand of Knille in the Berlin National Gallery. Over the large paintings are smaller frescos in the frieze; for Barbarossa, "The Boy who found the Magic Flower"; for Venus, "The Faithful Eckhart, guarding the Entrance to the Hörselberg." There is also a large framing of pictures, likewise representative of Thuringian folklore. Gey has painted in the Dining Hall two large scenes from the life of Henry the Lion.

Decorated as the building is by subjects bearing upon popular tradition, from without it resembles an enchanted castle; for no one is allowed to enter it save the careful steward, who keeps everything in such perfect order that the owner may take possession at once, and miss nothing relating to comfort. As all along, the castle is still the private property of Queen Marie; but it is very questionable whether she will ever again step into the picturesque castle-yard, or rest her eye upon the Leinethal from the splendid terraces. This could only happen if she were to yield to the inevitable. Thus the castle stands, for some as a sad memory of former happy times, for others as a landmark of eventful days in German history.

ASHCROFT BUILDINGS LIVERPOOL.

These buildings are being erected for Mr. James Ashcroft, billiard-table manufacturer, of Victoria-street, Liverpool. Ten years ago Mr. Ashcroft built large show-rooms and workshops near the site of the present buildings, but the demand for billiard-tables has increased so much of late years as to necessitate his putting up still more spacious show-rooms and workshops in order to keep pace with the requirements of his business.

The new premises will not only include workshops for carrying on Mr. Ashcroft's own business, but also warehouses and offices, suitable for the various trades of which Liverpool is the centre. Victoria-street is the headquarters of the fruit and produce trades, and the above buildings form an important link in the chain of fine warehouses which, of late years, have sprung up in the neighbourhood.

The principal frontage of the building is in Victoria-street, and is carried out with Ruabon pressed bricks with Cefn stone dressings. The windows of the ground-floor are handsome bays, which will be used as shop-fronts. They are made of teak, and the upper lights are fitted with grisaille glass in lead quarries. The entrance-arch and the pilaster of the shop-windows (each of the latter being in one stone) are of Aberdeen red granite, and the plinths are of grey Dalbeattie granite, both from the celebrated quarries of Messrs. Newall, of Dalbeattie. There is an amount of carving on the stonework in the frontage, which presents a very handsome appearance.

The walls of the hall and staircase are lined with marble, door height, and the surface above with "Burmantofts faience" tiling and panels in relief. The screens and the doors to the shops, also the doors on the first-floor landing, are of American walnut, and, together with the hall ceiling, which is also in walnut and oak, will be of an elaborate character. The principal windows above the transoms and the windows to the area are fitted with grisaille glass, like the shop-windows and those on the light area.

From the centre entrance-hall access is had to the shops, and also by means of a broad stone staircase to the offices in the basement, and to those on the first, second, and third floors. The whole of the third and fourth floors will be occupied by Mr. Ashcroft as workshops in his extensive business as a manufacturer of billiard-tables, and every requisite for the complete fitting up of billiard-rooms, whether for hotels, clubs, and private houses. The roof over the workshop is flat, and will be used as a timber-yard for the storage of the different woods required in the manufacture of the above. The turret is fitted with apparatus to photograph all work of new and special designs. The roof and floor between the workshops and the warehouse are made of concrete, the former being covered with Claridge's asphalte. It will be readily understood that in large warehouses of this class, of large span, and where no intermediate columns are used, wrought-iron girders must enter largely into the construction. In this case no less than 100 tons of them have been used, for not only had provision to be made for the great weight of the machinery in the workshops, but the storage of something like 400 tons of timber, and a large quantity of slate beds for the billiard-tables on the roof, and the frequently heavy loads stored in the warehouses had to be provided for. Such considerations, together with the required obtention of large shop-windows, have made it necessary to carry up portions of the building in cement, and some parts in blue brick in cement.

The third-floor warehouse is fitted up with shafting and power, so that it is suitable either as a warehouse, by means of which loads up to one ton may be quickly lifted at each door at the same time. A large cage-hoist is provided for lifting timber, &c., from the ground to the roof, or for lowering the manufactured goods from the workshops to the showrooms, also a passenger lift. A strong main shaft is provided across the third and fourth floors. All the hoists and the machinery in the workshops are driven by two "Otto" gas-engines, each of eight nominal horse-power, one of which is fixed in an engine-house on the roof, and the other in the workshop on the fourth floor. An engine house is also provided on the third floor for another gas-engine, for the purpose of lighting the building by means of the electric light. The shafting is so arranged that either of the engines can be turned on to drive the machinery in either of both floors; or, in case of emergency, both engines could drive at the same time on to one main shaft. In the event of either engine requiring cleaning or repairing, the other one could be turned on immediately,—a very important consideration where a large manufacture is carried on. The walls of the private office on the ground-floor are continued the full height of the building, to form the above-mentioned engine-houses, and are made especially strong to carry the load. The corresponding rooms on the first and second floors are rendered fireproof, and are fitted with Milner's fire and thief proof doors, and form strong-rooms in connexion with the offices. A separate entrance and staircase are provided in Cumberland street for workmen, and for access to the warehouses. The warehouses are all fitted with iron doors and window-shutters in conformity with the requirements of the Fire Prevention Act, and every precaution has been taken to render them fireproof. The machinery is of the very best construction, great care and attention having been given to meet the special requirements of the building. The engines are too well known to need special description. The machinery in Mr. Ashcroft's old premises was driven by one 3½-h.p. by the same makers.

The general contractors are Messrs. Collin & Son; Messrs. Crossley Bros. supply the gas-engines; Messrs. Waygood the hoisting machinery; Messrs. Furness & Co. the shafting and wood-working machinery; Messrs. Stones & Co. the revolving shutters; Messrs. Yates, Haywood, & Co., and Messrs. Macfarlane & Co., the decorative ironwork; Messrs. Norbury, Ryston, & Patterson, the stone carving; the whole being carried out under the direction of Messrs. Hoult & Wise, architects, 4, Water-street, Liverpool.

We may add that the various contracts for the building, &c., come to little over 13,000*l.*, exclusive of the land, which has been purchased on lease from the Earl of Derby.

LONDON STREET ARCHITECTURE, No. 350, OXFORD-STREET.

A new lease for sixty years was granted by the Duke of Portland upon surrender of the then existing lease, which had about six years to run. The business was established about thirty-five years back by the late Mr. John Bumpus, and is now carried on by his son John. The building which occupies part of the site of Old Tyburn Church has a frontage of about 32 ft. in Oxford-street, and a return frontage of about 37 ft. in Marylebone-lane. Both fronts are executed in Portland stone ashlar, and on the ground-floor have Corinthian pilasters with carved capitals standing on polished granite plinths.

The shop-front is of American walnut, glazed with plate glass. The building, including basement, is six stories in height, and is entirely used for business purposes. The shop and floor above are fitted up with book-shelves and cases of American walnut; the latter are glazed with plate glass, and are devoted to bound books, of which Mr. Bumpus has an extensive assortment of considerable value. The upper floors contain a counting-house and private room, and are fitted with shelves for the general stock, which is very large. The basement is devoted to second-hand books, conveniences for packing, &c., and has a lift taking goods direct from the street, and a smaller lift communicating with each story. There are likewise speaking-pipes and other conveniences.

The cost of the building was about 5,000*l.*, and it was erected by Messrs. G. H. & A. Bywaters, of King-street, Regent-street, from the designs and under the superintendence of Mr. E. Marks, architect, 1, Duke-street, Grosvenor-square. Messrs. Daymond & Son executed the stone and wood carving from the architect's designs.

REREDOS, ST. MARY'S, NEWINGTON.

The new reredos in St. Mary's, Newington, of which we give an illustration, is now nearly completed. It would have been completed before now if funds for it had been forthcoming. Mr. James Fowler, of Louth, is the architect.

MATLOCK BATH WATER SUPPLY.

Captain Robert C. T. Hildyard, an inspector of the Local Government Board, held an inquiry at Matlock Bath, on the 4th inst., with respect to an application from the Local Board of Matlock Bath and Scarthin Nick, for sanction to borrow the sum of 6,014*l.* for the purchase of the undertaking of the Matlock Bath Waterworks Company, and for the execution of works of water supply.

In the year 1881 Messrs. G. B. Nichols & Sons, engineers, of Handsworth and London, were called in by the Local Board to report upon a scheme for water supply, and to value the company's works. Their valuation amounted to 1,763*l.* The company's engineer, Mr. C. H. Roper, of Dudley, valued the works at 2,759*l.* 7s. 6d.; and in March, 1882, an arbitration was held, Mr. Wm. Batten, C.E., as umpire, whose award was 1,907*l.* 10s.

Messrs. Nichols & Sons estimate the cost of constructing new works, and extending the present sources of supply, at 4,077*l.* 3s.

There was no opposition to the application.

Competition.—The design of Messrs. Borer & Dobb, architects, of London-wall, has been selected in a limited competition by the Committee for the erection of the new Congregational Church, Lower Edmonton, N. (Rev. G. S. Curryer, minister).



LONDON STREET ARCHITECTURE: A HOUSE IN OXFORD STREET.—Mr. E. Marks, Architect.

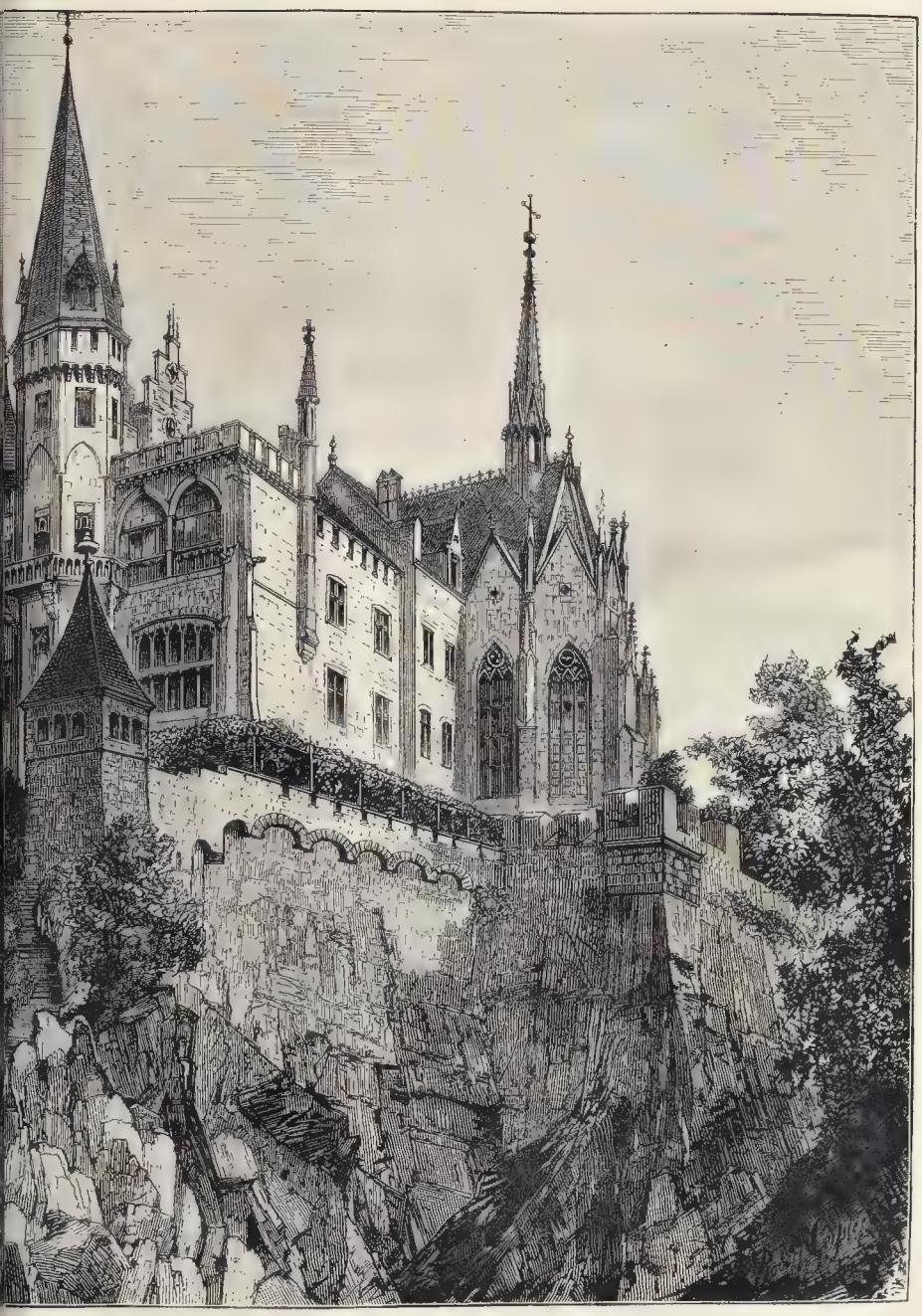




ASHCROFT BUILDINGS, LIVERPOOL.—Messrs. Hoult & Wise, Architects



GERMAN CASTLES AND BOURGS: THE MARIENBUR



ANOVER.—Herren Hase and Oppler, Architects.

S. Mary, Newington: Design for Reredos.



Whiteman & Bass, Photo., 169 High Holborn.

ITALY.*

I FEEL that I have been more than a little rash in choosing for my subject this evening one so comprehensive and so much better understood by some of you than by me. My apology must be that I feel more or less enthusiastic in the matter, and that, even if I fail to say anything which will be new to the old travellers, I may at least hope to interest some of my fellow students, who have not yet had the good fortune to visit Italy, in the architecture of that country which held the foremost place in art and literature for several centuries of the world's history.

In the spring of 1880 I had an opportunity of travelling abroad for a short time for the sake of study, and of course I was recommended to go to Italy. It was the right thing for a young architect to do,—every one did go there, and I was certain to enjoy it. But for a long time, in my usual pig-headed way, I declined to entertain the idea: I was a narrow-minded Goth, and would not look at any thing without pinnacles and pointed arches; as to a flying-buttress, I loved it as my friend and brother. My views of Italian architecture were not very broad, and by no means flattering; they were gathered principally from such books as Letarouilly and Cicognara, and I think concentrated themselves in a vision of Corinthian columns, as numerous and infinitely more monotonous than the trunks in a pine forest sprouting at the top into marble acanthus-leaves of the most irritating sameness. However, knowing very well that I knew nothing really about the matter, I at last allowed myself to be persuaded into going, and one wet and dreary evening in April I found myself, after a long and tiring journey, in the train running down the wild valley of the Dora from the Mont Cenis Tunnel towards Turin. This valley is described in the guide-books as picturesque and lovely; but that evening, in the wind and rain, and tired as I was, it appeared to me the very impersonation of weird and fantastic desolation,—the sort of place, as some one said, for which Gustave Doré must have got out the working drawings; he might have added that Danté should have been employed to write the specification. The few drenched passengers at the stations, with their slouched hats and cloaks thrown over the shoulder appeared like so many Guy Fawkeses or stage villains dissembling; the fact is, I had made up my mind to make the worst of everything. It rained incessantly for the first three days I was in the country, and I talked sarcastically about blue Italian skies; it was bitterly cold, and I wrote home ironically about "the sunny south." The paper money, the noisy streets, the importunate beggars, and the pestilential guides were excellent food for my ill-temper; while the buildings of Turin, where I was staying, were not calculated to dispel my illusions with regard to Italian architecture. Altogether I was decidedly *not* happy. However, after these first three days matters began to mend,—the rain ceased, and we had a cloudless sky all the summer through, the temperature became warm, and sometimes something more, and from the time I went to Pompeii,—which I did at once, while it was still spring and reasonably cool,—I began to get enthusiastic in my studies.

I do not propose to weary you by acting the showman, and telling you, in guide-book fashion that in such-and-such a town this and that building have certain features of interest, and that they were built by So-and-so, and restored by somebody else, neither of whom you may ever have heard of, but rather to attempt some short description of those features which made most impression upon me as being peculiar or peculiarly treated, and you will, I hope, not think me presumptuous if I add a few opinions and criticisms upon what I describe. In the fear of failing to interest you by what I have to say, I have borrowed from my friends a number of sketches and drawings of Italian architecture, which are hung upon the walls, and for the loan of which I desire to convey my best thanks to Mr. Millard, Mr. Vacher, Mr. Stokes, Mr. Hooper, Mr. Conder, and Mr. Leach.

I may say at once that my vision of Corinthian columns quickly faded. There is in Italy a mass of Mediæval work which, whatever its faults,—and they are many, at least, from our standpoint of constructional truth,—must excite the deepest admiration.

* A paper by Mr. F. T. Baggallay, read before the Architectural Association on the 6th inst.

Shams: Want of Thought in Design.—There is much of what we should call shams and constructive absurdities, and there is an evident lack of thought and ingenuity in much of the designing (I speak of the Mediæval work only); but these things were apparently not held to be faults, or more probably were altogether unnoticed at the time; and there is so much native grace and dignity of outline, and such beauty of colour, and, above all, such variety and suggestiveness, that one feels bound to forgive even such grave and fundamental errors.

Want of Continuity in Style.—One of the first things with regard to Italian architecture that I observed in going from place to place was its independence. There seems only a very slight connexion, except in a few matters and in exceptional cases, between the style in vogue in one town or group of towns and that of another; even the continuity of its history in one place is often most difficult to understand, designs springing up constantly, founded to all appearance upon nothing that has gone before and contemptuously indifferent to precedent, that tyrannical pedagogue before whom *we* all bow and tremble.

What apparent similarity is there, for instance, at first sight, between S. Ambrogio at Milan and S. Zeno at Verona, both buildings of the 12th century; or between S. Miniato at Florence and Lucca Cathedral, separated only by 50 years in time and by less than 40 miles in distance? Or where is the evident connexion between the gorgeous façades of Orvieto and Siena cathedrals and any previous or contemporary buildings. Of course, I do not mean that no connexion exists, but only that the course followed by the designers was so independent that some research is required to find it, and great difficulty would be experienced by any one who attempted to classify the architecture of Italy by dividing it into periods, as we have done with our own and with that of France; indeed, to do so would, I believe, be found impossible.

Low Roofs.—The thing of all others which, on entering Italy, is most certain to arrest the attention of every architect from this side of the Alps is the low pitch of the roofs. The reasons for this have been so often detailed that it is not necessary to repeat them again; but it has such an important influence on much of the designing that I cannot help referring to it. The first and most important consequence is that the roof becomes an entirely unimportant feature externally, even if it is seen at all; for a very flat pitched roof does not, of course, appear in perspective. When you think of the sky lines and other picturesque effects of the high roofs and gables of France and Germany, and what an important service the long level ridges and flat surfaces of the roofs of our English cathedrals perform in giving repose and finish to the designs, you will perceive at once what a difference this alone must introduce. Then, again, low roofs mean low-pitched gables, and these, almost as a natural consequence, necessitate the horizontal treatment, which is everywhere noticeable, rather than a vertical one, and so assist in maintaining the classical traditions of the country.

Lack of Vertical Connexion.—To this dominant horizontality (if I may call it so) is due, I think, the fact that Italian architects, while evidently very particular about the *lateral* continuity of their designs, seldom seem to have thought it necessary to provide any *vertical* connexion between the parts, so that buildings frequently give one the impression that they have been erected in separate stories or features, which were afterwards piled upon one another.

Absence of Buttresses.—Another thing that strikes the English architect most forcibly in Italy, notwithstanding all he may have heard about it beforehand, is the absence of buttresses. An Italian never used a buttress if by any possibility he could avoid it. If it was necessary to resist the thrust of an arch, he considered that the natural and legitimate thing to do was to put in an iron tie-rod, and he did so with the greatest frankness, and without the least sense of shame or of its being in any way reprehensible. So much has been said upon the merits and demerits of the two systems, that I will only remark, that while one leads to picturesqueness and piquancy the other lends itself to refinement and repose. It is certain that buttresses would so alter many of the most beautiful features of Italian architecture that they would no longer be themselves in any sense whatever. How would it be possible, for instance, to construct with buttresses anything at all resembling the beautiful porches attached to almost every cathedral and important church of the Romanesque period in Lombardy, which I shall presently describe?—or the tomb canopies of Verona and Bologna, one of the principal charms of which is their simple outline? Or how would Italian campanili look with buttresses? Perhaps they might still be beautiful in another way, but they would no longer be Italian campanili.

Arches.—A noticeable point in all the more nearly Gothic of Italian Gothic work,—that which is evidently founded to some extent on Northern buildings,—for instance, to give the best-known examples, Florence, Orvieto, and Siena cathedrals,—is that the arch mouldings are invariably, I believe, a repetition of those on the jambs, the caps being treated simply as an impost. I must say that I do not see the horrible wickedness of this arrangement, so often held up to reprobation by the virtuous apostles of architectural propriety. The caps have only a slight projection, and are so much run together that they may well be regarded as simply a band of carving marking the change from a straight line to a curve in the lines of the jamb; and as to the mouldings being the same, why, we do it ourselves every day. Where the arches are stilted, as they often are, the real springing is marked, with much true artistic feeling, by a small subordinate moulding, which often, too, forms a kind of base or plinth to the mouldings of the arch. I must not omit to mention the form of pointed arch, peculiar to the civil buildings of Florence and Siena, and a few other places to which the style extended,—which grows thicker towards the apex; that is, has the back of the arch more pointed than the soffit. This form strikes me as having an exceedingly pleasing effect; how much of the pleasure is due to the novelty I am not quite sure, but I do not think much. It has been condemned as unscientific, but of that I am not convinced, for I think it must bring the thrust more perpendicularly upon the abutments. Even if it is unscientific, must we always sacrifice beauty to constructive truth? And had we not better, in that case, become civil engineers at once?

Colour.—One prominent characteristic of Italian architecture,—perhaps the most prominent; one certainly which strikes any traveller from this drab and dingy city as much as any,—is the prevalence of beautiful and brilliant colour, both outside and inside the buildings. The climate is, no doubt, mostly responsible for this; the strong lights and deep shadows make brilliant colours, which here look glaring and vulgar, both bearable and pleasant. Perhaps, also, the artistic instincts of the population have something to do with it; and the purity of the atmosphere makes it possible to expose even fresco paintings in the open air. Coloured marble, too, is comparatively easily obtained and cheap, and is largely used in important works, both in large pieces and in mosaics. But the Italians use also materials for external colouring which are equally accessible to us, and which are, indeed, being gradually introduced; though not to such an extent as they might be, did some of us exhibit but a little more energy and enterprise, and perhaps a little less wilful prejudice. I speak of terra-cotta, ceramic ware, and glass mosaics. Before I went to Italy I was strongly prejudiced against the two first of these, but I feel sure that no one could retain any such prejudice after seeing the terra-cotta work at Ferrara, Bologna, Pavia, and other towns in the North of Italy, and the glorious panels and friezes of Della Robbia ware at Florence and elsewhere.

Terra Cotta.—The most refined work in terra cotta is, I think, to be found at Ferrara, with cinque-cento details, but there are also a mass of very beautiful things at Bologna, and the cloisters of the Certosa of Pavia seem hard to beat when one is looking at them. I have sometimes heard it urged that terra cotta being a cast material leads to flatness by the avoidance of undercutting, and to lack of interest by the repetition of features. Of course, it may be so, but the Italians do not seem to have fallen into either trap; their terra-cotta work is full of vigour, sometimes, as in the Ospedale Maggiore, at Milan, too much so, I think; and the more important features are seldom or never repeated, but are undercut and modelled like features in stone or marble, the mould being then necessarily broken in the production of the first cast. Among all the beautiful busts and

heads in the cloisters of the Certosa, I believe I am right in saying that no two are alike. The features required to be repeated cannot, of course, be undercut, but they are usually elaborately carved with running ornaments, only a few fillets being left plain. This has two advantages; it prevents the unavoidable flatness of the mouldings being noticed, and it hides, to a great extent, the imperfection of the joints caused by the unequal shrinkage of the material.

Ceramics.—The ceramic or majolica ware, to which I have referred, is glazed and coloured, and belongs to the latter half of the fifteenth century. The colours are mostly blue, green, purple, and yellow. Wherever it appears it is always attributed to Lucca della Robbia, or some member of his family, and I have never heard any doubt cast upon its origin; but, if the family had a monopoly of the manufacture, I think it must have been a valuable one, for there are now specimens of it all over the world, there are several at South Kensington. It is often used internally, as well as on the outside of buildings; but is, I think properly, confined, with few exceptions, to decorative friezes and panels. (The most noticeable exception is the front of the Oratorio of S. Bernadino at Perugia.) It always has a good effect, especially when the colouring is confined to a flat ground from which the white figures stand out in relief, the simplicity being eminently decorative. It is used with particularly beautiful effect in the coffers of the central arch of the porch of the cathedral at Pistoja and in the circular coffers,—I do not know whether that term is correct, but I think it will explain what I mean,—of the beautiful little dome over the porch of the Capella Pazzi at Sta. Croci at Florence.

Banded Striped Work.—It would not do to leave the subject of external colouring without mentioning the striped work both in white and dark green (practically black) marble, and in white marble or stone and red brick. It has occasionally an irritatingly unquiet effect, and I am sometimes a little inclined to think of zebras in connexion with it; but, on the whole, I think most people are pleased with it, and it certainly gives interest to many an otherwise flat wall surface. The bands are, of course, always horizontal, but there seems no rule to regulate their depth. Sometimes the black and white are about equal, as at S. Lorenzo at Genoa and the cathedral at Orvieto. The interior of Siena Cathedral, one of the most impressive interiors I know, is exactly similar. Sometimes, as in the exterior of Siena Cathedral, they are so unequal that one might call it a white wall with black strings; but usually the proportion is between the two extremes, the white being always in excess. The best example that I remember of the many buildings with red brick and white marble bands is the cathedral at Verona. The bands are about equal in breadth, and have a very fine effect; much better, I think, because a little less contrasted than the black and white.

Mosaics.—Glass mosaic was employed everywhere, almost to the exclusion,—sometimes altogether to the exclusion,—of other forms of decoration in the interiors of all the important early Christian churches in Italy. Those of Ravenna and Rome are covered with it, and in the tenth century even the whole of the interior of St. Mark's at Venice, from about 15 ft. or 20 ft. above the floor, is literally sheathed with it as if with a tight skin.

The ground colour of these mosaics is sometimes a dark rich blue, as in the interesting little building called the Mausoleum of Galla Placidia at Ravenna, but more usually it is golden. The tesseræ vary in size from that of a finger-nail, or larger, to almost microscopic minuteness, and no particular care is taken about their exact form. They are always arranged in rows or lines following the contours of the objects represented, and the features, hands, and other important parts are drawn with the smaller pieces, and the groundwork and flat surfaces with the larger ones. The drawing is stiff and conventional,—to put it in polite language,—but, on the whole, pleasing, and perhaps more decorative in character than the highly-finished productions of a later age. The colour is magnificent in the extreme.

I could never like the system adopted of running the mosaics round the arrises of arches and piers, it altogether confuses the lines of the architecture, and, though some say there is much poetry in the mystery that results, it, nevertheless, seems to me to offend against true decorative principles. Besides, I do not see that mystery *does* necessarily mean poetry; there is plenty of the former, but very little of the latter, in a London fog. I should much like to try the effect of a marble moulding on the arrises the first time a client gives me an order for a mosaic-covered interior. The mosaics with which the west fronts of Siena and Orvieto cathedrals are covered, and most of those in the west front of St. Mark's are of late date, gorgeous in colour, unconventional in treatment, and scarcely, I think, worthy of the admiration often expressed for them.

I might say much about the painted and fresco decorations both of early date at Pompeii and Rome, and the later ones at Perugia, Pisa, Florence, Assisi, Padua, and elsewhere; but they afford more than sufficient matter for a paper by themselves, and I leave them with the hope that some one will before long come forward with an essay on the subject.

Marble. The use of marble is so important a feature in a large majority of the principal buildings of Italy that it deserves to be described at some length. Much has been said and written respecting the sham involved in casing walls, as is there almost invariably done, with marble slabs. It is done in the churches and palaces of Venice, notably at St. Mark's and the upper part of the Ducal palace. All the principal ecclesiastical buildings at Florence, the cathedral, the baptistery, the campanile, St. Miniato, Sta. Maria Novella, and Sta. Croce are incrusted with white, black, and coloured marble in thin slabs, and the same is true of many churches at Pisa, Lucca, Pistoja, and, indeed, throughout the country. Milan Cathedral is an exception, it is true, in this as in other ways, and I think St. Lorenzo at Genoa, Siena, and Orvieto cathedrals (all except the west fronts), and a few other buildings have really marble ashlar; but it is impossible to tell. I have rather lost faith in ashlar work, since I have seen the destruction of the old law courts at Westminster, and how the solid-looking blocks there turned out to be little better than paving stones on edge. Even if those buildings are of solid blocks, they are only of the white and dark green marbles, so easily obtained from the neighbouring quarries in the Apennines that they may be considered as the local materials. It seems to me that it would have been absurd to use rare coloured marbles in the same way as common building stone; they are practically quite a different material, and should be treated in quite a different way; they are too valuable to be used for building solid walls with, and too beautiful to be laid so that only one small end or side of each block can be seen. As much surface, surely, should be exposed as possible, and the only way to do that is to use them in columns or in thin slabs. Some, perhaps, will say that, if marble could not be used in solid blocks, then it should not have been used at all for walling. But it would have been very hard to discard altogether the most beautiful of natural materials which are sufficiently durable for external use. I must say I think the Italians were perfectly right in resorting to the *slab* system; but I do not know that they often applied it in the right way. At St. Mark's, and most of the older buildings in Venice, oblong strips were laid over the whole surface, and fastened with cramps, so as to form a regular veneer, arranged like the veneering on our grand pianos and other furniture of a few years ago, with the veining reversed to form pretty patterns. This treatment is at least honest, and has no appearance of insecurity, because the cramps are perfectly visible; but it is surely too crude and wanting in ingenuity to be a worthy solution of the problem. In most of the Florentine buildings, notably the cathedral, and in many buildings at Lucca and other Tuscan towns, the marble incrustation takes the forms of joiners' work, with styles, and rails, and panels just like a wooden door or partition. This is, of course, to be condemned; every means must be taken to avoid using the forms proper to one material when working in another. The styles and rails at once give the impression of being framed together to carry the panels; and, if you were unaware of the nature of the material, you would be quite surprised to learn that the framing was not itself the wall, but was carried by something much more solid behind it. In many buildings, in parts, for instance, of the cathedrals at Pisa and Lucca, the slabs are ranged in courses and pretend to be solid blocks. I do not think any one will defend such a conscious untruth as that. In others, the best-known instance is that of the Doge's Palace at Venice; the pieces are cut small and arranged in a pattern or diaper: this is a less objectionable system, but is, nevertheless, a treatment more suited to bricks or tiles or some manufactured material which is always obtained of a particular form and size. The real solution seems to me to be found in those Venetian palaces,—the Ca d'Oro, for instance, in which the slabs are arranged in panels outlined by a moulding or ornament, such as a cord or what Mr. Ruskin calls the Venetian dentil. These mouldings are cut on the edges of slabs, which are built into the wall and form a perfectly constructional and legitimate tie for the facing, which no one could take for any thing but what it is. The treatment does not imitate that of wood or stone, and indeed would not be suitable to either. It appears, and is, perfectly secure, and gives, as you know, very beautiful results. The Venetians of the fifteenth century seem to me to have been very happy also in their use of porphyry, verde antique, and other very valuable and rare marbles, which they set in frames like jewels in the fronts of their houses, sometimes in squares or diamonds, but more frequently in circles. I do not know whether the idea has ever been suggested by any one else, but it occurred to me that possibly these circles may be the slices cut off the ends of the antique columns, stolen from Constantinople and the East to make them fit their new positions. The notion seems at first, perhaps, a little wild, but I do not know that there is really any great improbability in it. Of coloured marbles in columns there is little to be said, except that they seem most appropriate when of small scantling, and most beautiful when quite plain; fluting, twisting, or carving on veined or even coloured marble, whether in columns or otherwise, seems almost an insult to the material, and certainly spoils in the one case the beautiful lines of the natural veining, and in the other the breadth of the colour.

Pavements.—I must not leave the subject of marble without mentioning its use in pavements. The early marble mosaic, the *opus Alexandrinum*, as it was called, to be found at Rome especially, in most of the ancient churches, is, to my mind, the most appropriate material for a decorative pavement ever invented. The marble is rich and beautiful in itself, and able to bear a considerable amount of wear and tear without material deterioration, and the patterns, being geometrical, never suggest the reluctance to walk upon them which one feels if natural objects are represented. The pattern is almost always founded upon the circle, one large one forming a nucleus round which others are arranged on the hen-and-chickens or planet-and-satellites system. The eye of each circle is usually a large piece of porphyry or other rare and valuable marble, and this is surrounded by a single, triple, or quintuple band of smaller pieces, which goes winding about and connecting the whole together. Then there are the marble pavements of St. Miniato at Florence and the cathedral at Siena, each unique in its way. That of St. Miniato, laid down in 1207 (I like to make the most of a date when I have one), is in black and white marble, the black forming the ground, with circles containing conventional animals in white upon it. The pavement of Siena Cathedral is a magnificent work in white marble, with Biblical scenes and architecture drawn upon it in incised lines, which are filled up with black mastic. The whole thing is magnificent as a piece of line drawing on a gigantic scale, but simply abominable as a pavement. There is a rubbing of a part of it in the Architectural Court at South Kensington. While on the subject of pavements I should like to mention some which remain at Pompeii, and which are very suggestive for cheap floors. They consist of a concrete of broken brick or lava, making a red or black ground respectively, into which have been pressed, while it was wet, small tesseræ of white and black marble, in various geometrical patterns, squares, diamonds, frets, or others. They are very effective, and I do not see that any difficulty could arise in reproducing them.

Furniture.—A vast quantity of marble, both white and coloured, is used in the furniture of the churches, in pulpits and fonts, stoups, screens, altars and tombs. The early pulpits, or ambones, and the screens, decorated with opus Alexandrinum, and often also with glass mosaics in geometrical patterns (the principal colours used in such mosaics are red, yellow, white, and dark blue or green), give one an idea of colour

not to be acquired by the wildest dreamer in this country. Some of the more southern towns, such as Salerno, Amalfi, and Ravello, possess the best specimens of this kind of work, but there is a great deal also at Rome and a little at Ravenna. The beautiful white marble pulpits at Pisa and Siena, the work of Niccolo and Giovanni Pisano, are, I suppose, the finest specimens of Gothic furniture in Italy, but they are more works of sculpture than of architecture. (At South Kensington there are casts of the one still existing in the baptistery at Pisa and the one which was once in the cathedral). The pulpits and other furniture in white and coloured marbles of the cinque-cento period, which are to be found all over the country, are most exquisite and refined both in design and execution, but would alone take a long paper to describe.

Carving.—In Italian architectural carving, though the figure sculpture is always most beautiful and interesting, and though almost all the foliage of the Roman and renaissance periods in Italy is an acknowledged example to all ages and countries, it seems to me that much of that on the buildings of the Gothic period, while it has thrown aside the conventionality and refinement which make the beauty of the former, has none of that vigour and crispness which make up for the loss in the carving of our own and the French Gothic period, and upon which we set such a high value; in fact, many of the crockets, which are generally very large and set very close, look like very naturalistic cabbage leaves, while the undulating contortions of others strongly suggest flames; and when, as was often the case, I saw a gigantic finial with an ugly little half-length figure of some saint popping out of it like a jack-in-the-box, I was irresistibly reminded of a fairy tale that was once a favourite, in which an ogre appears to a child out of an actual cabbage. I do not care either for the foliage on the caps of the same period, which is naturally of much the same character. Some of you will at once think, I suppose, of Mr. Ruskin's eulogy of the caps of the arcades of the Ducal Palace at Venice; but even their beauty does not lie, I imagine, to any great extent in the foliage, but is due to the figure sculpture and the thought displayed in its design. I came across, however, one little piece of foliage of singular interest, it was the knob of a cap on an ambone in the cathedral at Ravello, near Amalfi, right in the south. It is work of the thirteenth century, certainly, but all the rest of the carving is purely Romanesque, while this piece bears something more than a strong resemblance to our Early English work,—it is, in fact, the very thing itself. While on the subject of carving, I must not forget the name of Mino da Fiesole, a Florentine sculptor, who lived in the second half of the fifteenth century, and who did a large quantity of decorative work in the neighbourhood,—there are several specimens of it at South Kensington. His sculpture in low relief, with its simple, sharp lines, is wonderfully well adapted to architectural decoration. There is one very charming specimen of carved work in the external pulpit on the south-west angle of the cathedral at Prato. It is a circular structure in white and coloured marbles, with sculptured panels surmounted by a moulded rail, corbelled out from the wall and surmounted by a conical canopy, a little like an umbrella; the effect is novel and pleasing in the extreme.

Symbolism.—The Mediæval Italians thoroughly understood, and were very fond of, symbolism; and the traveller who has studied Mrs. Jamieson's interesting books will find that his pleasure is vastly enhanced by his power of deciphering the legends told by that means in the sculptures and decorations of all the more important Italian buildings. Not only were religious emblems used, but cities and historical events were represented by symbolical animals on the angles or over the doorways of their public buildings, giving something of the piquancy and interest which is to be found in our more useful and more grotesque gargoyles.

I find that I have wandered to some extent away from purely architectural subjects, but by way of returning to them I will say a few words about corbels.

Corbelling.—The Italians are exceedingly fond of corbelling, and use corbels and consoles of enormous size and projection. I remember some at Bologna, in the courtyard of the Palazzo Fava, 9 ft. high and 5 ft. 6 in. in projection. In the same town the whole side of a celebrated brick and terra-cotta house, in which the Caracci are said to have lived, situated near the Piazza St. Domenico, is corbelled out some 3 ft. at the level of the first floor. The eaves of the roofs, which are frequently made of enormous projection for the sake of the shade in the streets, are in that case often supported on long carved wooden brackets, as, for instance, at the Bigallo at Florence. The corbels and consoles supporting the numerous window balconies in Italy, and the singing galleries, which are such a frequent and fine feature in the churches, are often of elaborate and beautiful design, especially those of the cinque-cento period. Corbel tables under cornices and strings were used in Italy up to the latest period, and many are very elaborate and beautiful.

Balustrades.—A very common feature in the north-east, in Venice, Verona, Padua, &c., is a peculiar balustrade, formed of a number of little colonnettes generally supporting a solid-looking trefoiled head, and surmounted by a moulded rail. The caps, and sometimes the spandrels between the trefoils and hollow in the rail, are carved with foliage; there are often no bases, and occasionally no caps either to the shafts, and very frequently the head is omitted, and the shafts directly support the rail. There is a very beautiful specimen in the red marble balustrade of the staircase at the Casa Priuli at Venice (the same house which has the corner window illustrated in Mr. Street's "Brick and Marble Architecture").

Balconies.—But I think these balustrades are most charming when surrounding one of the little balconies corbelled out from the house-fronts, as I have mentioned above. In Padua and Venice I remember them especially, and the extra charm often given to them by the little conventional lions or other figures perched upon the corners and peeping at the passers-by.

Twisted Shafts.—Another feature which I remarked in Italy as being peculiar to the country is the twisted shaft, which seems to be used everywhere, from the building of the beautiful cloisters of St. John Lateran and St. Paul, without the walls, at Rome, in the commencement of the thirteenth century, to the erection of the front of the baptistery of St. John at Siena at the end of the fourteenth. These shafts are generally exceedingly beautiful in themselves, and as they are most frequently used, that is, simply for decorative purposes, very seldom where a great weight has to be sustained, do not strike me as so awfully unconstructional. The variety of design is practically unlimited; a plain shaft twisted on itself is the simplest, and between this and the shaft, which is not only twisted, but has as well three or four elaborately-moulded carved and inlaid threads running round it like the threads of a screw, there must be an almost endless number of varieties, each of which may be again infinitely varied by altering the mouldings, or making the turn quicker or increasing the number of threads. A further complication is sometimes introduced by twisting two shafts together, but that has, I think, always an unpleasing effect. Where these twisted shafts are used in door or window jambs they follow the example of the other mouldings, and run round the arch as twisted rolls.

Doors.—Coming to doors and windows, I cannot, of course, notice all the varieties, but must choose those which seem most beautiful or characteristic. There is one class of very elaborate doors which greatly excited my admiration. The most beautiful example I know is the south door of Orvieto Cathedral. The jamb and arch-mould consists of alternate chevroned rolls or shafts, and bands of conventional, very refined, and deeply undercut foliage, of an altogether exceptional type at the period, but strongly resembling the classic acanthus; these are divided by rows of small dog-tooth ornament. The door is, as usual, square-headed, with a deep, rich green, bronze lintel, carved with little figures of our Lord and his Apostles. The arch is pointed, and the springing is marked by a band of carving, running into caps over the shafts, with a moulded architrave, which is carried across the lintel on consoles. In the tympanum are two little twisted shafts, which evidently once carried a canopy under which was probably a figure of a saint; and there are also some remains of colour decoration. The whole (except the lintel) is in white marble, and the richness of the effect is perfectly enchanting. Many similar and not much less beautiful doors exist in the country; there is one on the south side of the Palazzo Communale at Perugia, which is especially fine; it is much lower in proportion than the Orvieto one, and is finished with a semicircular arch. Over the door on either side is a bronze griffin overcoming a wolf, to commemorate a victory of Perugia over Siena. Another class of door which interested me a good deal, and of which there are some specimens at South Kensington (it belongs to the early part of the sixteenth century, and is therefore Renaissance), is that consisting of a flat pilaster on either side supporting an entablature, and surmounted by a semicircular canopy; each foot of the canopy is ornamented with a flower in a circle, surmounted by a five-leaved honeysuckle, and the summit has two such flowers supporting a finial. The tympanum is always filled with appropriate and characteristic sculpture.

At Venice, and now and then elsewhere, there are several specimens at Naples, and at least one in the interior of Milan Cathedral,—many square-headed doors of the Gothic period are surmounted by a peculiar and very characteristic canopy. It consists, in its simplest form, of a pointed arch, with much carving and moulding, *and much becrocketed*, supported at the sides by large finials bracketed out from the wall. The *raison d'être* of this canopy is evidently to afford an opportunity for sculpture. A good simple specimen is the south transept door of the Frari Church at Venice. Similar canopies are very common over wall tombs. Some very beautiful specimens may be seen in SS. Giovanni e Paolo at Venice.

Windows.—Some of the most characteristic Mediæval windows in Italy are, I think, the circular ones which fill the gables of almost every church built between the beginning of the twelfth and the end of the fourteenth centuries. These might have been very beautiful features; indeed, it is always a difficult task to make a circular window in a gable otherwise, but unfortunately the dislike or ignorance manifested by Italians with regard to tracery prevented their being made the most of, and, with a few exceptions, all are designed on much the same pattern,—a pattern which I do not like, because it strongly resembles, and always reminds me of a cart-wheel; but that is a matter of taste. There are three honourable exceptions: two of them the east and west windows of Siena Cathedral, which are round holes filled only with glass and stanchion-bars, and the other an early window at Toscanella, near Viterbo, which is thoughtful, and, I think, very beautiful in design. When I speak of the dislike of the Italians for tracery, I do not forget that they used it, or one kind of it, to a very large extent at Venice, but I regard Venice as an altogether exceptional city,—in architecture as in other things. And I must also make an exception in favour of some instances of plate tracery of the most exquisite beauty. I refer to the windows of the Church of St. Michele in Orte, or "Or St Michele" at Florence, and of the little Church of the Madonna dell' Arena at Padua, so well known for containing some exquisite frescos by Giotto. Mr. Ruskin, if I remember rightly, gives unstinted praise to the former in his "Seven Lamps," and says of it that "there is no more beautiful building in Italy." Unfortunately, "doctors differ," for Mr. Fergusson says in his history that it attracts attention "more on account of its curious ornaments than for beauty of design, which latter *it does not, and indeed can hardly be expected to, possess.*" I must say that, as regards the windows, I think Mr. Fergusson has made a mistake. Certainly the windows of the Padua chapel are some of the most charming and suggestive little features that I came across anywhere. I must also not forget that the tracery in Giotto's campanile at Florence is beautiful and refined in the extreme. I do not remember a single instance in an Italian building of the use of a moulded mullion (I do not regard Milan Cathedral as an Italian building). If it was necessary to divide a window, shafts with caps and (generally) bases were used, carrying arched or trefoiled heads and the frame and glass were set back to the inside of the wall. Sometimes, in very thick walls or where no glass is used, as in cloisters and towers, the shafts are double, or there is a long cushion capital similar to that found in the Saxon work in this country.

Porches.—The porches to which I referred in the early part of this paper, notwithstanding that they transgress in almost every particular the traditions which we hold, are, nevertheless, objects of the greatest beauty

and interest; indeed, in many instances the architects seem to have relied upon them for the whole effect of their fronts. The essential features are an arch, or rather a short section of a barrel-vault, projecting from the wall and resting on columns, having an iron tie-rod to resist the thrust, and the columns resting on the backs of symbolical animals,—usually lions or griffons. Sometimes, as at Ancona Cathedral, and at St. Zeno at Verona, the gabled roof is simply (so to speak) fitted over the arch; but more commonly there is a second story either of another single arch, as at Verona, Piacenza, and Parma cathedrals, or of three, as at Sta. Maria Maggiore at Bergamo (of which there is a sketch in "Brick and Marble Architecture") and the south porch of Modena Cathedral. The upper story was evidently intended as a niche for statuary, possibly for a statue of the founder, and in some cases is so used. The whole structure is generally of marble, the lovely colours of which, combined with the simplicity of design, the dignity and significance of the animals which support it, and the beauty of the carving which usually decorates it, causes the spectator to forget, or, at least, to forgive, its structural absurdities. One of the best, perhaps quite the best, of these porches is that at the west entrance of Ferrara Cathedral. It is built on the backs of a couple of conventional lions; the lower story is exactly the usual thing, but the upper one has the three Pointed arches on the front filled with tracery and resting on chevroned columns, while above the arches runs a deep frieze, representing, if I recollect rightly, the "Last Judgment," and the whole is crowned by a sculptured gable or pediment, with smaller gables facing the ends. In the four spandrels of the upper story are the symbols of the evangelists, and under the centre arch a figure of the Madonna and child. It is as suggestive a design as I have seen anywhere, and far more allied to my beloved Northern Gothic than anything else in Italy. The symbolical animals under the columns of these porches are worthy of special note; they are (I think, always) carved in red marble, and have great dignity of expression; they evidently have a symbolical meaning, and are either caressing or destroying some small figure. In guide-books they are said to represent the Church welcoming the repentant sinner or crushing heresy.

Tombs.—Tombs, free standing or wall tombs, are, owing to the climate, much more frequently found in the open air in Italy than in this country. It was very usual to put wall tombs in the west fronts of the churches, as at St. Giacomo Maggiore, at Bologna, and sometimes they are found on the other sides as well,—often treated quite as decorative features. Of the free-standing tombs, I am not sure that I do not prefer the simplest, such as the remarkably beautiful one which is bracketed out over a gateway to the north of the west entrance to Sta. Anastasia at Verona, after seeing which I was a little disappointed with the celebrated "Tombs of the Scaligeri," in the same town. I suppose I expected too much of these renowned works of art, for there seems to be a concensus of opinion that they are among the most beautiful productions of the country. Beautiful as they certainly are, I fancy I detect in them that carelessness of design of which I have spoken. It seems, for instance, a very poor expedient for getting a pinnacle to erect on the angle of the tomb of Mastino, a little colonnette to carry a platform on which a little canopied niche is built up like a separate structure or an afterthought. If it were altogether removed, the tomb would be just as complete without it. Again, if it were desired to erect an equestrian statue of the great man, surely some other position might have been found for it, which would not have necessitated truncating the cone which forms the canopy.

Campanili. — Coming to the never-failing subject of the campanili, which are such a prominent and attractive feature in all Italian towns, from north to south, I can only afford space to mention a few of them, and to point out some of what I conceive to be their excellencies and defects. The glorious campanili of Giotto, at Florence, should by right come first, but I dare neither describe nor criticise what is so well known, and has been a pet subject with all writers on Italian art. It is enough to ask those who only know it from drawings and photographs to suspend their judgment, if it be an adverse one, until they have seen it. I went to Florence feeling sure I could not like it, having judged by the framed panelling and the heavy cornice, and generally unsatisfactory outline at the summit. But the beauty and exquisite delicacy of the tracery and carving, and the tender tones of the marble which no drawing can reproduce, at once turned my prejudice into the sincerest admiration. There is a marble campanile attached to the cathedral at Siena, which, though beautiful in its way, always made me smile when I looked at it. The architect had evidently laid hold very firmly indeed of the principal that towers should grow lighter in design as they ascend, and he hit upon the very simple expedient of building first one story quite blank, then a story with a single opening in each face, then another with double openings, then triple, and so on until the topmost stage has a little arcade of six arches on each face. The principle, no doubt, is carried out to the letter, but the method is surely open to the charge of being ridiculously childish.

The characteristic towers of Northern Italy are the red brick ones which are found in every town, and indeed in many villages as well. They are of the simplest possible design, prondly, almost contemptuously plain, square in plan without buttresses or openings, and with only slight breaks in the shape of shallow projections or narrow strings until the summit is reached, when there is a double or triple opening in each face, and the whole is practically finished with a deep corbel-table and slight cornice. But on the top of this there is generally placed, without any preparation, a circular brick cone; it cannot be called a spire, and occasionally the angles are filled up with little brick pinnacles of similar design, also popped on as an afterthought. The cone and pinnacles are constructed of bricks showing circular ends on the face and giving an appearance of scales. The Campanili of St. Zeno and St. Ferno Maggiore at Verona, of the Cathedral at Piacenza, St. Barnaba, Venice, and St. Corona at Vicenza, may be taken as specimens of this class, only in the last-named some slight preparation is made for the cone by first erecting a short octagon on the top of the tower. The campanile of Parma Cathedral is similar, but the cone is of stone and octagonal. That of St. Samuele at Venice is practically the same, but displays a little more thought in design, tapering from the base to the summit and being appropriately crowned with a high pyramidal lead roof. The tower of the palace of the Scaligers at Verona is also similar, but the cornice is carried on boldly projecting corbels, and is surmounted by a beautiful little octagon with a low hipped roof. The celebrated campanile of St. Mark's at Venice was also probably intended to be something of the same sort, but it was finished in Renaissance times, and is surmounted by a solid sepulchral-looking monument, which seems as if it must necessarily break through the light arcaded story beneath. The beautiful campanile of St. Antonio at Milan is crowned with a brick cone, but is octagonal in plan and much more elaborate in design. The best view of it is to be had from the roof of the cathedral. Of all towns I have ever seen, Bologna is the place for towers. Coming up to it by the rail, which happens to be on a high level, they seem to stand up almost like the masts below London Bridge. Among them are those ridiculous specimens of engineering science, the towers called Asinetti and Garisendi, plain brick structures (the latter built on purpose to rival the leaning tower of Pisa), made to lean in opposite directions so as to increase their apparent inclination. Then there are the towers of the cathedral and Palazzo del Podesta, somewhat similar to the campanili described above, the two towers of St. Francesco, the larger of which has elaborate wall and window tracery in terra-cotta, and others that I do not now remember.

Ceilings.—A sketch of architectural features, peculiarly Italian, would not be complete, I think, without some mention of the wooden ceilings of two churches at Verona (I am told that there is a church at Venice, St. Stefano, with a similar ceiling), I mean those of St. Zeno and St. Fermo Maggiore. They are of wood, in a sort of foliated barrel-vault form. That of St. Zeno is in three curves only, with wooden ties at intervals half way up, which are probably the tie-beams of the roof-trusses. The ceiling of St. Fermo Maggiore has five curves with iron ties, also about half way up, and kingrods. The curves are divided by nearly upright faces and horizontal soffits. In both cases the lowest curve starts from the outer end of a row of wooden corbels, leaving a wide soffit between it and the wall. The curved surfaces are divided up into small coffers by narrow wooden bands, on which is a roughly-painted pattern in black, the rest being also decorated in colour. I was much charmed with these ceilings, and especially with the more elaborate one, though it, at any rate, if not the other also, must be entirely unconstructional.

Baptisteries.—There are in Italy a large number of square, polygonal, and circular churches and baptisteries; indeed, the latter, as separate buildings, are peculiar to the country. Many, such as the circular baptistery at Pisa, and those at Parma and Pistoja, are too well known to need more than mention of their names, but there is one very interesting little church, Sta. Fosca, at Torcello, near Venice (from which, in fact, Venice was first colonised), which greatly took my fancy, and of which I will attempt a short description. The plan is cruciform inside, consisting of a large square area with short, aisled nave and transepts of one bay each, mere recesses, one might call them, divided into centre and side compartments and a chancel of two bays with three apses. The side of the square is the whole width of the nave, *including* the aisles, and is worked into a circle at the top, by means of a pendentive and two arches, one over the other, at each angle. It may possibly have been intended to erect a dome, but the roof is now a flat cone, constructed very simply in wood. Externally, advantage is taken of the shortness of the arms of the cross to turn the plan into an octagon, round which runs an open cloister or loggia. The arms of the cross show over the loggia, and the circular upper part is piled up so as to form a most picturesque group.

Certosa of Pavia.—One of the most beautiful and most interesting buildings in North Italy is the monastery known as the Certosa of Pavia, situated between that town and Milan. Its georgeous marble front is covered with a perfectly bewildering mass of exquisite detail, statues in the round (about one hundred of which are life-size), vignettes, busts, and Bible history scenes in high and low relief, in niches, panels, and medallions; foliated pilasters and carved baluster colonnettes; besides moulded and inlaid work, all executed by artists of high ability, and enough in quantity to supply half a dozen such façades with interest and artistic excellence. Unfortunately, it is not enough, or perhaps is too much, to make one such front really beautiful. It serves, indeed, better than anything to point the old saying that one may have too much of a good thing. I think the real charm of the building is anywhere rather than in this front. Its grouping, as seen from various points of view in the cloisters, is wonderfully beautiful, with the central feature of piled-up colonnades and all the light elegant little pinnacles round it, and the buttresses and apses, and that always pretty feature the galleries under the cornices so common in Italy and Germany. The colour, too, of the red bricks and terra-cotta combines well with that of the stonework and plaster and the clear blue sky. The terra-cotta cloisters also are full of interest for the London architect who desires to find the right way of using that much-abused new old material. In these cloisters, too, the detail is both abundant and beautiful, and, as I have before said, all figure work is constantly varied and the interest thereby maintained.

Palazzo Communale, Piacenza.—A remarkable building, and one in some respects characteristic of a class in Italy is the Palazzo Communale at Piacenza. It is rectangular in plan, with the long side facing the great Piazza. The lower story is an open vaulted hall, of stone or marble (I am not quite certain which), with five pointed arches, on rectangular piers, on the long side, and two at each end. The upper story, which contains the town-hall, is of deep red brick, with marble quoins and cornice. On the principal face there are six great semicircular arches, very low in proportion, with wide archivolts of sumptuously moulded and carved bricks. They surround small three and four light windows. The east end has two similar arches, and a wheel-window in the gable; the other end, a square-headed window and no gable. Above the cornice rise high brick baetlements, of the swallow-tailed form used by the Ghibelline party, and at the angles solid, heavy structures, which I hardly know whether to call turrets or pinnacles. Over the centre arch of the ground-story is the balcony from which to address crowds collected on the piazza. There are

carefully-coloured measured drawings of this building on a stand in the Architectural Court at South Kensington.

Venice.—I suppose there is no town in Europe (unless it be Constantinople) so strange and interesting to every ordinary traveller as Venice,—a city without streets, in which the tramp of a horse is never heard, and no wheel-track is ever seen; in which the sea washes the very plinths and doorsteps of the houses, in which the cabs and omnibuses are boats, and the boats themselves, with all belonging to them, so different from the boats elsewhere, is something so wonderful and curious in itself to every dweller on dry land that it must of necessity awaken the interest of the most *blasé* of tourists. I shall always remember the delight of my first ride in a gondola through some of the quieter canals; the absence of rattle and tramp, and the smooth, easy, sleepy motion, the silence only broken by the regular click of the oar and the occasional cry of "Sta'i," or "Ia e," as we came round a corner; and the skill displayed in steering round the corner with the gunwale within an inch of the house wall for the whole 15 ft. or 20 ft. of its length, yet never touching it. And the architecture of Venice seems to me to be marvellously appropriate to the place; there is a lack of rigidity, even of apparent stability, about it; an unrest and a light sparkling playfulness that is charmingly in keeping with the rippling waters of the lagoon. A level string, a really vertical wall, or a surface "in winding," are hardly to be found in the whole town. It is, too, as strange and unique as the city itself and all belonging to it. Where elsewhere are to be found anything at all resembling the light arcaded fronts of the palaces, or the curious west front of St. Mark's, or the Rialto bridge,—not to speak of all the other bridges,—or even the Renaissance fronts of St. Zaccharia and the Ospedale Civile? The curiosity of these two buildings is in their gables,—if one may call them gables,—for they are semicircular, just like the canopies of the doors I have described, magnified. In the façade of the Ospedale is a not very pleasant illustration of what I called the "playfulness" of Venetian architecture; it is a representation of architectural features in perspective in the marble incrustation. There is a copy of the doorway at South Kensington. Among the number of beautiful features in Venice, the wells in the courtyards are one of the most remarkable, and deserve some notice. They are frequently and, indeed, generally, found everywhere in Italy, but nowhere treated with so much artistic skill.

Perugia.—Another town which, though in a less degree, much interested and charmed me was Perugia. It is a picturesque old place, built over the slopes of the hills all up and down, with curious arches and buttresses and odd corners, doors where one would least expect them, and windows which in a duller climate would get no light, views suddenly turning up in unexpected places, of the Apennines, with picturesque villages on prominent points, consisting of a fortified convent or monastery with its walls and turrets, and a few cottages round, or of the Umbrian valley stretching away to Lake Trasimeno, itself just hidden, unfortunately, by some low hills. The Piazza del Duomo, with the Palazzo Communale, the cathedral, and the great fountain, the finest probably in the country, is a centre of architectural interest, which however is by no means confined to that spot. The old Etruscan gate, called the Arch of Augustus, the front of the oratorio of S. Bernardino already mentioned, the Little Church of the Madonna della Luce, with its bell turret, the colour decorations in the Collegio del Cambio, the old Chamber of Commerce, and the inlaid stalls and marble decorations of S. Pietro de' Casinensi, are alone worth a journey from England to see, and they are only the more prominent of beautiful objects in the town.

In summing up this very desultory sketch of "Italy from an Architectural Point of View," I may say that, whatever may be the faults of the whole buildings, or of the features, they are never wanting in interest or suggestiveness, and if they display some lack of care in design, *that* is more than compensated for by the artistic instincts of the architects, which saved them from making gross errors, and gave a peculiar charm to even the worst of their productions. The student will never in Italy want subjects for his pencil, and if he uses the brush so much the better; for colour is a principal element of beauty in most of the work. In no part of the world, moreover, can be found so many and such beautiful examples of sumptuous work, especially in church furniture and all kinds of decoration.

I have not had time,—nor, indeed, am I competent,—to speak of the mass of pictures and of sculpture by all the best masters to be found in the galleries of almost every town, and I have also omitted all mention of the beautiful and interesting objects to be found in the museums, which are the richest in Europe; but the architectural student should make it a principal object to become well acquainted with both; for only so will he inhale that aroma of art with which the air in Italy is impregnated, as if it were one of its component gases.

In conclusion, I thank you sincerely for your kind attention, and hope that my sins, both of omission and commission, will be called attention to, and corrected by many of those present.

A brief discussion ensued, the speakers being the President (Mr. E. G. Hayes), Mr. Thomas Blashill, Mr. Sydney Vacher, Mr. Cole, Mr. H. W. Pratt, Mr. Trubshawe, Mr. W. J. N. Millard, and Mr. A. B. Pite, and a vote of thanks was accorded to Mr. Baggallay, who briefly replied.

SANITARY PROGRESS IN IRELAND AND THE LEGAL POWERS OF SANITARY AUTHORITIES IN REGARD TO HOUSES.

A LECTURE was delivered in the Theatre Royal of the Royal Dublin Society, Dublin, on Saturday, under the auspices of the Ladies' Sanitary Association, on "Some of the Legal Powers of Sanitary Authorities and Individuals with regard to Houses," by Mr. R. O'Brien Farlong, in which he explained the leading provisions of the Acts as regards the construction of houses, drainage, nuisances, disinfection, &c. With reference to disinfection, he said the law authorised the infliction of a penalty of 20*l.* on any person letting any portion of a house in which infectious disease had broken out, before such house was properly disinfected, and it further authorised a penalty of 20*l.*, or a month's imprisonment, for giving false answers to any questions that might be asked of the occupier of the house as regarded the occurrence of infectious diseases in it. It was well for people to know this now that the seaside season was approaching. This law had been put in force in England, but, so far as he knew, not in Ireland, and he hoped that whenever a violation of it was discovered, there would be no hesitation in bringing the guilty person to justice. The punishment should be imprisonment without the option of a fine. He then alluded to the dwellings of the humbler classes, and to the evils arising from overcrowding, and said it would be the merest folly, if they desired to see improvement in the public health, to be content with what the State had done. They must rather rely upon the formation of sound public opinion, with the aid of voluntary associations. He could bear testimony to the influence exerted by the Dublin Sanitary Association, in conjunction with the College of Physicians and Surgeons, and the Irish Medical Association, in procuring the enactment of the Public Health Act of 1878. That Act had effected the most marked improvement in the sanitary condition of Ireland. Since its exceptional powers came into force, the sums expended in sanitary improvements had increased enormously. The loans issued to the public sanitary authorities in Ireland for sewerage and water supply since 1876 amounted to nearly 960,000*l.*,—in seven years. In 1880, the amount so lent was 292,000*l.*, as compared with 37,000*l.* in 1876. On the census night of 1871 the number of persons in Ireland suffering from fever was 2,070,—that was typhus, enteric, and simple fever, but not measles, scarlatina, and so on. On the census night of 1881, the number suffering from fever was 1,501, showing a decrease of 7 per cent., whereas the decrease in the population in the same period was only 4·3 per cent. The Dublin Sanitary Association had much to do with the formation of the Artisans' Dwellings Company, which had done more to improve the houses of the working classes in Dublin than centuries of legislation could have effected. It provided accommodation at present for 540 families, representing more than 3,000 persons. Over 15,000*l.* had been received in rent, the bad debts not exceeding 80*l.* The great work commenced must be continued with moderation: the people must be educated up to the proper state of things, and it was the duty of such an Association as this to educate public opinion, so that not alone might the Legislature be persuaded to pass remedial laws, but that the sanitary authorities might be induced to administer them with vigour, the ratepayers contribute to them without grumbling, and all classes taught to see the need of these great reforms.

THE LONDON, CHATHAM, AND DOVER COMPANY'S NEW BRIDGE AND STATION WORKS AT BLACKFRIARS.

MESSRS. LUCAS & AIRD, the contractors for the new bridge across the Thames, and for the City and Suburban new station in connexion with it, in Queen Victoria-street, are now busily proceeding with the necessary works, on which a large number of men are engaged, and the preparations for the erection of the station and the construction of the bridge are simultaneously going forward. For the purposes of the station a considerable extent of wharf and other property, immediately opposite to the *Times* office, has been purchased, and the site is now being cleared, and excavations are in progress preliminary to the commencement of the station buildings. The land which has been obtained extends to the foreshore of the river, where the land abutments of the bridge will be erected, and at this point a coffer-dam is in course of construction in front of the wharf or river-wall, previously to the commencement of the abutment works. The station, which will extend eastward from the present railway bridge to Messrs. Cockerell's premises at Purfleet Wharf, will have a frontage to Queen Victoria-street, about 140 ft. in length. It will immediately adjoin the Blackfriars station of the Metropolitan District Railway, with which it is intended to be in communication. The booking-offices, parcel-offices, waiting and refreshment rooms, and other apartments will be formed in a large central hall on the Queen Victoria-street ground level, from which the station will be approached. From this central hall the arrival and departure platforms above will be reached by staircases on the east and west sides. There will be five of these platforms, and four lines of rails, from which it will be seen that the station will be of considerable dimensions. From the Queen Victoria-street frontage to the extreme south end of the platforms the station will, in fact, be about 600 ft. in length, a special feature of it being that the platforms will extend to about the second arch of the bridge, in the direction of the company's Blackfriars station, the bridge, about the third pier from the Surrey side, widening out in the direction of Queen Victoria-street, so as to support the pier platforms of the station.

As regards the bridge itself, the piling in the river has already been driven to a considerable extent, more particularly those portions required for the two central river piers. For the construction of the piers caissons, will be sunk down to the London clay, and then filled with concrete to form the foundations for the piers, which will be uniform with those of the present bridge; but the new bridge itself will be of entirely different construction, and, we are told, more graceful in form than the present structure. It will be nearly 60 ft. in width, and will contain five arches, three of which will be 185 ft. span each, and the other two 175 ft. span each. The Thames Iron Company are supplying the whole of the ironwork for the bridge. It is stated that, as a portion of the undertaking, it is intended to connect the Ludgate-hill station with the new one, by a covered way between Ludgate-hill and the Blackfriars station of the District Railway.

Mr. W. Mills, Mr. J. Wolfe Barry, and Mr. H. M. Brunel are the joint engineers. The cost of the bridge and station is estimated at 320,000*l.*

The Governors of the "Governesses' Home," Alexandra-road, Southport, finding it necessary to provide additional bed and sitting room accommodation, have just accepted tenders for extensions of their building. The architects are Messrs. Maxwell, Tuke, & Hurst, of Southport.

THE SPOHR MONUMENT.

ON the 5th inst., the Spohr centenary was celebrated at Cassel by the inauguration of a monument to that renowned composer, and by the performance of several of his principal works in the theatre in the afternoon and evening. The monument, a lifelike statue of the musician, was unveiled by Count Eulenburg, Chief President of the province, after an inaugural speech from Dr. Pinder, Director of the Cassel Museum. At the conclusion of the ceremony, Count Eulenburg handed over the monument, in the name of the Festival Committee, to the city authorities, for whom the chief burgomaster accepted it in a speech in which he returned thanks for the gift. The festival was attended by musicians from all parts of Germany and other countries, and was a great success.

FOREIGN NOTES.

Statues to the Humboldts.—On Friday, the 6th inst., the anniversary of the death of Alexander von Humboldt, statues of the great naturalist and of his almost equally distinguished brother, Wilhelm von Humboldt, were solemnly unveiled in Berlin. They are erected in front of the University, in the great avenue Unter den Linden.

Statue to Dupleix.—A committee has been formed in France to collect subscriptions for the erection of a monument to General Dupleix, the most formidable of the French leaders who fought against the English in Hindostan in order to prevent them from extending British power over India. It is intended to erect the statue of Dupleix in his birth-place at Landruins.

The Paris Salon.—In the next Paris *Salon*, the total number of exhibitors will be 1,554, of whom 1,236 will be Frenchmen and 318 foreigners. They comprise the following:—There will be 611 French and 188 foreign painters; 252 French and 57 foreign sculptors; 246 French and 42 foreign architects; and 127 French and 31 foreign engravers and lithographers. With regard to the nationality of the foreign artists, there come from Belgium 31 painters and 16 sculptors; Germany, 29 painters and 4 sculptors; England, 22 painters and 6 sculptors; Austria, 21 painters and 5 sculptors; Italy, 17 painters and 14 sculptors; Switzerland, 14 painters and 2 sculptors; Spain, 13 painters and 3 sculptors; Holland, 10 painters and 2 sculptors; Scandinavia, 11 painters; Russia, 8 painters and 2 sculptors; North America, 6 painters; Denmark, 2 painters; Greece and Portugal each 1 painter and 1 sculptor; and, finally, 1 sculptor from Haiti. The number of ladies who will be represented by works in the *Salon* is nearly 60, of whom 40 are French painters, 2 sculptors, and 2 copperplate engravers. The rest belong to various countries, especially Germany, Sweden, and Switzerland.

The Proposed Inland Sea in the Zahara Desert. The result of the tour of inspection M. de Lesseps has been making in Algeria has been to convince him that there is no insuperable difficulty to be overcome in realising the project of an inland sea in the Desert of Zahara, to the south of Algeria and Tunis. He finds that, to a depth of about 240 ft. the land is uniformly compact. He calculates that the necessary excavations for connecting the Mediterranean and letting in the water could be carried out with 100 dredging-machines, which would perform the work of 100,000 labourers. The reception M. de Lesseps met with among the Arab population is said to have been very friendly. He is expected to arrive back in Paris in the course of the present week.

Exhibition at Christiania.—During the present summer an Exhibition of Industry and Art will be held in Christiania, the Norwegian capital. The number of exhibitors far exceeds the most sanguine anticipations. Medals and diplomas will be awarded to exhibitors of the most meritorious articles in the various sections, the awards being made by the jury in the usual way. Great preparations are now being made for the Exhibition in the Castle Park at Christiania. The Swedish Crown Prince, Gustavus, has promised to open the Exhibition, the date fixed being his Royal Highness's birth-day, June 16th.

Competition for Design for a Model Theatre.—The Hungarian Architects and Engineers' Society has offered a prize for the best design for a model theatre, which, while reducing the danger from fire to a minimum, answers all the requirements of a modern temple of the drama.

FOREIGN COMPETITIONS.

COMPETITION is invited for designs for rebuilding the Northern Museum at Stockholm, to which foreign architects are admitted. Five prizes will be given,—one of 84*l.*, one of 24*l.*, and three of 17*l.* The jury consists of the committee of the museum and two eminent architects. Plans must be sent in by June 1 next, and must include estimate, plan of site (scale 1 : 400), ground-plans, sections, and perspectives (scale 1 : 200). The building is to be in keeping, architecturally, with its splendid site and national importance, at the lowest possible cost. It is to contain the usual rooms for the collections, library, store-rooms, workrooms, and rooms for the assistants. Further information may be obtained by addressing, amongst others, the director of the Northern Museum, Herr Hazelius, Nordiska Museet, Stockholm. A few copies of the programme have been sent to 46, Catherine-street, and may be had, so far as they will go, by architects who leave their card.

Designs are also invited, as we mentioned last week, for a national library at Rio de Janeiro, to the competition for which architects of all nations will be admitted. The premiums offered are liberal, 800*l.* for the first, and 400*l.* for the second. Plans must be received by June 30 next. The cost is not to exceed 100,000*l.* The selection is confided to a commission comprising the librarian, the director of archives, and three engineers (!). This latter circumstance does not look very inviting for competitors.

The Verein Deutscher Eisenbahn-Verwaltungen (German Railway Union) has issued a circular containing the regulations for the competition which takes place once in three years for prizes given for the most important inventions in railway construction and working. Competitors may send in claims from January 1 to July 15, 1884. Premiums will be given for such inventions, improvements, and literary publications as have been executed or published from July 16, 1878, to July 15, 1884. Nine prizes will be awarded for inventions and improvements,—(1) in the construction of railways (three premiums of 360*l.*, 150*l.*, and 75*l.* respectively); (2) in rolling-stock (similar prizes); (3) with reference to the central administration of railways and railway statistics, as well as for important publications of railway literature (three premiums of 150*l.*, 75*l.*, and 75*l.* respectively).

BUILDING PATENT RECORD.*

APPLICATIONS FOR LETTERS PATENT.

1,610. D. B. Gibson, Manchester. Preventing the entrance of wind, rain, and dust under doors, &c. March 30, 1883.

1,611. H. J. Haddan, London. Manufacture of tissues for a base of plaster ceilings, &c. (Com. by H. Kahls, Chemnitz, Saxony). March 30, 1883.

1,658. J. Wright, London. Manufacture of cement, &c. April 3, 1883.

1,688. H. J. Allison, London. Coloured-glass windows, &c. (Com. by J. La Farge, New York, U.S.A.) April 4, 1883.

1,690. F. P. Preston, J. T. Prestige, and E. J. Preston, Deptford, and E. W. De Rusett, Anerley. Lavatories. April 4, 1883.

1,692. W. Kemp, Miller's Dale. Manufacture of lime. April 4, 1883.

1,694. J. B. Adams and J. Telford, Liverpool. Balancing, securing, &c., sliding windowsashes. April 4, 1883.

1,705. T. C. Olney, Manchester. Hot-water apparatus for heating buildings, &c. April 5, 1883.

1,712. J. Barnes, Manchester. Damp-proof and non-inflammable material for lining walls, &c. April 5, 1883.

1,724. W. R. Lake, London. Locks and lockgates for canals, &c. (Com. by L. Coiseau, Antwerp.) April 5, 1883.

1,728. F. Service, London. Tool for pointing the joints of brickwork and masonry. April 5, 1883.

* Compiled by Hart & Co., Patent Agents, 186, Fleet-street.

NOTICES TO PROCEED

have been given by the following applicants on the dates named:—

April 3, 1883.

5,708. P. Jensen, London. Manufacture of furniture, doors, window-sashes, &c., from peat moss. (Com. by T. P. Aktiebolag, Jönköping, Sweden.) Nov. 30, 1882.

5,756. W. Foot, Wellington. Bricks, blocks, and slabs for building and other purposes. Dec. 2, 1882.

5,781. G. Crofts and G. F. Assinder, Birmingham. Joints for suspending swing looking-glasses, fanlights, &c. Dec. 5, 1882.

5,876. T. H. Thompson, Manchester. Ventilating buildings. Dec. 9. 1882.

6,121. W. R. Lake, London. Water-closets and sewers and traps therefor. (Com. by C. F. Pike, Philadelphia, and E. L. Collings, Camden, U.S.A.) Dec. 22, 1882.

April 6, 1883.

5,795. J. Whitehouse and S. Peacock, Birmingham. Sash-fastenings. Dec. 5, 1882.

6,039. F. Walton, Twickenham. Mosaic floorcloths, &c. Dec. 18, 1882.

1,154. R. E. Cox, London. Smokeless stoves, &c. March 3, 1883.

ABRIDGMENTS OF SPECIFICATIONS.

Published during the Week ending April 7, 1883.

3,260. J. C. Morris, Manchester. Stair-rods. July 10, 1882. Price 2d.

These are made of wood, and have removable and enlarged ends. (Protection not allowed.)

3,472. J. Solomon, London. Cowl for chimneys. July 21, 1882. Price 2d.

This has a number of apertures governed by doors, of which those facing the wind are closed, while the others are left open. (Protection not allowed.)

3,701. C. E. Hanewauld, London. Apparatus for preventing down-draught in chimneys. (Com. by F. Haszelmann, Munich.) Aug. 3, 1882. Price 6d.

A tube is fixed to the top of the chimney, over which is passed another tube, the top of this being fitted with a projecting cap, and the wind passing under this cap creates an up-draught in the chimney.

3,793. J. S. Willway, Bristol. Combined door-mat and scraper. Aug. 9, 1882. Price 4d.

This consists of a series of parallel flat bars, which are screwed at suitable distances apart by transverse rods.

3,816. H. J. Hadden, London. Stoves or furnaces. (Com. by D. McB. Graham, Massachusetts, U.S.A.) Aug. 10, 1882. Price 6d.

A drum is fitted above the fuel in the stove through pipes in which the gases of combustion pass to the flue. Air is let in from the stove through other pipes in the drum wherein it is heated, and thence it passes to the fire and plays upon the fuel and smoke, thereby ensuring perfect combustion.

3,829. T. S. Wilson and H. T. Johnson, Manchester. Ventilating sewers, soil-pipes, &c. Aug. 11, 1882. Price 6d.

The foul gases are taken to a chamber where there is a gas-burner, above which is placed a layer of fire-clay lumps, which are maintained at a red heat. The gases passing through these are rendered innocuous.

CASE UNDER METROPOLITAN BUILDING ACT.

FEE FOR IRREGULAR BUILDING REMOVED.

FLETCHER *v.* THE PINXTON COAL CO.

THIS case was heard at the Lambeth Police Court, on the 4th inst., before Mr. Chance, magistrate. Messrs. Beale, Marigold, & Co. appeared for the defendants; Mr. Banister Fletcher for himself.

The defendants' builder had erected an office on land belonging to the Midland Railway Company between Steedman and Amelia streets, Walworth. The District Surveyor (Mr. Banister Fletcher) had served a notice requiring this office to be amended in conformity with the Act. Eventually, instead of amending, the defendants removed the building entirely.

Messrs. Beale, Marigold, & Co. contended that no fee was payable, because:—1. The building was not a building within the Act; (2) the building was on land belonging to the railway; (3) the office was used in conjunction with the railway business, therefore was exempt under section 6 of the Metropolitan Building Act, 1855, and also by reason of the special Acts obtained by the railway for the formation of this coal depôt at Walworth.

The magistrate decided the District Surveyor was entitled to his fee, and made an order for the payment of the same, with costs.

City of London College.—The Prince of Wales has consented to open the new building of this College, Moorfields, at an early date.

SUGGESTIONS FOR THE CONDUCT OF ARCHITECTURAL COMPETITIONS,

ADOPTED BY THE ROYAL INSTITUTE OF BRITISH ARCHITECTS.

At a special general meeting of this Institute, held on Monday evening last, Mr. Horace Jones, president, in the chair, the notice convening the meeting having been read, it was moved by Mr. Alfred Waterhouse, A.R.A., Member of Council, and seconded by Mr. James Brooks, Member of Council, that the revised paper, entitled "Suggestions for the Conduct of Architectural Competitions," presented to the business meeting held on the 8th of January, 1883, be substituted for the Institute paper sanctioned in 1872, and entitled "General Regulations for the Conduct of Architectural Competitions."

Reference was made to the notice of motion by Professor Kerr, Fellow, the memorials of the Leeds Architectural Society and the Liverpool Architectural Society, and the "Laws for the Control and Conduct of Architectural Competitions," suggested by Mr. H. Hardwicke Langston, Associate, printed in No. 16 of the Journal of Proceedings, 1881-82. After a discussion, in which, besides the members above mentioned, and the President, the following joined, namely: — Messrs. Arthur Cates, Octavius Hansard, and Professor T. Roger Smith, Members of Council; Messrs. Cole A. Adams, T. Blashill, Henry Dawson, T. Porter, L. W. Ridge, E. C. Robins, F.S.A., Fellows; Messrs. E. E. Hollis and T. M. Rickman, F.S.A., Associates; and Mr. F. C. Penrose, M.A., past vice-president,—it was

Resolved that, subject to a few alterations agreed to, the revised paper entitled "Suggestions for the Conduct of Architectural Competitions," presented to the last business meeting, be substituted for the paper sanctioned in 1872, and entitled "General Regulations for the Conduct of Architectural Competitions," and that the said revised paper do stand as follows:—

SUGGESTIONS FOR THE CONDUCT OF ARCHITECTURAL COMPETITIONS.

1. The promoters of an intended competition should, as their first step, appoint one or more professional assessors, architects of established reputation, whose name or names should be published in the originnl advertisements and instructions, and whose decision should govern the selection of the designs in all stages of the competition.

2. The duty of these assessors should be:—

a. To draw up the particulars and conditions as instructions to competitors, or to advise upon and, should it be necessary, revise or supplement them if already drawn up.

b. To determine which of the designs conform to the instructions.

c. To exclude all others. And

d. To advise the promoters on the relative merits of the designs admitted to the competition.

3. Every member of the body promoting the competition, and every assessor engaged upon it, should abstain absolutely from taking part in the said competition, or from acting as architect in the execution of the proposed work.

4. The number and scale of the required drawings should be distinctly stated, and they should not be more in number or to a larger scale than necessary to clearly explain the design. If perspective views be required, they should be uniform in size, number, mode of colouring, &c.

5. Competitions should be initiated either (A) by inviting preliminary sketches, involving only moderate cost to each competitor, preparatory to a final competition; or (B) by invitation without sketches; or (C) by personal invitation.

If (A)—By advertisement, inviting architects willing to compete for . . . . (*here describe the intended work*) to send in their names by a given day, on receipt of which each applicant should be supplied with the instructions prepared under the advice of the professional assessor or assessors. Each applicant, from such instructions, should send in by a given date a Sketch Design (*here describe the limit and character of such sketches*). The promoters, with the advice of the professional assessor or assessors, should select from such sketch designs not less than . . . . (*here specify the number*), the authors of which should be invited to join in a final competition, in which each should receive £ . . . . (*here state the amount*) for the preparation of his design. From these designs a choice should be made of the architect to carry out the work.

If (B) without sketches—By advertisement inviting architects willing to compete for . . . . (*here describe the intended work*) to send in their names by a given day, with such other information as the candidate may think likely to advance his claim to be admitted to the competition. From these names the promoters, with the advice of the professional assessor or assessors, should select . . . . (*here specify the number*) to compete, and each competitor thus selected should receive £ . . . . (*here state the amount*) for the preparation of his design. From these designs a choice should be made of the architect to carry out the work.

If (C)—By personal invitation to a limited number of selected architects, to join in a competition for . . . . (*here describe the intended work*), each competitor to receive £ . . . . (*here state the amount*) for the preparation of his design. The author of the design which may be awarded the first place in point of merit should be employed to carry out the work.

In each case (A), (B), and (C) the amount of remuneration for designs should be fixed by the promoters, acting under the advice of the professional assessor or assessors.

6. Each design should be distinguished only by a motto or device, and any attempt to influence the decision of the promoters, or of the assessor or assessors, should disqualify a competitor.

7. A design should be excluded from a competition,—

a. If sent in after the period named (accidents in transit excepted);

b. If in violation of the instructions;

c. If it do not substantially give the accommodation asked for;

d. If it exceed the limits of site; and

e. If the assessor or assessors (with or without the assistance of a surveyor) should determine that its probable cost will exceed the intended outlay (if specified in the instructions), or the estimate of the competitor should no outlay be specified.

8. It is desirable that all the submitted designs in a final competition under section (A) of clause 5, except any excluded under clause 7, should, with the consent of their authors, be publicly exhibited after the final award. The decision of the assessor or assessors and of the promoters should be published at the time of exhibition.

9. The work, if carried out in any shape, should be placed in the hands of the architect whose design has been adjudged to be the best, and he should be placed in exactly the same position, in relation to the employer and the intended work, as he would have been had he alone been professionally consulted. In case a competition has resulted in the selection of an architect, and the instructions to him to proceed further in the matter are not given within twelve months from the time of the architect being so selected, he should be paid at the usual professional rate, under the advice of the assessor or assessors, exclusive of the sum paid to him in common with the other competitors. Such payment to be taken on account of commission, should the work be carried out at a future time under his superintendence from the design submitted by him in competition.

*** A correspondent ("Junius") complains that a member was not allowed to move an amendment, on the ground that he was an Associate. This was not the fault of the chairman. The regulation may be right or wrong, but so long as it exists the chairman must act in accordance with it.

RIGHTNESS IN ART.

Sir,—In a letter that I addressed to you, printed in the *Builder* of February 3rd, I broached the theory that *rightness* in art is the virtue that constitutes excellence and mastery, and that exhortations to be original in any other sense than this only tend to promote peculiarity or affectation in style. The paramount aim of the artist, as of the man, being to be right, this evangel of rightness links the practice of art with the moral conduct of life,—with the moral rule, in fact, of nature. I was therefore gratified to find that in a leader in the *Times* of Good Friday last, on the 400th centenary of the birth of Raffaelle, the writer ascribed the transcendant excellence of the great painter to *rightness* in the conception and treatment of his works. It is of very considerable advantage to discussion to sum the purpose of art in that one simple general expression of *rightness*; for, let our thoughts wander as they may in the endeavour to analyse it, it serves as a pole star, by which the veering intellect may be brought up to its true course. It is to the long entombment of this master principle that all the vagaries, those riotous brushings and chisellings of modern art, may be attributed, for they are really due to false leading, to misconceptions founded on some too narrow or special basis, either of literal imitation, of impressionism, or of some one or another one-sided view of nature. But the evangel of rightness points to the one all-including and leading principle, and prompts the artist to determine what is the worthiest, the noblest work for the brush and for the chisel. It is the resurrection of this vital and vitalising principle, indeed, that constitutes the true Renaissance.

It has long been the custom for art teachers to lay great stress upon the paramount importance of being original, but I am, myself, inclined to believe that it is to this endeavour to be above all things original,—to this effort to do something strikingly new,—that may be imputed most of those affectations which have of late afflicted the fine arts. It was that *rightness*, as the writer in the *Times* justly observed, that gave Raffaelle pre-eminence in art, for there is in the possibilities of the pictorial treatment of any subject one right and best way, and all other ways but that one right way, although they might, in some sense, be called original, would be more or less peculiar, eccentric, or affected,—inferior to that one central or typal form of its embodiment. This view may be illustrated by the famous cartoons of Raffaelle. Persons who do not know in what the highest artistic excellence consists are frequently disappointed, when looking at them, at not finding any evidences of either exact imitation or of technical display. The great painter did not aim at these minor and inferior qualities; his main and masterful object was to present that grand series of subjects from the Acts of the Apostles, each one in its best or right point of view,—to give it its central, typal, or most impressive form. Let any painter attempt to design anew, to make an original composition, of any one of that series of subjects, and he will find that, although he may have the power of designing it differently, and to exhibit originality, if he so please to call it, yet that it would be inferior in form to the presentment of the same subject by Raffaelle. The endeavour to attain to rightness in the embodiment of a subject, too, begets a moral habit of thought, which ultimately leads to a right solution of subject. It may possibly be urged that Raffaelle and the other great artists of his time had an incentive to rightness, to great motives of action, from the important public works that were entrusted to them, and I, myself, have not the slightest doubt that this was the case. Hence the great importance of mural decoration in the leading of the arts of design,—the vast importance of this branch of art, which has been so long, so persistently, neglected in England. W. Cave Thomas.

"THE DECORATION OF THE CENTRAL HALL, HOUSES OF PARLIAMENT."

Sir,—I have just seen an article in your paper of the 7th inst., in which some observations which I made in the House of Commons upon the "Decoration of the Central Hall" are severely criticised. I must therefore ask your permission to offer a few remarks upon this subject, which, whatever you may think, interests me greatly. I will not attempt to argue whether Mr. Poynter's "St. George" is a fine work or a failure—that is a matter of taste upon which opinions may be and are widely different. But not myself professing to be a judge of art, and having no knowledge of it except that which I have derived from a long and careful study of the old masters, I am persuaded that the expenditure of public money upon a companion to St. George, or upon such designs as Sir F. Leighton and Mr. Poynter have proposed for St. Paul's, would only be "throwing good money after bad," and though I am not so hopeless about the future of British art as to be without the expectation that a painter may eventually arise amongst us fully capable of dealing with the exigency, yet until that time comes I should wish the "Commissioner of Works" to rest upon his oars and keep the public purse-strings firmly tied.

In order to justify a "waiting game," I have only to refer you to the statue of Earl Russell, which has lately been set up in the Central Hall, and which, clothed in an unreal imitation of modern costume, seems to hurl defiance at the memory of the late Sir Charles Barry, and to proclaim the small modicum of veneration which modern "committees of taste" feel for the teaching of the ancients. It is alleged, however, by your critic that I have made an "absurd suggestion" by contending that the spaces in the Central Hall should be filled with paintings in oil. Now, upon this point I desire to reply that if my assailant would be good enough to visit Venice, or, at all events, consult any Venetian guide-book of respectable authority, he would learn that whenever Messrs. Titian, Tintoretto, Paul Veronese, Pordenone, Palma Giovane, and other distinguished artists of the sixteenth and two following centuries, received commissions to decorate the public edifices of Venice, it was their invariable practice to fill

spaces such as those which are now vacant in the "Central Hall," not with frescoes, not with mosaics, but with *paintings in oil*, and the results, as everybody knows, have not been deemed "absurd" by the verdict of posterity, but have, on the contrary, been almost unanimously approved. If, therefore, a "mere schoolboy," according to your critic, will in these days have noticed enough to be aware that oil-paintings "are worse than useless for this purpose," it follows that the conclusions of the enlightened schoolboy are entirely at variance with the principles and practice of the "ill-instructed" artists to whom I have referred above. I will not trespass further on your space, except to remind your critic that a little knowledge is a dangerous possession.

George Cavendish Bentinck.

April 11th.

GRATITUDE.

ST. PAUL'S CHURCH, CAMDEN-SQUARE.

Sir,—The public is not altogether unacquainted with proceedings occurring during the last few months in connexion with the above church, evidently resulting from the fact of a generous donor,—a member of the congregation, giving, to the extent of 700*l.* towards the alteration and beautifying of the church, and, astonishing to say, the surveyor for the church sent him an account of 12*l.* 12*s.* for his fees in overlooking a small portion of the above works, although he had received no instructions or order whatever from the donor, as his services had been promised by the vicar (Rev. E. R. Adams). Notwithstanding the strange nature of the claim, it was carried into the Bloomsbury County Court, a proceeding which seems very much like returning evil for good, and which, if generally adopted, would be likely to affect the interest of churches in the future, as it has the appearance of taxing donors for their liberal gifts.

Fair Play.

BUILDINGS BETWEEN LEADENHALL MARKET AND LEADENHALL-STREET, E.C.

Sir,—With reference to the remarks in your last week's issue on the new buildings between Leadenhall Market and Leadenhall-street, the parties interested ask us to request you to add the following particulars:—

That Messrs. W. Shepherd and T. Boyce are not the contractors, but the owners, holding leases direct from the City; also, that Mr. Brunton acted as foreman for Mr. Shepherd; that Mr. Seale executed the carving for him; and that Mr. W. Thompson, architect, of 72*a*, Old Broad-street, was associated with us for this portion of the work. Mr. Cornish was the foreman acting for Mr. Boyce for the Metal Exchange and Offices in the block erected by him, and Mr. A. M. White executed the carving.

J. & J. S. Edmeston.

Books.

Hydraulic, Steam, and Hand Power Lifting and Pressing Machinery. By F. Colyer, M.I.C.E., M.I.M.E. London: E. & F. N. Spon.

The facts collected in this useful book are such as, with a few exceptions, have been derived from the author's own experience. Assuming that he is addressing chiefly practical men, he has not gone into any rudimentary descriptions, but has mentioned only such details as may be required for practical purposes. The work has been written in a concise form, and treats successively of hydraulic, steam, and hand power lifting machinery, and hydraulic pressing machinery. In an addendum reference is made to Clark & Standfield's hydraulic lift for railway trains. The author, by applying the principle of hydraulics in a judicious manner, has succeeded in pressing a great many practical facts and data into a very limited compass, and thus proved that the practice of engineering may be usefully introduced also in bookwriting. For this reason alone, if there were no other, the work will be welcomed by all engineers whose practice has not been in the particular branch of engineering with which it deals, as well as by architects and users of lifting and pressing machinery, who will by its aid obtain an insight into the same, and to whom it will serve as a guide. A special and noteworthy feature of the volume consists in the many excellent drawings, which make up half its bulk.

Practical Mechanics. By Prof. J. Perry, M.E. With numerous illustrations. London: Cassell & Co., 1883.

This is an attempt to put before non-mathematical readers a method of studying mechanics. With this view, the author advises the student not merely to read the book, but to study mechanics in the manner recommended therein. Should the student follow that advice, the author feels quite sure that he will gain in a short time such a working knowledge of the subject as will well repay his labour. The mental training acquired in this way is, he thinks, of a kind not inferior to that of the study of ancient classics and Euclid.

Miscellanea.

Society of Arts.—The following are the dates and arrangements for the forthcoming meetings of the Society of Arts:—Ordinary meetings, Wednesdays,—April 11, "The Portrush Railway and Transmission of Power by Electricity," by Alexander Siemens and Edward Hopkinson, D.Sc; April 18, "The Government Patent Bill," by H. Truman Wood, B.A., Secretary of the Society; April 25, "Economy of Sanitation," by Captain Douglas Galton, C.B., F.R.S.; May 2, "The Comparative Claims of Etching and Engraving to rank as Fine Arts," by Seymour Haden; May 9, "English and Foreign Silver Work, with some Remarks on Hall-marking," by Wilfred Cripps, F.S.A. Applied Chemistry and Physics Section, Thursdays,—April 12, "The Formation of Diastase from Grain by Moulds," by R. W. Atkinson, B.Sc.; May 2½, "The Development of Electric Lighting," by J. E. H. Gordon, B.A.; April 26, "A New Process for the Separation and Recovery of the Volatile Constituents of Coal," by T. B. Lightfoot, M. Inst. C.E. Indian Section, Fridays,—April 20, "The Fisheries of India," by Surgeon-General Francis Day; May 4, "Some Notes on the Domestic Architecture of India," by C. Purdon Clarke.

New Members of the Royal Institute of British Architects.—At the business meeting of this Institute on Monday evening last, the following gentlemen were balloted for and declared to be duly elected. As Fellows: Mr. Alexander Hannam Edmonds, of 32, Colehern-road, West Brompton, S.W.; Mr. Frederick William Stevens, of the Indian Public Works Department, Bombay; Mr. Henry Petit, Associate, of 26, Welbeck-street, Cavendish-square, W.; and Mr. Henry Hewitt Bridgman, associate, of 42, Poultry, E.C. As Associates: Mr. Arthur Charles Wissenden, of 73, Maison Dieu-road, Dover; Mr. Percy Hunter, of 17, Southampton-street, Bloomsbury, W.C.; and Mr. Edward Prioleau Warren, of 8, Gray's Inn-square, W.C. The three gentlemen last-named had previously passed the Examination in Architecture.

Worms on Lawns may be destroyed by a solution of common salt and corrosive sublimate. Prepare the solution by dissolving in hot water two handfuls of salt and one ounce of corrosive sublimate, and then mix with nine gallons of water. The best time to apply the solution is immediately after rain, as the worms are then near the surface. The worms that come to the surface after the application should be swept away and destroyed, and care be taken to place them out of the reach of poultry.—*The Gardeners' Magazine.*

Yarmouth.—Plans have been prepared by Messrs. Bottle & Olley, Great Yarmouth, for extensive additions to the churches of St. John and St. Andrew, in Great Yarmouth. The additions to St. John's comprise new south transept, south chancel aisle, turret, corridor, clergy vestry, and an octagon-room of 27 ft. diameter, and alterations to chancel. The additions to St. Andrew's are new north aisle, porch, and large room in connexion with the church and school.

Lower Norwood. There has just been placed in St. Luke's Church, Lower Norwood, a stained-glass window, presented by Mrs. Bonner, formerly a member of the congregation, in memory of her late husband. The subject is "Christ among the Doctors." It is the production of Messrs. W. M. Pepper & Co., of 381, Euston-road, and is the third window placed in the same church by that firm. The lady mentioned has commissioned Messrs. Pepper to execute a fourth window for the church.

Sierra Leone.—Mr. Robert E. Pownall, A.R.I.B.A., for many years an active member of the Architectural Association, has been appointed Director of Public Works in the colony of Sierra Leone. He has resigned his seat on the committee of the Association, and will take with him to his new sphere of work the best wishes of all who know him.

Blundellsands.—A window, by Messrs. Mayer & Co., representing Christ blessing Children, has just been erected in St. Nicholas's Church, Blundellsands, near Liverpool. It is the gift of the children belonging to the congregation.

The County Magistrates of Somerset have elected Mr. William John Willcox, of Bath, architect, by the large majority of 50 to 9, to the County Surveyorship, rendered vacant by the retirement of Mr. Whitehead.

The New Brentford Union Schools at Isleworth, erected at a cost of 20,000*l.*, to accommodate 300 children, were opened on the 11th by Sir Charles Dilke, the President of the Local Government Board. The schools occupy 3½ acres of land in front of the Union Workhouse. At the luncheon, Sir Charles Dilke, in replying to the toast of "The Local Government Board," spoke in favour of giving local liberty to guardians, asserting that it was the duty of one in the position such as he occupied of presiding over the Local Government Board, which took over the functions of the old Poor Law Board, to do what was possible in the direction of that local liberty, leaving to guardians to try experiments, to some extent, for themselves; believing that they were as likely to know what was good for those who elected them, and to look after their interest, as any other body in the country. He referred to the fact that although the population of the Union had doubled within the last twenty years, and the rateable value of the Union had increased within the last ten years from 310,000*l.* to 530,000*l.*, there had been a decrease within the later period in the proportion of paupers, or those in receipt of relief, from one in fourteen to one in thirty-nine; and also a decrease in that time of the portion of the rate which went towards relief from 10*d.* to 7¼*d.* Sir Charles Dilke is working at the Local Government Board, and it may be expected will do good. It is possibly not exactly the position he would choose for himself, but his disposition is such that he will be sure to work, and in a good direction. We have been looking for an opportunity to give the right hon. gentleman a hint or two, and may yet find it.

The New Market for West London.—The Chelsea Vestry, acting on the recommendation of the Committee of Works, have come to a final agreement with the promoters of the South Kensington market scheme, who seek powers to establish a market in the parish of Chelsea (near South Kensington station) for the supply of fruit, vegetables, meat, poultry, and fish. The promoters in their last concessions have agreed that the market shall be completed within five, instead of seven years, as first proposed; not to exercise compulsory powers of purchase after the expiration of two years from the passing of the Act; not to extend the limits of the market from time to time; and to execute the works to the satisfaction of the vestry. The vestry have also caused to be inserted, for the protection of the parish, stringent clauses to prevent the use of the market as a railway depôt; to secure the rating of the market; and to ensure that the site is used for no other purpose than "a market, market buildings, dwelling-houses, shops, first-class hotel, or theatre." The plans of the latter, to which the promoters agree, shall be submitted for the approval of the vestry. Lastly, the promoters have met the wishes in regard to the provision of artisans' dwellings in the place of those displaced by the construction of the market.

The Finsbury Technical College, Tabernacle-row.—The summer term of the Technical College of the City and Guilds of London Institute for the Advancement of Technical Education commenced on Thursday, the 12th inst., when the College opened for the reception of new students. Work began on the 13th. The programme is a very comprehensive one, including instruction in nearly all the branches of applied art, chemistry, mechanics, and physics. The evening courses are specially intended for those technically employed during the day, and as the fees are merely nominal, they are within the reach of all working men. While the courses are mainly intended for those engaged in technical work, some of them will be found of interest to the general public. This is especially the case with the course of lectures for persons engaged in the building trades. This course, delivered by Professor H. E. Armstrong, Ph.D., F.R.S., on Tuesday evenings, is intended to give information of importance not merely to those actually engaged in the building trades, but to all householders, &c.

National Health Society.—As already mentioned, an exhibition of sanitary domestic appliances, hygienic dress, and decoration, will be held at Humphreys' Hall, Albert-gate (opposite the Barracks, Knightsbridge), in June next. A meeting has been fixed for May 9th, at five p.m., at Grosvenor House, to promote the objects of the society, the Duke of Westminster to preside. It is hoped that all members and their friends will attend.

Heating Houses.—There are only two ways, says the *Engineer*, in which dwelling-houses can be heated,—namely, by high temperature radiant heat, or by hot air. The former is produced by the open fire, and by it alone. The latter is obtained in various ways too numerous to particularise. We may cite one for convenience, namely, the well-known hot-water pipe apparatus of conservatories and churches. The question whether we shall use hot air or radiant heat in our rooms is by no means one to be lightly passed over. Instinct tells us to select radiant heat, and instinct is quite right; and it is so because radiant heat operates in a very peculiar way. It is known that as a matter of health it is best to breathe air considerably below the natural temperature of the body,—98 deg.; in air heated to this temperature most persons would in a short time feel stifled. But it is also known that the body likes, as far as sensation is concerned, to be kept at a temperature as near 98 deg. as may be, and that very much higher temperatures can be enjoyed; as, for example, when we sit before a fire, or bask in the sun. Now it so happens that radiant heat will not warm air as it passes through it, and so, at one and the same time, we can enjoy the warmth of a fire and breathe that cool air which is best suited to the wants of our system. Herein lies the secret of the popularity of the open fireplace. But in order that the open fireplace may succeed, it must be worked within the proper limits of temperature. If air falls much below 40 deg. it becomes unpleasant to breathe; and it is also very difficult to keep the body warm enough when at rest by any quantity of clothes. In Russia and Canada the temperature of the air outside the houses often falls far below zero, and in the houses it cannot be much above the freezing-point. Here the open fire fails; it can only warm air by first heating the walls, furniture, and other materials in a room, and these, in turn, heat the air with which they come in contact. But this will not do for North American winters; and accordingly in Canada and the United States the stove or some other expedient for warming air by direct contact with heated metal or earthenware is imperatively required. But this is the misfortune of those who live in cold climates, and when they ask us to follow their example and take to close stoves and steam-pipes, and such like, they strongly remind us of the fable of the fox who had lost his tail. How accurately instinct works in the selection of the two systems is demonstrated by the fact that a succession of mild winters is always followed in the United States by an extended use of open grates; that is to say, the English system becomes, or tends to become, fashionable, while, on the other hand, a succession of severe winters in this country brings at once into favour with builders and others a whole host of close stoves and similar devices which would not be looked at under more favourable conditions of the weather. While English winters remain moderately temperate the open fireplace will enjoy the favour it deserves, as not only the most attractive, but the most scientific apparatus available for warming houses.

Calcutta International Exhibition.—Communications recently received from the Vice-President of the Executive Committee at Calcutta (the Hon. Colonel S. T. Trevor, R.E., joint secretary, Government of Bengal, Public Works Department) are to the effect that all the necessary annexes in course of erection adjacent to the India Museum will be completed by July or August. A large space on the Maidan, facing the Museum, has been enclosed, and will be devoted specially to machinery in motion, agricultural implements, &c. Gas and water will be available throughout the building. The arrangements in regard to lighting are now under consideration. It is proposed that, for this purpose, the electric light should be employed. A deep reservoir, covering an area of nearly 90,000 square feet, will serve for exhibiting specimens of native boats, and for displaying diving apparatus, life-saving apparatus, including boats and steam-launch machinery. In considering the allotments of space, priority will be given in accordance with the dates of the applications received through the official agent, No. 4, Westminster Chambers, Victoria-street, London.

Proposed Municipal Offices, Nottingham.—The designs submitted in competition for the proposed municipal offices, Nottingham, are now hung in the Exchange Rooms, and may be inspected.

International Electric Exhibition, Vienna.—In consequence of an intervention by the Austrian-Hungarian Embassy at St. Petersburg, and a report of the Russian Minister on Finances, the Emperor of Russia has allowed the Imperial Russian Technical Society at St. Petersburg for forming a Russian section at the International Electric Exhibition at Vienna the sum of fifteen thousand roubles. At a meeting held on the 19th of March (old style), the president of the above-mentioned society, Prince Kotschubey, informed the members of this Imperial resolution, and the chairman of the electricians, Mr. Welitschko, who likewise represented the Russian department at the Paris Exhibition, 1881, has been entrusted with the organisation of the Russian exhibition group.

Fire.—The town-hall at Rochdale, which was built at a cost of many thousands of pounds, was found to be on fire on Tuesday night. The octagonal spire was entirely destroyed, but the hall itself was saved. By one o'clock in the morning the flames had been all but extinguished.

TENDERS.

For the erection of swimming-bath at the Seamen's Orphan Asylum, Snaresbrook, Essex. Mr. J. T. Bressy, architect:—

Perry & Co.	£1,859 0 0
Parmenter	1,731 0 0
Rider & Sons	1,598 0 0
Harris & Wardrop	1,584 0 0
A. Read	1,518 0 0
Harper	1,503 0 0
F. & F. J. Wood	1,493 0 0

For additional workshops, Norfolk Foundry, Ecclesfield. Messrs. Dixon & Moxon, architects, Barnsley:—
T. F. Troop, Barnsley (accepted for the whole work).

For erecting nineteen houses and stables at Stoke Newington, for the Incorporated Society of Licensed Victuallers. Mr. H. J. Newton, architect:—

Royal (accepted)	£8,332 0 0

For alterations and enlargements of No. 56, Broadmead, Bristol, for Messrs. Rose & Harris. Mr. Herbert J. Jones, architect:—

	New Work.	Old Materials.
Cowlin & Sons	£1,734 0 0	£30 0 0
Howell & Sons	1,440 0 0	35 0 0
Veals	1,434 0 0	50 0 0
Eastabrook & Sons	1,382 0 0	25 0 0
Green	1,378 0 0	27 10 0
Humphreys	1,340 0 0	87 0 0
Bastow	1,317 0 0	50 0 0
James	1,299 0 0	35 0 0
Davis	1,295 0 0	65 0 0
Saise & Son	1,295 0 0	35 0 0
Lewis & Edbrooke	1,286 0 0	66 0 0
Hatherley	1,235 0 0	—
Church, Bristol*	1,208 0 0	108 0 0

* Accepted.

For the conversion of a silk-mill into stores and offices for the Star Tea Company, Derby. Mr. R. W. H. Mason, architect, Derby:—

J. Wood	£585 12 0
Ford & Co.	420 0 0
F. Slater	365 0 0
W. Walkerdine (accepted)	347 0 0

For the construction of coffee-roasting and grinding mills, engine-house, mess-room, &c., for the Star Tea Company, Derby. Mr. R. W. H. Mason, architect, Derby.—
W. Walkerdine (accepted at a schedule of prices).
Machinery by Faulder, of Stockport.

For alterations and additions to The Cedars, Broadsall, for Mr. Joseph Cadman. Mr. R. W. H. Mason, architect:—

Ford & Co.	£537 0 0
J. Wood	536 6 0
W. Walkerdine (accepted)	469 0 0
F. Slater	455 10 0

For building a pair of semi-detached residences for Mr. S. Hurdle, at Erith, Kent. Mr. Henry Roberts, 113, Lewisham-road, architect:—
G. W. Sly, Greenwich (accepted).

For the erection of bakery at the Workhouse, Marloes-road, for the Guardians of St. Mary Abbotts, Kensington. Messrs. A. & C. Harston, 15, Leadenhall-street, architects:

Warr	£637 0 0
Martin & Goddard	546 0 0
Egan & Co.	543 0 0
Seward	494 0 0
Nightingale	463 0 0
Ridout (informal)	447 0 0
Hunt & Challis	441 0 0
Reeves	423 0 0
A. G. Bolding, George-street, Portman-square (accepted)	287 0 0

Ovens, Machinery, and Fittings.

Smith & Son, York-street, Lambeth (accepted) £448 0 0

For new sanitary fittings to the Infirmary, Marloes-road, Kensington, for the Guardians of Kensington. Messrs. A. & C. Harston, architects:—

Jeffrey & Burton	£2,314 0 0!
J. & F. May	1,250 0 0
Lucas & Son	1,240 0 0
Bolding	1,227 0 0
Jeakes & Co.	1,172 7 6
Crapper	989 0 0
Stidder	878 0 0
Clark, Bunnett, & Co., Rathbone-place (accepted)	850 0 0!

For the erection of a Masonic Hall for the Clausentum Lodge, No. 1,471, at Woolston, near Southampton. Mr. W. H. Mitchell, architect:—

Stevens & Sons	£1,450 0 0
Brinton & Bone	1,405 0 0
W. H. Chapman	1,338 0 0

For alterations, &c., to premises, Upper-street, Islington for Mr. Rackstraw:—

Williams & Son	£3,767 0 0
Grover	3,689 0 0
Smith Bros.	3,270 0 0
Coombs	3,168 0 0

For rebuilding two houses and shops on the site of Nos. 177, 179, and 181, New Kent-road, S.E. Messrs. George Lansdown & Harriss, architects:—

Howard & Dorrell	£1,770 0 0
J. W. Falkner	1,740 0 0
H. & E. Lea	1,718 0 0
Canning & Mullins	1,630 0 0
Tarrant & Son	1,628 0 0
W. Smith	1,600 0 0
W. & F. Croaker	1,576 0 0
J. Marsland	1,555 0 0
R. W. Edgley (accepted)	1,366 0 0

For a new farm cottage at the Vicarage Farm, Thurleigh, Beds, for the Rev. B. Trapp, vicar. Mr. John Day, architect:—
W. Wade, St. Neots (accepted) £269 5 0

For additions to the Vicarage at Stow Longa, Huntingdonshire, for the Rev. G. E. Sharland. Mr. John Day, architect:—
W. Osborne, St. Neots (accepted) £754 10 0

For a new rectory at Upton-with-Coppingford, Huntingdonshire, for the Rev. J. A. Lawson, rector. Mr. John Day, architect:—
W. Osborne, St. Neots (according to schedule).

For a new cricket pavilion for the Bedford Grammar School. Mr. John Day, architect:—
Messrs. Corby & Son, Bedford (accepted) £451 14 6

For additions to Wadsworth House, Kimbolton-road, Bedford, for Mr. Thos. Bull. Mr. John Day, architect:—

G. Haynes, Bedford (accepted)	£250 0 0
Bellhanger and gasfitter extra	31 5 6

For new billiard-room at the Bedford Conservative Club, St. Loyes. Mr. John Day, architect:—
G. Todd, Bedford (accepted) £288 0 6

For a new vicarage for the parish of Holy Trinity, Bedford. Mr. John Day, architect.—
S. Foster, Kempston and Bedford (accepted)... £1,430

For alterations to Nos. 43 and 44, High-street, Hampstead. Messrs. Ebbetts & Cobb, 115, Strand, architects.—

J. Nichols	£163 3 6
J. Williamson	125 7 6
Langlar & Pinkham	97 0 0
Steel Bros.	69 0 0

For repairs and conservatory to Huntingdon House, Hornsey, for Mr. S. W. Francis. Mr. Walter Graves, architect:—

Mansfield & Co.	£440 0 0
J. O. Richardson	327 0 0
Allidis Bros.	324 0 0
Goad	319 0 0
Spencer & Co.	302 0 0
Williams & Son	263 0 0

For alterations and additions to No. 574, Old Kent-road, for Mr. Herbert Clarke. Mr. John Groom, architect.—
J. O. Richardson (accepted).

For dwelling-house and surgery in Streatham High-road, for Mr. J. W. Roughton, M.D. Mr. F. Wheeler, architect:—
Hull Bros., Streatham (accepted) ... £1,565 0 0

Accepted for works required to be done during the space of one year by the Hornsey Local Board. Mr. T. de Courcy Meade, surveyor:

Scavenging and Dusting.

Hodson & Smith, Tottenham £240 0 0

Street-Watering and General Cartage Work.

Jackson & Son, Finsbury Park (according to schedule).

Asphalte Paving.

The French Asphalte Company, Cornhill (according to schedule).

Street Cleansing.

Jackson & Son, Finsbury Park 845 0 0

Road Materials.

E. Heard, Hoxton (according to schedule).

Mason and Paviors' Work.

Aspinall & Son, Hoxton (according to schedule).

Sewer Jobbing Works.

Dunmore, Crouch-end (according to schedule).

Accepted for the making up of several private roads, in the Hornsey Local Board District. Mr. T. de Courcy Meade, surveyor.—

St. Joseph's-road.

Pizzey, Hornsey £215 0 0

St. Anne's-road.

Pizzey, Hornsey 70 0 0

Orchard-road.

McKenzie, Williams, & Co., Finsbury 284 0 0

Holmesdale-road (private portion of).

McKenzie, Williams, & Co., Finsbury 161 0 0

Parkhouse-road.

Pizzey, Hornsey 388 0 0

Bishop's-road.

Pizzey, Hornsey 372 0 0

Bloomfield-road.

Pizzey, Hornsey 374 0 0

Broadlands-road.

Pizzey, Hornsey 624 0 0

Northwood-road (sewer).

Dunmore, Crouch-end 335 0 0

For house, Lawnde Manor, Market Rasen, for Lieut.-Colonel F. J. Conway Gordon. Mr. C. G. Wray, architect. Quantities by Messrs. Linsdell & Giffard:—

A. Brown, Hull	£4,734 0 0
Wright, Lincoln	4,689 0 0
Blackburn, Hull	4,595 0 0
Kirk & Parry, Sleaford	4,296 0 0
Rudd & Son, Grantham	4,259 0 0
Musgrave, Hull	4,093 0 0
Knight, Sleaford	3,979 0 0
Baines, Newark	3,950 0 0
Walter & Hensman, Horncastle	3,940 0 0
Thompson & Son, Louth (withdrawn)	3,450 0 0

For a reception-room to the Masonic Hall, Reading. Messrs. Webb & Tubbs, architects:—

Higgs, Reading (accepted)	£300 0 0

For lodge, Rock Shaw, near Merstham, Surrey, for Mr. W. Gardiner. Messrs. Webb & Tubbs, architects:—

Gray, Reigate	£725 0 0
Thompson, Caterham	694 0 0
Kingerlee, Banbury (accepted)	655 0 0

For additions to mansion, Rock Shaw, near Merstham, Surrey, for Mr. W. Gardiner. Messrs. Webb & Tubbs, architects:—

Gray, Reigate	£1,173 11 8
Kingerlee, Banbury	993 0 0
Thompson, Caterham	956 0 0

For new billiard-room, Wellington Club, Reading, for the Directors of the Conservative Club. Messrs. Webb & Tubbs, architects:—

Pegler, Reading	£461 0 0
Winter	454 17 0
Strong	449 0 0
Lewis & Son	425 0 0
Woodroffe	410 0 0

For additions to buildings, Frohield Vicarage, near Hungerford, for the Rev. R. C. Stiles. Messrs. Webb & Tubbs, architects:—

Kingerlee, Banbury (accepted)	£100 0 0

For boat-houses, Tilehurst, near Reading, for Messrs. Hawkins. Messrs. Webb & Tubbs, architects, 1, Blagrave-street, Reading:—

Dry Boat-house.

Woodroffe, Reading	£60 0 0
Kingerlee, Banbury	60 0 0
Talbot, Caversham (accepted)	60 0 0

Wet Boat-house.

Talbot, Caversham (accepted)	50 0 0

For stables, Tilehurst, near Reading, for Messrs. Hawkins. Messrs. Webb & Tubbs, architects:—

Kingerlee, Banbury (accepted)	£235 0 0

For billiard-room, Tilehurst, near Reading, for Messrs. Hawkins. Messrs. Webb & Tubbs, architects:—

Kingerlee, Banbury (accepted)	£260 0 0

For new laundry and alteration to hotel, Tilehurst, near Reading, for Messrs. Hawkins. Messrs. Webb & Tubbs, architects:—

Kingerlee, Banbury (accepted)	£200 0 0

For cottages, Sonning, near Reading, for Messrs. Hawkins. Messrs. Webb & Tubbs, architects:—

Simmons, Reading	£335 0 0
Strong, Reading	315 0 0
Bottrill, Reading	312 0 0
Margetts, Reading	309 0 0
Wernham, Reading	3 8 10 0
Kingerlee, Banbury	295 0 0
Cox, Sonning (accepted)	256 0 0

For new sewers in Torrington-street, Torrington-square, Torrington-mews, &c., for the Board of Works for the St. Giles's District. Mr. G. Wallace, surveyor:—

J. Mowlem & Co.	£2,439 0 0
Hoare & Sons	1,852 0 0
F. Keeble	1,680 0 0
J. Pizzey	1,665 0 0
Nowell & Robson	1,655 0 0
C. Killingback (accepted)	1,580 0 0

For Finchley Congregational Baptist Church, Trinity-road, Upper Tooting. Mr. T. H. Vernon, architect:—

W. Johnson, Wandsworth-common*	£1,999 0 0

* Accepted.

For alterations, &c., to the Lawns, Balham Hill, S.W., for Mr. E. F. Hilton. Mr. A. Causton, architect:—

Greenwood	£1,490 0 0
Hall, Beddall, & Co.	1,344 0 0
Stimpson & Co.	1,230 0 0

For new offices, &c., for Messrs. Carter Paterson & Co., at 128, Goswell-road. Mr. William Eve, architect, 10, Union-court, Old Broad-street, E.C.:—

Spencer & Co.	£816 0 0
W. Downs	463 0 0
F. Higgs	460 0 0
W. Rowe	450 0 0
Harris & Wardrop	394 0 0
D. D. & A. Brown (accepted)	355 0 0

For enlargement of stables, for Messrs. Carter Paterson & Co., 128, Goswell-road. Mr. William Eve, architect:—

	Deduct if old roof retained.
Harris & Wardrop	£863 0 ..... £105
F. Higgs	810 0 90
W. Downs	727 0 50
D. D. & A. Brown (accepted)	720 10 60

For alterations and additions to premises in Noble-street, St. Luke's, for Messrs. George Farmiloe & Sons. Messrs. Isaacs & Florence, architects:—

C. P. Roberts	£811 0 0
Wells & Son	785 0 0
Crabb (accepted)	774 0 0

TO CORRESPONDENTS.

To the writer who has placed Portland stone under the head of "Freestones" is quite correct.—*Re* Cemetery and Cellars (apply to the Sanitary Office, or the Parish Authorities, or to the Local Government Board. But he should be sure that he is right before troubling them).—T. T. (you will find it should you search the advertisements during the last month).—J. P. (no name to letter).—A. H. (not an Associate).—P. B.—C.—J. H.—D. & G.—A. K.—Capt. R. J. C.—B. & D.—H. J. J.—F. D. W. & B.—E. L.—E. J. E.—M. T. & H.—A. W.—E. G.—D. & O.—S. & C.—L. G.—P. S. D.—J. G. Y.—F. B.—D. & Co.—G. P.—J. N.—A. J. R.

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The Builder.

VOL. XLIV. No. 2098. SATURDAY, APRIL 21, 1883.

ILLUSTRATIONS.

The National Liberal Club, Northumberland-avenue, Charing-cross (Double-page Engraving).—Messrs. H. & F. Francis, Architects 538
Church of the Sacred Hearts of Jesu and Mary, West Brompton (Double-page Engraving).—Messrs. J. A. Hansom & Son, Architects 539
Church of St. John, Warsaw, at Time of Prayers (Double-page Engraving) 540, 541

CONTENTS.

Anglo-Roman and Saxon Antiquities at the British Museum .. 523
Room for Architecture, and Architecture as affected by Want of Room 525
Architecture among the Poets 526
Some Traits of Canova and Thorwaldsen 528
A Biographical Sketch and its Lessons 529
The Decorative Treatment of Metal in Architecture: Cantor Lectures, Society of Arts 530
Ben Jonson at Lincoln's Inn 532
Discovery of an Ancient Celtic Cross 532
Work for Scotland to do 534
The Latest Phase of the Thirlmere Scheme 534
Mr. Charles Fowler 534
Church of St. John, Warsaw 547
The National Liberal Club, Charing Cross 547
The Roman Catholic Church, West Brompton 547
Wren's City Churches 547
The Completion of the Wellington Monument in St. Paul's Cathedral 549
The Manchester Ship Canal Bill 550
Mr. Tilworth's Exhibition 551
Edinburgh Building Notes 550
The "Waiting Game" with respect to Mural Painting 551
A Visit to the Metropolitan Railway Company's Locomotive and Carriage Works at Neasden 551
The Late Great Fire in Wood-street: Extensive New Building Works 552
Mexican Antiquities 552
French Scientific Expeditions 552
The Capital of English Railways 552
St. Paul's School, Kensington: Visit of the Architectural Association 553
The Bradford Chimney Disaster 552
The Beaconsfield National Memorial Statue 553
Obituary 553
New Bank Buildings in the City 553
Alhambra Theatre 553
Proposed Sanitary Inspectors Association 554
Glasgow Southern Hospital 554
Nottingham New Municipal Offices Competition 554
Double Competitions 554
Surveyorship Items 554
Architects' Benevolent Society 554
The Smoke Abatement Committee's Official Report 554
Books: Meade's Iron and Coal Industries of the United Kingdom (Lockwood) 554
Various 554
Miscellanea 555

Anglo-Roman and Saxon Antiquities at the British Museum.

GRADUALLY but surely, the galleries on the upper floors of the British Museum are putting on another aspect of a very different nature to that which for so many years they have worn. Frequenters have taken delight in the long row of cases devoted to the exhibition of natural objects, but with the exception of the ornithological collections, arranged by the late Mr. G. R. Gray, F.R.S., and a few of the more unwieldy mammalians waiting to rejoin their congeners in new quarters, very little illustration of natural history is now to be seen in the Museum. The palæontological specimens, in which Professor Owen delights so much, gave place to Etruscan antiquities, and our readers will remember the description of that room which we printed at the time of its opening. In like manner the geological collections migrated to the South Kensington "British Museum of Natural History," and made way for the Egyptian antiquities, presided over by Dr. Birch; and of this change also, as well as of the elaboration of one of the old Egyptian rooms into a room of Archaic Greek Pottery, we gave notices at the periods of their arrangement. We now have to record the arrangement of the two rooms on the upper floor on the eastern or right-hand side of the south gallery, which were formerly devoted to the display of botanical specimens, and polished samples of exotic timbers. Here also art has displaced nature, and from henceforth the extensive series of national relics of the Romans and Anglo-Saxons, with foreign comparative objects, will occupy the position. At the work of arrangement Mr. A. W. Franks, F.R.S., keeper of the department to which these antiquities belong, has long laboured, and taking the opportunity which was afforded him by the completion of his task, he very courteously invited the officers and executive councils of the British Archæological Association, the London and Middlesex Archæological Society, and the Royal Archæological Institute, to inspect the new rooms on the afternoon of Saturday the 7th inst. In response to this complimentary recognition a large proportion of the members of the different bodies attended, and Mr. Franks, assisted by Mr. C. Read, F.S.A., his coadjutor, pointed out the results of his arrangements, and drew attention to the principal objects of interest.

The Anglo-Roman antiquities are located in the second and farthest room as one enters from the landing at the head of the grand staircase, behind the cases which for the present hold the gorilla family, while the first room, which is somewhat smaller, enshrines the Anglo-Saxon relics with a few Celtic and allied objects. Of the Roman antiquities, which the numerous excavations undertaken as well for private and systematic research as necessitated by the erection of buildings, and construction of railways, stations, sewers, and other works involving the displacement of large masses of earth, the British Museum possesses,—as indeed it is only proper that it should possess,—a very extensive and representative collection, which has been slowly accumulating for many years as the result of judicious purchases, bequests, gifts, and by other ways whereby things follow a kind of impulse which directs them to centres of attraction cognate to their own characteristics. The remarkably intelligent way in which these have been disposed for examination by visitors, and those who take an interest in such matters, speaks volumes for the future arrangement of the magnificent collection known as the Christy collection of ethnographical objects, which, we believe, will not have to wait very much longer in their present repository at Victoria-street, before they fall under the hands of Mr. Franks for disposition in the long galleries of the Museum, now being divested of the animals and birds. In the centre of the Anglo-Roman room is placed the fine heroic head of the Emperor Hadrian, found in the River Thames, probably not far from the original site of the statue, which, with exception of this head, and perhaps the large right hand with forefinger extended as it were in the act of command, found in Thames-street, is now no longer in existence. In front of it stands the beautifully-adorned bronze standing figure of an imperial personage which was found near Barking Hall, Suffolk. The lustrous patina, the coloured enamels, and, above all, the masterly and artistic composition of this commanding figure claim for it the first place in any description of Roman bronzes found in Britain. Not far from these set out in wall-cases on the left-hand side of the room, is a good display of smaller bronzes, among them being a fine green-coloured bronze figure of an archer in the act of drawing a bow, now wanting from the hand which held it, found in Queen-street, Cheapside, in the year 1842; a standing figure of an emperor found at Erith; casts of two heads endowed by the fabricator with a chaste and elevated expression, closely approaching to Greek art, believed to have been found in Bath; an enamelled cup found at Braughin, near Standon, in Hertfordshire; a helmet found between Tring and Berkhampstead, of the hemispherical form so well known in the modern jockey cap, but with the peak or projection intended to be worn at the back of the head instead of on the brow, as in modern fashion; and an enamelled bowl or vase found in a Roman sepulchre at Bartlow hills, Essex, in 1835, and unfortunately seriously injured,—but not before a model had been made of it,—by the fire at Easton Hall, in 1847. On the left side of the room the upright glass cases ranged against the wall contain a very large collection of fictile vessels, and are surmounted by large specimens of amphoræ, and sepulchral vessels of terra-cotta. The fictilia have been classified by Mr. Franks according to colour of the ware. First, the yellow pottery, chiefly from West Thurrock, in Essex, and Colchester, fertile spots to the Roman relic-searching antiquary, and a series of the flat bowl-shaped *mortaria*, and inscribed or stamped handles of jugs and amphoræ found in Moorgate-street and elsewhere. Then the more frequently occurring grey pottery yielded by various sites, such as, for example, Weymouth, Rochester, Reculver, Basing, Felixstow, and Exning. After these the highly-prized decorated pottery, with designs and letters in white slips, and that found *in situ* in Roman potters' kilns in the New Forest, Caister, near Peterborough, and Colchester. The last-named locality supplies many vessels to the concluding class of pottery namely, the Samian, many bowls and vessels of which class are of unusual size, and indicate the highest point of art to which the moulder and designer of the figures and ornamental devices seen on red Roman ware ever attained.

On the opposite side of this well-stocked room the cases are surmounted by a series of small altars, for the most part sculptured on their front sides with full-length figures, and dedicated to Mars, Fortune, Victory, Sylvanus, and other deities of the Roman system of polytheistic mythology. They were found at King's Stanley and Bisley in Gloucestershire, and in other places. Near the doorway are deposited a few leaden coffins not far from the full size of human stature, some of which exhibit the conventional symbol of the pecten or escallop shell, and a jointed or beaded band or bar, a detail which may be noticed on other leaden relics in this collection. It is difficult to say why the escallop-shell, adopted in Mediæval days as the emblem of St. James the Apostle, and of pilgrims generally, should have been used by the Romans in Britain as a mortuary ornament. The first case on this side contains authentic sepulchral groups of pottery with the vessels arranged in the same relative position to each other as when they were first discovered at Colchester; the leaden lid of a sarcophagus which was exhumed at Haydon-square, in the Minories, enriched with the beaded ornament and escallop already referred to; a collection of glass urns used in cinerary burials, and miscel-

laneous objects such as bones, parts of dress, and sandals found at Southfleet, in Kent, enclosed in a stone sarcophagus; a large green glass bottle of square-sided form, found in a stone cist at Harpenden, in Hertfordshire; and a lecythus, or conical bottle, of bright green glass found in 1865 at Old Windsor, and presented by Her Majesty the Queen, to whom also the authorities of the British Museum are indebted for a perfect Roman tomb constructed of thick and ponderous red tiles of very large size, forming a square receptacle in which some cinerary urns are deposited. This impressive group was also discovered at Old Windsor at the same period. In a contiguous case are preserved the sepulchral cists found underground in Warwick-square, on the south side of Newgate-street, just behind the gaol buildings in 1881. These canister-shaped cylindrical boxes, with tight-fitting lids, are adorned with the favourite beaded pattern of the Roman leadsmith, and have on the side repeated surface plaques in relief, with the representation of a four-horsed chariot driven at racing speed by a charioteer. These cylinders contained large glass amphoræ and other objects. There was also found, and is here exhibited, a massive Florentine stone cinerary urn in which was a coin of Claudius, a fact which fixes the date of the interment between A.D. 41 and 54. In the same case a similar but smaller canister-shaped vessel of lead is shown, found in Endell-street in 1864; a leaden coffin of small dimensions, for a little child, from Mansell-street, Whitechapel; and a leaden vat or cistern, bearing an inscription which perpetuates the name of the British maker,—CVNOBARRVS. The glass vessels found from time to time at Colchester, one of the most fruitful sites ever explored for Roman remains in England, possess manifold shapes and elegant forms; one, added not long ago to the Museum treasures, is of pale bluish green, cylindrical in body, with broad lip on a pipe-shaped neck, and having the thin flattened handle peculiar to Roman glass. From Barnwell, in Cambridgeshire, is derived a rare shaped sepulchral jug or vase, having six sides, and containing the calcined bones of an ancient Roman of high rank; another vessel, square-sided, and replenished in like manner with the calcined *reliquiæ* of him in whose memory it was deposited in the grave, comes from Messing, in Essex. The next cases on this side of the room are filled with glass objects and miscellaneous antiquities, arranged in accordance with a system of classification adopted by Mr. Franks to bring into juxta-position objects of similar character. Among them may be pointed out for especial observation the drinking-cup of moulded glass, amber-coloured, bearing the favourite sporting device of a chariot race, with the names of those who took part in the contest placed along the frieze or rim of the cup; the sepulchral cyst filled with pottery, from Westergate, near Chichester; two curious cakes or molten masses of Roman copper found in the Paris mines of Anglesea; and some pewter cakes, found near Battersea, in the bed of the river Thames, inscribed with the name of Syagrius.

The iron implements and weapons which follow are from Lakenheath, Suffolk, and London; others, of Romano-British workmanship in bone and metal, from two caves not far from Settle, in Yorkshire. In other cases are displayed weights for steelyards, lamps, a stake found in the Thames at a place called Coway Stakes, where it is said that Julius Cæsar crossed the river; and a portion of a wooden pile, incrusted with a conglomerate formation containing Roman coins, found underneath the foundations of London Bridge. London sites also supply several horseshoes or slippers of remarkable form, furnished with a projecting ring or bend of metal in front of the hoof. The bas-reliefs of the "Deae Matres" from London, and Wellow, in Somersetshire, are followed by a stone tablet carved with a standard and symbols of the Second Legion, found at Benwell, in Northumberland,—a county which, as Alnwick Castle Museum testifies, has contributed a great many sculptures of the Roman period to our antiquarian knowledge and experiences. But, as a rule, sculpture of this period, as evinced by the examples hitherto discovered, is, with but a very few exceptions, of an inferior kind. This is shown by the marble statuette of the goddess Luna, found at Woodchester, in Gloucestershire, famous for its mosaic pavement; and that of Cupid and Psyche, in a fragmentary condition, from the same locality, now resting on the shelves of this new room in the Museum, as well as by the figures on the Gloucestershire altars already mentioned. To these relics succeed a selected series of roof-tiles, with the lower edge shaped in an acute angle; plain terra-cotta tiles; fine-tiles, deeply scored with the trowel's edge; flanged tiles, drain and conduit pipes, and portions of the coloured and decorated stucco work from the interior walls of Roman edifices. At the end of the room the wall supports the central subject,—Bacchus riding on a panther,—and parts of the ornamental border of a mosaic pavement found in Leadenhall-street.

Beneath this group are ranged the heavy pigs of Roman lead, one of which, from the mine of Lutudæ, was found near Matlock Bank, Derby; another at Broomer's Hill, Sussex; and others at Cromford Moor, Derby, bearing the name of the Emperor Hadrian; Snailbeach Farm, in Shropshire, also stamped with that imperial name; and Hayshaw Moor, Yorkshire, on which is found the name and titles of the Emperor Domitian. The table-cases which stand in the area of the room are well stocked with an immense variety of objects of domestic, military, and religious employment, such as locks and keys, tools, and other implements of the artificer, mirrors, pins, tweezers, weights, bells, steelyards, little boxes of fanciful shape for holding the indispensable seal so constantly in requisition in the well-conducted but frugal household of the ancient Roman, chains, rings, beads of glass, and other substances, shears, strainers, writing-boxes, and tablets or *pugillaria*, enamelled bronze, and gilt silver brooches, necklaces of finely iridescent glass beads, bronze pouches or purses for use on the arm; pins, beads, and armlets of jet; the bases of small vases made of a kind of shale, and known to the archæologist as kimmeridge coal-money; two portions of a Roman vase turned out of kimmeridge coal, found at Warden, in Bedfordshire; and three tables, like book-covers, chased with ornamental devices very like book-binders' blind-tooling, formed out of a slaty stone, and found near Weymouth. As the visitor pursues his inspection of the contents of these cases, he will not fail to notice several original tablets of bronze possessing remarkable and highly important palæographical features. These are (1) the "Malpas Diploma" of privileges, granted by the Emperor Trajan to military bodies serving in Britain, dated in the month of January, A.D. 103, found at Malpas, in Cheshire, in 1812, and presented by Lord Kenyon; (2) the "Sydenham Diploma," by Trajan, of similar import, A.D. 105; (3) the "Riveling Diploma," of Hadrian, A.D. 124, couched in similar terms, found near Sheffield; and (4, 5) two of Antoninus Pius, A.D. 164, found at Chesters, the Roman Cilurnum, co. Northumberland, presented to the Museum by Mr. J. Clayton, F.S.A., who has examined the site of that Roman station with considerable success. A tablet resembling these, and relating to British auxiliary troops, was found in 1881 near Liège, and has been described by Mr. C. Roach Smith, F.S.A., for the British Archæological Association, and by Dr. Adolf Ceuleneer, for the Archæological Academy of Belgium. Not far from these inscribed plates lies the iron sword and its accompanying sheath of bronze, richly ornamented with patterns of foliage, with birds, and the mythological device of Romulus and Remus, tended by their wolf foster-mother, recently found in the river-bed at Putney. One of the most singular objects in the whole collection is an instrument of massy metal, described as being perhaps a pair of brays for the nose of a victim. On the shanks of this peculiar implement are small busts representing the deities who presided in turn over the days of the week. This also comes from the Thames, and bears marks of the corroding influence of running water. It was formerly in the Roach Smith collection, the acquisition of which has aided, in no small measure, the proper illustration of Anglo-Roman arts and sciences in the British Museum. The thinly beaten plates of silver, ornamented with a kind of gauffering, and cut into fanciful shapes, dedicated, according to the tenor of the inscriptions upon them, as votive offerings to Mars and Vulcan, should not be overlooked. They were found at Barkway, in Hertfordshire, and presented by Lord Selsey to the Museum authorities. Two bronze helmets of different eras of Roman art, and of perfectly different form, are well worthy of notice. The one, having projections on the forehead, like budding horns, had been so flattened that, when first found, it was conjectured to be a breast-plate, but under the skilful manipulation of an artificer, it eventually yielded up its secret and resumed its pristine shape. The other, from Ribchester, in Lancashire, is ornamented with subjects in *repoussé* work representing combats or gladiatorial exercises, and is furnished with a portrait face or mask of considerable artistic merit. In concluding these observations on the contents of the table-cases, we may point out, among other relics which must be passed over, a glass funnel found on the site of a villa at North Wraxhall, in Wiltshire; window-glass from the recently-opened villa at Brading, in the Isle of Wight; a series of forgers' moulds for fabricating spurious coins; shoes and sandals of black leather, cut with reticulated work at the sides, found in London; bosses of shields; and finally a series of fragments of vessels, coins, and ingots of silver from Coleraine, in Ireland. For the charming arrangement of this large number of antiquities in a room of rather circumscribed dimensions and limited area, the public has to thank Mr. Franks very much.

The room in which the Anglo-Saxon relics are exhibited is of still smaller dimensions, but it will be found replete with many unique relics of our forefathers. In case No. 1 stand two remarkable glass drinking-vessels furnished with projecting ornaments or drops, which seem to indicate that it was designed for ornament rather than use. The pretty tints and light shades of some of the glass drinking-cups, and the iridescent glass beads from Saxon graves, will strike the visitor as he passes round the room. The pottery is dark coloured and heavy, but with characteristic forms, except in one or two rare instances, where, as in the bowl placed in case 5, the Roman form appears. The patterns deeply impressed into the thick earthen substance of the vase are not particularly artistic. But in the goldsmith's work, on the other hand, much taste is evinced, and a fine large fibula, adorned with gold filigree work, and a sword handle, also enriched with filigree, show the great excellence to which the worker in the precious metal had attained. The curious little buckets or pails, constructed with wooden staves bound with bronze or other metal, found at Long Wittenham, in Berkshire, and several other sites of Anglo-Saxon cemeteries, usually with male skeletons, no doubt bear witness to some details in the funeral ritual of those times which is now unexplained. Amber heads, crystal pendants, bronze or enamelled brooches and pins, iron knives, swords, and spear-heads seem to have formed the most durable treasures of those distant but simple-minded times, yet occasionally the home of a chief or ruler seems to have been signalised by the possession of some such richly-worked relic as the casket carved out of the bone of a whale, bearing the well-known subjects of Romulus and Remus with their wolf, the Magi adoring the new-born Saviour, the decollation of the Baptist, and the sack of Jerusalem, explained by runic legends in Northumbrian dialect. It would be impossible here to enumerate, however briefly, a tenth part of the collections in this room. The table cases are filled with the miscellaneous yield of many graves, systematically explored with the object not so much of acquiring the relics themselves as to find some clue to the *raison d'être* of their inhumation. Here are displayed fibulæ, pins, brooches, chains, rings, heads of amber and glass, weapons of many forms, seals, and carvings, a bone with patterns apparently sketched as a trial of skill by an engraver, imitation coin-brooches, combs, whet-stones, oval bronze brooches of the Scandinavian type, and the multifarious objects, principally of small size, which remain to-day as witnesses of the early tastes and arts which obtained in Great Britain. It is not far to turn to the case of Celtic bells, hallowed by their association with the Saints of Ireland who flourished in the sixth and seventh century, small and of square pyramidal form, which still keeps its place among the sheep bells seen upon the downs of Sussex,—many of which are probably of considerable age, and certainly, as to form at least, remarkable instances of the way in which types of antiquity linger in the unlikely places of the earth. There are objects of Vandal and of Merovingian origin in the Anglo-Saxon room, as well as of Germano-Saxon and Gothic types, but the description of them would occupy more space than may here be devoted to that object. Happily the Museum is of easy access to all, its officials courteous, and a visit, however hastily

made, is sure to be attended with profit to the pleasure-seeker, the enthusiast, or the antiquary.

ROOM FOR ARCHITECTURE, AND ARCHITECTURE AS AFFECTED BY WANT OF ROOM.

No influence is so powerful, in producing slow but irresistible change, as the steady increase of population. The question is one which it has only become possible definitively to study within the present century, and serious difficulties and anomalies oppose the attempt to carry back our appreciation of the rate of increase to earlier times. This comes especially home to the architect in regarding the question of church accommodation. Since (in about 1815) English people recommenced the building of churches, we know how numerous have been the edifices raised for public worship. But the large size of many of our ancient churches, when compared with the actual population of the villages and rural districts in which they stand, is a fact that has caused much perplexity. The agglomerating movement by which, over the greater part of Europe, the population is becoming more and more urban in its character, may have much to do with the matter. But while the growth of the urban population at once explains the demand for new churches, it can hardly account for the extensive accommodation afforded by many of the old. It has been thought that the greater knowledge which we have attained of the laws of health, by enabling us to avoid those periodical plagues, pestilences, and famines that to some extent counteracted the normal growth of the population in past times, may have much to do with the change. Again, many noble churches were abbatial or conventual; and the wealth slowly but steadily accumulating in ecclesiastical hands from the Conquest to the Reformation has often been expended in a large and splendid provision of church room, probably considerably in excess of the wants of the times. But with all the allowances that can be made, the question of the size and even of the numbers of our early churches is not one that can be regarded as by any means satisfactorily understood.

The question of church room, whether in the past or in the present, is, however, but one case of that great general problem which is yearly becoming more grave for the statesman, the architect, and the sanitary reformer. Church room and house room are only details of the general question of the capacity of the island for the support of its population. The great change which, nearly half a century ago, was made in the laws regulating the admission into the country of food produced in foreign parts, was only one of those great secular movements which we are apt to attribute to the influence of this man, or that party, but which neither individuals nor parties would have been able to effect, except under conditions that made all men feel that change of some kind was inevitable. Again, that change in distribution of the population which the introduction of the railway system has done so much to hasten, is not one that can be spoken of as due to statesmen or to legislation. It has ensued on the facilitation of communication; and that in a manner which is perhaps not even yet thoroughly understood, and which it certainly would have been impossible to predict. The mode in which man makes work for man, and in which an increment in population causes, or at all events is closely accompanied (with one or two noted exceptions) by, an increase in productive industry, and even by a multiplication of the number of distinct trades and crafts, is a subject which has never yet received the attention that it deserves. How is it, that with each mile for which some striving town pushes forth its approaches into the country, occupations sift and form themselves,—that new inhabitants develope new wants, and that various industries, of distribution, of conversion, or even of, what we may call indication, spring up as if from seed broadcast on the soil?

Of the direct effect of the growth of population on the building industries, it is, of course, possible to speak with some distinctness. That 1 per cent. more of population will require 1 per cent. more of house-room may be anticipated; and in prosperous communities the demand for building will always be in advance of the numeric increase, because, with the increase of wealth and of luxury more house-room will be demanded per unit of population. But even here the subject is far from simple. There is the question of dilapidation and decay to be regarded alongside of the question of enlargement and increase. There is the subtle but mighty influence of fashion, the march of which it is so hard to predict. It might seem almost a paradox to say that the change of fashion as to locality depended on the respective prevalence of the winds from different quarters; but it is hard, with the map in our hands, to exclude this consideration from our minds. In seeking a site for a suburban residence a considerate architect will naturally be influenced by the degree in which the locality is injured or rendered valuable by the vicinity of the city; and thus, when he finds that a westerly wind brings clear sky to a site on the west of a town, while on the east the only wind that brings clear sky is one that is objectionable in other respects, we can understand why the west end should be the fashionable quarter (if no topographical difficulties oppose) as a sequel of natural causes.

It is thus evident that for those who look to the future, whether for the construction or choice of their dwellings, or for their selection of a stand-point for any industry which is to be more than ephemeral, the great question of capacity is assuming a predominant importance. Facilities of communication may prevent, on the one hand, a city from becoming "hide-bound," or a country locality from being deserted. But what is the natural limit of these facilities? At what point will they cease to be elastic? At what point of growth will it become necessary wholly to reconsider the question of communication, on the ground that the constant addition of details to the system renders the system as a whole unmanageable?

It may be thought that the time has arrived to direct some degree of systematic attention to this great question of capacity. There are signs in many quarters that, if neglected much longer, it may tend to settle itself, in perhaps an awkward fashion. Alike in the metropolis, in the provincial centres of industry, and in the wilder and more neglected regions of Scotland and of Ireland, is the question becoming troublesome. Its most urgent form, probably, is that which regards the homes of the urban industrial classes. As to this it is but too well known how serious the difficulty is becoming. But apart from the actual state of any particular district or class, what are the general features of the question? First, we have a constantly-increasing population, increasing at a rate which is not measured by the excess of births over deaths, great as that is, because it is augmented by a constant displacement of the adults. Then comes the consideration of the limit of the urban area,—a limit drawn not by walls and ditches, but by facility of intercommunication. The routes or lines of this intercommunication are each limited in their capacity, and in some cases that limit seems to be reached, or nearly so. Thus these routes to some extent interfere with and limit one another. Of this we have a signal instance in the case of the Thames Embankment and the Underground Railway. What the railway traveller desires is at variance with the proper use of the Embankment. Again, although we have happily, for a long time, been without any of those catastrophes which have shown the difficulty of the numerous junctions, crossings, and tunnels essential to the connexions of urban and suburban railways, the pressure of traffic on each of these is severe, and there is a necessary limit to the interchange of traffic. At the same time, with the growing density of population, rents inevitably rise. To some extent the cost of living in other respects must rise also. How the working man is to be able to pay the rent necessary for constructing fit abodes for him on the narrow and thickly-traversed area on which his work lies, is a problem of the most serious difficulty. And it is not one to be solved *ambulando*. To some extent the difficulty is palliated by railways. But the railway problem itself is not in a condition of satisfactory solution. The time comes when railways themselves become obstacles to the capacity of a given area. The constant demand for additional station room, especially for goods traffic, is of a magnitude which, if it could be put before the public in a bird's-eye view, is nothing short of appalling. So serious do the railway companies themselves find this outlay to be, that they are striving to reconsider the whole subject of rates of carriage. It was distinctly claimed before the Select Committee on Railways (Rates and Fares) of last year, as will be found on reference to the reports (226 and 226 I., 1881, and 317, 1882) that the companies had the right to impose terminal charges on goods to pay for the extraordinary outlay that they now made on stations. In the case of the Great Western Railway alone it was stated by the manager that the cost of the Smithfield station had been so large as to raise "the terminal expenses connected with minerals" at that station, not including carting, to 3s. 8½d. per ton (226 I., 1881, p. 263). The wisdom of this outlay, or even the accuracy of the calculation, is not what we now seek to consider. We refer to it as raising the question, To what does this tend? There is a well-known Latin line which speaks of losing the aims of life for the sake of living. Something of the same kind seems to abound in this enormous development of what are called facilities. The centres of population are so pressed upon from within by the expansion of railway stations, that room and rent, and architectural fitness and convenience for the transaction of business, are all impeded and interfered with by this one development alone.

The question, When must a city begin to become uninhabitable from its very size? is one that it may be difficult to master; but it is hard to deny that it may arise. Two thousand two hundred years ago it was thought impossible for an independent community to attain the size of one of our third-rate towns. Aristotle speaks, if we remember rightly, of 50,000 inhabitants as being a larger number than a free city could expect to contain. The difficulty is complicated by the following fact:—The growth of a city is, to a certain extent, automatic, like that of a tree. But in the tree the idea of the full magnitude ultimately attainable was comprehended in the germ, and the growth of, perhaps, centuries, only results in the working out that germinal idea. In the city there is no such central idea. The market-place, the exchange, the central area that seemed ample or even splendid in the time of the Stuart kings, are shrinking into petty and inconvenient meanness in the reign of Queen Victoria. In many cases the difficulty is nobly met by the architect. To say nothing of such new features as are arising in London, what a city of palaces has Manchester become in comparison with the Manchester of 1830? But to all this there is a limit. Streets have their maximum capacity for traffic, and the time comes when the traffic catches up, and then chokes, the capacity. For a time something may be done by looking carefully for the points of restriction, and there making demolitions in order to give room. But the relation between width of street and of footway, and the volume of the stream of traffic to which it can give passage, has a physical limit, and that limit, in many places is now approached,—if not reached. Our readers may remember that we have given some details on this subject in discussing the question of the communications across the Thames. The traffic in several of the most densely-beaten thoroughfares in London,—as, for instance, in Great Tower-street, Fleet-street, and over London Bridge, has been ascertained. An instructive table will be found on page 252 of "Roads and Streets," by H. Law and D. K. Clark (to which useful little volume we have not unfrequently referred), which gives the number of vehicles that passed over twenty-two different streets, in twelve hours, in 1872-1873. These are reduced to the number in each case per foot in width of the street, by way of comparison. They range from 516 vehicles in Milk-street, which is only 14 ft. 6 in. wide, and where the number comes to only 36 per foot, to 13,767 in Mansion House-street, which is 40ft. wide, and where the number is 300 vehicles per foot of width in twelve hours. Here we may see something like the limiting capacity of a road for vehicular traffic. As to foot traffic there is no doubt a limit. In the quick march of the army, 1,060 men, in single file, occupy a mile in length, and make 108 steps, covering 90 yards, in a minute. Thus the whole 1,060 men would pass a given point, if the march were continuous and uninterrupted, in $\frac{1760}{90} = 19{\cdot}55'$, say in twenty minutes. So that we may say, in round numbers, that 3,000 passengers per hour per yard of width of pavement is the outside that, under the best arrangements, the streets of a city can accommodate. And in this there is no allowance for the interference of one line of passengers with another

for street crossings,—for occasional stops,—to speak to a friend, to look in at a shop-window,—to avoid a porter carrying a parcel. Regard being had to this, it is very questionable whether, over a long line of street, a yard of width of pavement would allow of the passage of much more than 2,000 passengers, at the very outside, per hour. Here, then, is another limit, which no railway facility can evade. The more readily a mass of passengers are brought to a central station, and the more easily and suddenly they are poured forth on the streets, the closer do we come to a block from mere plethora of traffic. The tendency is obvious,—the result is unquestionable. It is not so easy to indicate a remedy.

The question which in the metropolis is thus setting up its prickles in so many ways, takes an entirely different shape in the manufacturing districts, although the underlying principle is the same. In London it is the physical possibility of passing an increasing amount of traffic through a limited amount of space that is the difficulty to be met. In Manchester, Sheffield, and other places it is the cost at which the transport is effected that is, at present, the most serious part of the story. For passengers the question is, perhaps, less urgent than for goods. At all events, we have before us the remarkable fact that whether an enormous outlay is made in order to accommodate an enormous body of passengers, as in the case of the underground railways; or a smaller, but still considerable outlay is made, to accommodate a smaller number, as in the case of tramways, or the entire outlay is restricted to the provision of horses and vehicles, as by the omnibus proprietors, the cost per passenger journey is very nearly equal. The average lengths of these journeys are not ascertained, but presumably they will not very much differ by the three routes. The average receipt for passengers on each of these three routes is almost exactly twopence. But the railway company carry their passengers for one-third of the cost (for equal receipts) at which the omnibus company carry theirs. The two-thirds margin, however, does not make up the dividend of the railway company to more than five-eighths (or, indeed, to quite five-eighths) of that of the omnibus company. It would thus seem as if the limit of cheapness for urban passengers had been attained, as far as our present condition of science goes; and moreover that the omnibus, with all its defects, is, at the present moment, the cheapest medium of urban traffic. As to the establishment of a third plane of transport, as in the case of the elevated railways of New York, we have no working details. But if anything could add to the discomforts attending on a city abode, we should think that the elevated railway would bear the palm among the causes of annoyance.

This cost, which alike in the case of the railway, with its enormous, and of the tramway, with its moderate, traffic, enables the old, inartificial pair-horse vehicle to hold its own against the combined efforts of science and of capital, is felt, and that in a more aggravated form, as to freight. It is the calculation of the French statists that the cost of transport has been reduced, by the railway system, to one-fifth of its former amount. We cannot, from either our own experience or our own investigations, make the reduction quite so much. To one-third we think nearer the mark. Not but that the mere cost of locomotion has been reduced in a far higher ratio, only it is also the case that, *per contra*, we have to reckon not only on the interest on capital, but on the much larger proportion of dead weight that is carried by railway than by road. But if we take the mean cost of a penny a ton per mile, which is rather below what transport costs in England, as charged by a railway company over a run of, say, 100 miles, this has to be compared not only with the charges on the Continental railways, but with those of the Continental canals. The reduced rates now in course of establishment on the French railways will allow of the transport of goods at 30 per cent. below English rates,—taking rates that will pay 4½ per cent. on capital. But on the French canals the cost of transport is just the half of this reduced cost on the French railways. Thus the difference of sending a ton of goods for a hundred miles on an English railway and on a French canal is the difference between 9s. and 3s. 2d. Is it surprising that such a difference is beginning to tell heavily on our manufacturing industry?

There are signs that in many parts of England this difficulty may soon be obviated by the re-opening of the canals. But there are yet more significant indications of the migration of industry to the seaboard and to the sides of navigable rivers, as the Clyde, the Tyne, and the Tees. Here, then, comes in again the architect's concern with the question of capacity. While the architect is doing all he can to make the most of an urban area, and is at this moment in doubt how far the need for larger offices, and more numerous stories, and every contrivance for accommodating a larger number of persons, in a better manner, on an area contrived for the abode and use of a comparatively small number of residents, will be lightened or aggravated by the new element of telephonic communication; another element is silently at work. It may not be at work in London; and while the Thames continues to flow, it is possible that it will not become, at all events, unmanageable in the metropolis. But in other places it is certainly at work. It is felt at Sheffield. It is felt at Manchester, and that so practically that both Manchester and Sheffield have come to the conclusion that nothing can maintain their prosperity but free access to the sea; and at this moment it seems to depend on the providing of this access, whether the capacity, and the rental value, of these and other great industrial centres shall continue to increase or continue to decline.

To the architect it may not so much matter whether his services are required in an old or a new centre of industry. For many reasons he may prefer the latter, if he have the choice. But to all those who are in any way linked to the soil as land-holders or as lease-holders the question of habitable capacity is one of the most intimate nature, and of essential importance.

Of the third mode in which this question of the capacity of area to contain population arises, we must say less than we would otherwise do, for fear of trespassing on the impartial limits prescribed to a scientific paper. But it is no debateable matter that in the outlying districts of Scotland and of Ireland there is at all events the assertion that the population presses too densely on the area. Or rather (for to call the 123 souls per square mile of Connaught a dense population is absurd) the land does not—it is asserted that it cannot—feed its children. In 1841 Ireland supported 224 souls on every square mile of her area. In 1881 the ratio had declined to 161 souls per square mile. We may have our own opinion as to the causes, but of the fact there is no room for doubt. For the Scottish island we are not in possession of details, but the movement is in the same direction. The remarkable part of the phenomenon is that the question of capacity of area for population is thus at the same time becoming urgent, in opposite directions, at the centre and at the extremities of the body politic. The concentration of population, the depletion of the rural districts, and the congestion of the urban districts, are phenomena common to the whole civilised world at the present time. Where there is large vacant space, as in the far west of America, the surplus is overflowing from the cup to the saucer, and the increase of population is replenishing the former wastes. But in countries where this safety-valve does not exist, the opposite phenomenon is constant. Area is insufficient to feed population, for want of hands, or at all events for want of adequately applied labour; or area is becoming unable to house or almost to hold population from the concentration of hands, not all, it is true, industrious, but most of them anxious for some industrial employment,—even if of a predatory kind. Should not a mighty problem of this nature be investigated with all the impartial skill at the command of the highest intelligence of the day?

Royal Victoria Coffee-hall, Waterloo-road, S.E.—This Friday, April 20, a number of distinguished members of the legal profession are going to hold a grand Temperance Demonstration. Sir Thomas Chambers, Q.C., M.P., the eminent and popular Recorder of London, is to preside on the occasion, and amongst the chief speakers will be the following gentlemen:—Prof. William Barber, Q.C.; Mr. E. W. Fithian and Mr. Thomas Suthurst (barristers-at-law), Mr. Swinford Francis, Mr. J. Maud, Mr. J. M. Todd, and Mr. Samuel Watson (solicitors). Admission to the hall will be at nominal prices, varying from one penny upwards.

ARCHITECTURE AMONG THE POETS.*

If Shakspeare's references to architecture are few and far between, there is still less recognition of its existence among the other dramatists of the great dramatic period, and what references there are cannot be said to be very happy, though occasionally characteristic in one way or another. The conclusion to be drawn from a good many of the references in our poets of all classes in the sixteenth, seventeenth, and great part of the eighteenth centuries is that they regarded architecture with great indifference, and in many cases speak of it (as many average English people do now) as something that is in its nature opposed to practical considerations and common sense. This is evidently the kind of view taken by Ben Jonson. Almost the only reference to architecture in his plays is put into the mouth of the silly *Crispinus*, in "The Poetaster," the bore of the piece, who pesters *Horace* (act iii., sc. 1) with his talk and criticisms as they walk through the city:—

"By Phœbus, here's a most neat fine street, isn't it? I protest to thee I am enamoured of this street, more than of half the streets of Rome again; 'tis so polite and terse! There's a front of a building now! I study architecture too. If ever I should build, I'd have a house just of that prospective."

Crispinus seems to have been given to talk architecture, as he applies it afterwards to a lady's head-dress,—"I affect not these high gable-ends, these Tuscan tops, nor your arches, nor your coronets nor your pyramids." In one of Ben Jonson's poems, "To Penshurst," his own practical notions come out:—

"Thou art not, Penshurst, built to curious show
Of touch or marble, nor canst boast a row
Of polish'd pillars, or a roof of gold;
Thou hast no lantern, whereof tales are told,
Or stair, or court; thou stand'st an ancient pile,
And these not grudged, art reverenced the while;
Thou joy'st in better marks, of soil, of air,
Of wood, of water: therein art thou fair."

This feeling of the superior value of situation and usefulness above architectural merit in a mansion is expressed in much the same strain in a poem by Carew, "To his friend G. N., from Wrest," the latter being the name of a country seat at which the poet † was staying:—

"Here the architect
Did not with curious skill a pile erect
Of carved marble, touch or prophecy,‡
But built a house for hospitality.
No sumptuous chimney-piece of shining stone
Invites the stranger's eye to gaze upon
And coldly entertain his sight; but clear
And cheerful flames cherish and warm him here;
No Dorie or Corinthian pillars grace
With imagery this structure's naked face;
The lord and lady of this place delight
Rather to be in act, than seem in sight.
* * * * *
Nor think because our pyramids and high
Exalted turrets threaten not the sky,
That therefore Wrest of narrowness complains,
Or straiten'd walls; for she more numerous trains
Of noble guests daily receives, and those
Can with far more conveniency dispose,
Than prouder piles, where the vain builder spent
More cost in outward gay embellishment
Than real use, which was the sole design
Of our contriver, who made things not fine,
But fit for service."

Not what one would call a poet's view of the matter, certainly, but apparently what was considered at that time a proper and sensible view to take of architecture,—as on one side it is, no doubt. The first Lord Dudley (he of the *Quarterly Review*) expressed much the same opinion in a terser fashion, when shown the design for his proposed new house:—"Very well for a Greek god, no doubt; but a modern gentleman requires offices." To return to the dramatists for a moment, the only two passages we have hit upon among the leading poets of the old school consist in a single architectural metaphor in Massinger ("Fatal Dowry"),—

"I raised
The building of my life, for seventy years,
Upon so sure a ground, that all the vices
Practised to ruin me, though brought against me,
Could never undermine";

and one passage out of all the voluminous (and often very unsavoury) pages of Beaumont and Fletcher ("Philaster"), which is curious as showing again that connexion of the notion of gold and precious stones with the idea of

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* See p. 491, *ante*.

† Carew joined to his reputation as a poet the official dignities of Gentleman of the Privy Council, and "Sewer in Ordinary" to Charles I.

‡ The meaning of this is certainly not very obvious. In this and the preceding quotation "touch" seems to be used in some sense now obsolete.

ancient architecture, which we have already noticed in Chaucer and Spenser:—

"No monument
(Though high and big as Pelion) shall be able
To cover this base murder; make it rich
With brass, with purest gold, and shining jasper,
Like the Pyramides,
* * * my little marble
(That only clothes my ashes, not my faults)
Shall far outshine it";

This idea about the Pyramids reminds us of the testimony of *Lepidus* ("Antony and Cleopatra"):—"Certainly I have heard the Ptolemies' Pyramises are very goodly things; without contradiction, I have heard that"; so that there seems to have been in those days, when Egypt was a kind of *terra incognita*, a prevalent idea that the Pyramids were remarkable for a barbaric splendour as well as for size. In the dramatic poetry of a rather later date there is one well-known passage, the description of a cathedral interior by Congreve, too familiar to need quotation, but which is really fine, and almost deserves the very exuberant praise it has received.

Going back to the poets, other than dramatic, we find in Cowley the recurrence again of the idea of the preference of unpretending to sumptuous architecture. In one poem he praises Florence as,—

"For stately buildings famed
And lofty roofs that emulate the sky,"

and of one of the characters in the same poem ("Constantia and Philetus"),—

"In roofs which gold and Parian stone adorn
(Proud as the owner's mind) he did abound."

The parenthesis here appears to be an insinuation against sumptuous buildings; and in the same spirit we find Cowley expressing his personal feeling in a poem called "The Wish":—

"My house a cottage more
Than palace, and should fitting be
For all my use, not luxury."

It may be doubted, perhaps, whether this was not an affectation of speaking, fashionable at the time,—a "pride that aped humility." At any rate, Cowley (who was a far rarer and "braver" poetical spirit than men like Carew and Waller) could feel keen interest in the restoration of a great public building, as he has shown in some very spirited lines, "On the Queen's repairing Somerset House," from which some passages are worth quoting. The building speaks *in propriâ personâ*:—

"In all my rooms and galleries I found
The richest figures torn, and all around
Dismember'd statues of great heroes lay.
* * * *
The gaping walls were cleft,
The pillars sunk, the rooms above me wept,
No sign of spring, or joy, my garden kept."

Then he goes on to say how changed is his face since his great mistress,—indeed, she might rightly be called foundress,—took up the matter:—

"Now I dare
Even with the proudest palaces compare
* * * *
Before my gate a street's broad channel goes
Which still with waves of crowding people flows;
And every day there passes by my side,
Up to its western reach, the London tide,
The spring-tides of the term; my front looks down
On all the pride and business of the town;
My other front (for as in kings we see
The liveliest image of the deity,
We in their houses should Heaven's likeness find
Where nothing can be said to lie behind),
My other fair and more majestic face
(Who can the fair to more advantage place?)
For ever gazes on itself below
In the best mirror that the world can show.
* * * *
To assure yet my defence, on either hand,
Like mighty forts, at equal distance stand
Two of the best and stateliest piles which e'er
Man's liberal piety of old did rear.
Where the two princes of th' Apostles band,
My neighbours and my guards, watch and command."

This sketch of the palace as the centre point between the two great cathedrals shows a fine feeling for architectural association. The same event drew forth a poem also from Waller, too poor to be worth quoting; he also versified "upon his Majesty's repairing of St. Paul's," and compared Charles II. to Amphion, who caused the walls of Troy to rise. Returning to Cowley, we find him, although roused to some enthusiasm about Somerset House, returning to his anti-architectural ideas in his poem "On Solitude"; and certainly architecture is essentially an art at variance with solitary tastes:—

"Hail, old patrician trees!
* * * *
Here Nature does a house for me erect;
Nature, the fairest architect,
Who those fond artists does despise
That can the fair and living trees neglect,
Yet the dead timber prize."

This is, of course, a poet's conceit, as Cowley would have found out if he had ever been reduced really to doing without the "dead timber," and to residing like one of the literary men in Henri Mürger's "Vie Bohémienne," who gave his address as "Boulevard ———, third tree, fifth branch." Cowley, however, returns to the charge in another poem, "The Garden," in which he shows how buildings were contrary to the divine order of things:—

"For God, the universal architect,
It had been as easy to erect
A Louvre or Escurial, or a tower
That might with Heaven communication hold,
As Babel vainly thought to do of old:
He wanted not the skill or power,
* * * *
But well he knew what place would best agree
With innocence and with felicity,—
* * * *
God the first garden made, and the first city
Cain."

Pretty fancies, for summer weather, in which Cowley much delighted.

Dryden thinks no more of architects and architecture than his predecessors. The only lengthened reference to the subject in his poems is in a passage in his translation or paraphrase of Boileau's "Art of Poetry," in which he instances the overlaboured description of a mansion as an example of one fault in poetic style:—

"Sometimes an author, fond of his own thought,
Pursues its object till 'tis overwrought;
If he describes a house he shows the face,
And after walks you round from place to place;
Here is a vista, there the doors unfold.
Balconies here are baluster'd with gold,
Then counts the rounds and ovals in the halls,
'The festoons, friezes, and the astragals.'"

Dryden puts the last line between commas, as if he regarded the words used therein as architectural "shop" not admissible in poetry except in an apologetic manner. That a description of architecture in that piecemeal matter-of-fact way is unpoetical and unINTERESTING no one would deny, but not because of its length or elaboration, for modern poets who have really a feeling for architecture as an art can spend more space than that over a description (as we shall have occasion to see) without being in any way redundant or prosaic. As a further example of his respect for the profession of an architect, Dryden introduces elsewhere a description of a man who had been a successful but a quack physician, and after killing many people with his drugs, had retired to live at a friend's country-house, and showed what he was really good for by making great practical improvements in it, the moral from which is "Better be a good mason than a dull poet," mason and architect being apparently convertible terms. Swift seems to have known better than that; see one of his epistles to Stella, in which he says she is indirectly to be credited with any good that he may accomplish, as being the person who inspires him,—

"As when a lofty pile is raised,
We never hear the workmen praised
Who bring the lime and place the stones,
But all admire Inigo Jones."

Swift once or twice also presses architectural or building metaphors into his service, most pointedly in a poem on the true basis of happiness in married life ("Strephon and Chloe") equally remarkable for its real good sense and morality and its astounding coarseness of expression, the architectural simile being one of the few decent passages in it:—

"A prudent builder should forecast
How long the stuff is like to last;
And carefully observe the ground,
To build on some foundation sound.
What house when its materials crumble
Must not inevitably tumble?
What edifice can long endure,
Raised on a basis insecure?
Rash mortals, ere you take a wife,
Contrive your pile to last a life."

Thinking of the account lately published of the history of the Dublin Cathedral, and the state into which it had fallen before its restoration, one may fancy that the Dean of St. Patrick's had official reasons for being occupied with ideas derived from ruinous buildings.

Pope sings in the same tune as a good many of his predecessors and contemporaries in regard to the advantage of looking at architecture from a practical point of view; but he speaks in the tone of a man far more cultured in artistic matters than Dryden and Swift, as he undoubtedly was, and he handles the subject with far more knowledge of detail and far more power of graphic expression than most, or indeed any, of the poets of his era. The passage addressed to the Earl of Burlington (Epistle iv.), who was then publishing at his own expense designs by Inigo Jones, and the Antiquities of Rome, by Palladio, is full of force and picturesqueness, as well as artistic good sense; it immediately follows the well-known sneer at "Sir Visto," and at "Bubo," the latter

"A standing sermon, at each year's expense,
That never Coxcomb reach'd magnificence,"

a remark, the truth of which has been how often illustrated in the architectural speculations of wealthy but vulgar-minded people. Then he goes on, addressing Lord Burlington, to distinguish between truly sumptuous architecture and misuse of the resources of the art:—

"You show us, Rome was glorious, not profuse,
And pompous buildings once were things of use.
Yet shall, my lord, your just, your noble rules,
Fill half the land with imitating fools;
Who random drawings from your sheets shall take,
And of one beauty many blunders make;
Load some vain church with old theatric state,
Turn arcs of triumph to a garden gate;
Reverse your ornaments, and hang them all
On some patch'd dog-hole eked with ends of wall;
Then clap four slices of pilaster on't
That, laced with bits of rustic, makes a front;
Shall call the winds through long arcades to roar,
Proud to catch cold at a Venetian door;
Conscious they act a true Palladian part,
And if they starve they starve by rules of art."

With the exception of the last couplet, which implies rather an incorrect notion of the Palladian system, there is sense and sound criticism in every line of that, and a whole architectural essay might be written on the various points which it suggests, in some of which Pope is quite prophetic. His little epigrammatic poem on "The Duke of Marlborough's House at Woodstock" is also very good, and in the same vein of shrewd and satirical sense:—

"See here, Sir, here's the grand approach,
This way is for his Grace's coach;
There lies the bridge, and here's the clock,
Observe the lion and the cock,
The spacious court, the colonnade,
And mark how wide the hall is made!
The chimneys are so well design'd
They never smoke in any wind.
This gallery's contrived for walking,
The window's to retire and talk in;
The Council-chamber for debate,
And all the rest are rooms of state.

Thanks, Sir, cried I, 'tis very fine,
But where d'ye sleep, or where d'ye dine?
I find by all you have been telling,
That 'tis a house, but not a dwelling."

It is noticeable that Pope, in his modernised paraphrase of Chaucer's "Temple of Fame," has architectural sketches entirely his own, and having no reference to anything in the original poem; and these architectural images are of a more imaginative and sumptuous turn than is usual with him. The difference between the architectural references in Chaucer's poem and Pope's free imitation of it is characteristic. Chaucer's is the old barbaric architecture before referred to, as so common in the imagination of poets in a juvenile age. He sketches a "castell," in which

"All was of stone of berile,
Both the castell and the toure,
And eke the hall, and every boure,
Without peeces or joynings,
But many subtell compassings,
As babwries and pinnacles,
Imageries and tabernacles,
I saw, and eke full of windowes
As flakes fallen in great snowes."

The last expression is very curious. Does it refer to the shape of the Pointed window, or of the compartments of the tracery? Perhaps it is merely a hyperbolical simile to indicate the number of the windows. A further incident in this part of the poem is the introduction of pillars of different metals and other substances, as pedestals for the statues of famous men, and apparently selected for the supposed suitability of the material in each case, or its gradation of costliness. Thus Homer stood upon an iron pillar, Virgil upon one of "tinned iron clere," which sounds like galvanised iron; it is difficult to understand quite what Chaucer meant by the expression, unless it were iron coated with tin to give lustre. Ovid stands on a pillar of copper, and so on. Pope adopts the idea of the columns, but describes them at much length and gives them great profusion of ornament, not with any very special power of description, however; but he raises a structure over these columns (which are planted in a circle) of which there is no hint in Chaucer; a dome covered with gems, under which Fame herself was enthroned, and which reflects the various coloured lights of the pavement, and the light radiating from the throne. Unfortunately, the description is too conventional, and too full of mere rhyming-dictionary lines, to convey any sense of reality

to the reader; and though the passage is ambitious and grandiose in intention, it is not worth quoting. In the description of the exterior of the Temple, at the commencement of the poem, there are one or two points made, such as the description of the western front,

"Crown'd with an architrave of antique mould,
With sculpture rising on the roughen'd gold."

The latter expression indicates an eye for the effect of texture in surfaces, which seldom crops up in architectural allusions of the eighteenth century, and since the Mediæval period seems not to have been revived till our own day. On the whole, however, Pope is much better in his references to existing types of architecture than in his attempts at idealising architecture; which latter is always a difficult task, whether for poet or draughtsman. Notice should be taken, however, of one very clever and well-expressed poem, the epistle to Addison, occasioned by some dissertations of the latter upon medals. Here Pope draws, in very picturesque language, a contrast between the comparatively transient nature of great buildings as monuments, how they lose their meaning and history, and the durability of fame inscribed upon medals, in profiles and inscriptions:—

"Ambition sigh'd; she found it vain to trust
The faithless column or the crumbling bust;
Huge moles, whose shadows stretch'd from shore to shore,
Their ruins perish'd, and their place no more.
Convinced, she now contracts her vast design,
And all her triumphs shrink into a coin,"—

which last is a very bad rhyme, certainly, but he touches off happily the medal and its connoisseurs:—

"With sharpen'd sight pale antiquaries pore,
The inscription value, but the rust adore,
This the blue varnish, that the green endears,
The sacred rust of twice ten hundred years.
To gain Pescennius one employs his pains,
One grasps a Cecrops in ecstatic dreams,
Poor Vadius, long with learned spleen devour'd
Can taste no pleasure since his shield was scour'd;
And Curio, restless by the fair one's side,
Sighs for an Otho, and neglects his bride."

But in spite of this preference of medallic over architectural glory, the poem contains two or three lines about architecture which strike a rather new note, and connect it with a more modern phase of feeling on the subject; but this link may go to piece the next portion of the chain.

SOME TRAITS OF CANOVA AND THORWALDSEN.

It is not only from the lives in Rome of these two celebrated sculptors having been in great degree contemporaneous that they are so often mentioned together, but also from the fact that they not unfrequently took the same subjects, their works thus coming into direct competition. Canova avowed that his ambition was to reinstate the Greek heroes and heroines on their pedestals; nevertheless, he was scarcely so successful in catching the simple spirit and sentiment of classic art as was his Northern compeer. His Hebe, for instance, is not exactly the Hebe of Olympus, but as an elegant sylph acting as a cup-bearer it has no equal.

There is a very graceful story uniting the memory of these two great artists redounding much to the honour of Canova, who is said to have had a most liberal spirit in his appreciation of others. At the time in question he was in the plenitude of his employment and reputation when Thorwaldsen was comparatively a beginner, having been but a very few years in Rome, during which period he had met with but little encouragement, and had chiefly subsisted upon the scanty pension which he had gained in competition at the Copenhagen Academy. Since he had been in Rome, however, he had produced a very fine model of a figure of Jason, which attracted great admiration. This, however, took no substantial form; and the young sculptor became, not only disappointed, but so much discouraged that he resolved to quit Rome and return to his native land. It was at this juncture that the generous feeling of the Italian mature sculptor intervened to the lasting benefit of the young Dane. Mr. Hope, the English banker, having visited Canova with a commission to execute a statue of high art for him, and the sculptor not accepting it, pleading his many engagements of that nature, added, "There is a young Dane here who has executed a model of a statue in a new and grand style of art: go and see it, and if it pleases you you cannot do better than transfer the commission to him; he is well worthy of such an opportunity." The Englishman followed Canova's advice, and the pleasant consequence was that the Jason was ordered to be produced in marble. At this time young Thorwaldsen's trunks were actually packed to leave the city, but, thus turned from his resolve, he remained in Rome to earn an undying name.

Although no doubt the Dane was fully sensible of the opportune kindness shown him on this occasion by the Italian master, their friendship does not seem ever to have extended to close intimacy, and in after years in reference to Canova, Thorwaldsen spoke as follows to a friend:—"When Canova had finished a new model he would ask me to come and look at it. If I made any observation, as, for instance, that such or such a fold of drapery might be altered with advantage in such or such a way, he always acknowledged the truth of my suggestion, and thanked me warmly, but he never made the alteration. If I asked him to come to my studio he was sure to pay me a visit, but confined himself to praising my works most highly, but never made a suggestion." It is to the honour of Canova, however, that he held the same tone of laudation to others as he did to the artist himself, and when the Adonis of Thorwaldsen was in hand, he said to Madame Brun that she should go and inspect it. "It is an admirable statue," he remarked, "noble and simple, in the true antique style and full of feeling. Your Danish friend, madame, is divine!" And then, after a pause, added, "Ah! it is a pity that I also am not young!" Canova, however, was born in 1757, and Thorwaldsen in 1770, so there was only thirteen years' difference between them; but what may not be done in art in thirteen years, in the prime of life and vigour?

There is no doubt that Thorwaldsen surpasses Canova in *relievo*. Indeed, the title of "Patriarch of *Relievo*" was applied to him by the Romans themselves for his mastery in that difficult department of sculpture, in which true form is simulated by false form, and the round expressed by the flat. In his facility in clay in this branch of the art he was without a rival among the moderns. In design, however, this is not the case, for our own Flaxman's field of fancy and composition was vastly wider than that of the Dane, and, as far as we know, than that of any sculptor who ever existed. His compositions, both from classic and sacred subjects, are of a marvellous diversity as well as beauty, whereas both Thorwaldsen and Canova adhered closely to the traditions of classic arrangement. Thorwaldsen, however, would knock off a *relievo* of a couple of figures in a morning, without which marvellous rapidity he could not have carried through the multitude he produced.

In comparing the styles of the Italian and the Dane, it is manifest that the man of Northern clime was the simplest. His celebrated Mercury, indeed, might have been of the purest time of Greek art. It is founded on an incident in the story of Io, who, in one of the amours of Jupiter, was transformed into a beautiful heifer. Juno, however, not deceived by this ruse of her inconstant lord, employed Argus to watch her, for, as he was gifted with a hundred eyes, it was supposed that some of them would keep awake. The craft of Mercury, however, who was deputed by Jupiter to deliver her, was too much even for his vigilance. Mercury played him to sleep with his lyre and then slew him. The moment taken for the subject of the statue is when Mercury, having succeeded in composing the herdsman to slumber, stays his performance and is in the act of drawing his sword from its sheath. The attitude may be characterised as a half-sitting one, and the composition may be regarded as perfect, natural, vigorous, varied in line, full of expression, and truly Greek in style. The sculptor, however, has taken the licence of substituting Pan's pipes for the lyre, as more convenient to his purpose.

There is no male statue by Canova so Greek in style as this one by his compeer, and in fact in this respect it is difficult to find its equal in modern art, and perhaps the nearest approach to it in this regard is the hunter of our own John Gibson which, although not so beautiful a composition as the Mercury of the Dane, is remarkable for its classic quality.

The Perseus, by Canova, is one of his finest male figures. The subject had been before executed by Cellini of large size, and every lover of art interested in its difficulties must have derived much amusement from that part of his delightful autobiography in which he gives a vivid account of the casting of the group of that statue and Medusa. Canova's statue, however, represents a different moment, and is without the decollated body, and exhibits only the head, of Medusa, which is held up to freeze the assailants of Perseus to stone, as narrated by Ovid. His figure is emulative of the Apollo of the Belvedere in the Vatican, and it had the perhaps appropriate office, while that statue, with many other antiques, was removed to Paris during the time of the first Napoleon, of being substituted in its place, from which circumstance it received the name of the *consolatore*. This substitution may have helped to suggest the somewhat fanciful idea that the Apollo himself may have originally held an Ægis with a Medusa's head affixed on it, whereas there can be no doubt that he is more fitly portrayed as in the words of Byron, "The god of the unerring bow." The Perseus is unquestionably a very beautiful figure, yet it may be open to the comment that it is composed too much in a plane, which arrangement is more suited for a *relievo* than for a figure in the round, and in this regard as well as in supreme nobility of aspect comes much short of the Apollo himself. But that ancient work seems to be unapproachable in its peculiar dignity of active beauty except by its twin sister the Diana of Versailles.

Venus and the Graces formed subjects for the chisels of both the Italian and the Dane. Canova did two Venuses, Thorwaldsen one. Canova did one group of the Graces, Thorwaldsen two. This enumeration is, of course, independent of the *replicas* which were made, which liberty is the acknowledged birthright of the sculptor's art; the copyright not passing with the original work except by special stipulation. It is difficult in respect to the above productions to conclude to which sculptor belongs the palm. The Venus of the Pitti Palace of Canova has most nobility of mien and is more a lady than the Venus of Thorwaldsen, who has more of the look of a very pretty peasant, but which of the two is the most charming it is not easy to say. Both Canova's Venuses are partly draped, and in both cases the goddess may be supposed to be represented as having just left the bath and to have partially resumed her dress. In Thorwaldsen's she has the apple, and thus might be called a Venus *Victrix*. This she holds in her right hand with some degree of triumphant coquetry, while with the left she is taking up the somewhat scanty drapery which she had deposited on the trunk of one of the oak trees for which Mount Ida was famous. The figure is beautifully composed, and is plump without being overcharged. One *replica* of it is at Chatsworth.

The Venus of the Pitti Palace also is extremely graceful, the throat being curved in turning the head over the shoulder quite as much as the warrant of nature would support; but, no doubt, Canova witnessed the action. The figure is perhaps a trifle flat from back to front, but that may be a matter of taste, for its character is long in proportion, much more so than either the Venus de' Medici or the Venus of Thorwaldsen. The back, which is quite uncovered, is especially admired, but the front is much concealed not only by the arms and hands of the figure, but by the drapery which they hold pressed to the form. Its contours not only meet the requirements of four principal views being charming, but may be said to do so even to the number of the seven aspects which Cellini mentions that a statue should satisfy, which practically means that it should bear the eye of the critic in scanning it all round, as Lucian said the Venus of Cnidos did. It is well balanced in general outline, and compact and symmetrical in mass in the front and back views. This is a quality which much conduces to the value of a statue in an architectural point of view, as such a work is much more easily placed than one of irregular outline, which rarely harmonises with a central position, but rather seems to look for a situation on one side, so as to be balanced on the other by another of corresponding form; and this appears to be a point well worthy of the attention of every sculptor who may aim at a central position for his work. The Laocoon, for example, is adapted to a central situation, as it is pyramidal, or, at least, has the general form of a flame but slightly blown aside. The Venus de' Medici is admirably balanced in outline, which has tended to make her so great a favourite, and so also is the graceful antique group of

Cupid and Psyche. The Michael and Satan also of Flaxman is composed after this method, which well fits it for its situation at Petworth, and that in which the original model stands in the saloon in the London University.

In returning to the subject of Venus, it may be acknowledged that the most salient point in her mythologic history is that of her success in the competition for superior beauty with the Queen of the Skies and the Goddess of Wisdom. Canova did not touch this point in his two celebrated statues. Thorwaldsen represented her after her conquest, with the golden prize in her hand; and it is the same with the statue by our own Gibson. Praxiteles in his most celebrated statue of the goddess did not choose this moment: she had not the apple, but was shown as she stood before Paris previously to receiving it, so that each visitor to the little temple at Cnidos, which was her shrine, might have fancied himself the shepherd on whose judgment the meed of triumph was to depend. This statue, however, in Parian marble, which was accounted one of the wonders of the ancient world, was quite nude, like that of Thorwaldsen, but the pendent drapery, although apart from the figure, was held so as to screen her in degree from the direct gaze of the son of Priam. Which was the finest conception cannot well now be decided, as the fatal conflagration of the Lausian Palace in Constantinople, whither this glory of the ancient chisel had been removed, has deprived us of that version of the goddess; but it may readily be welcomed that the above idea of her, derived from the descriptions of Pliny and Lucian, possesses a peculiar and appropriate delicacy of sentiment. And, indeed, it may afford some marvel, as we mentioned in a former article, that they have not spurred modern artistic ambition to the attempts to resuscitate her. Flaxman, among the illustrations of his lectures, gives a sketch of his view with respect to her. But we are not aware that he ever followed it out in a model, or that any other modern sculptor has ever undertaken the arduous but inspiring task. Perhaps it remains for the United States of America to offer a prize for this being carried into effect, which would be an art project worthy of that great but comparatively youthful country.

Canova, in the year 1815, visited England, but declined any commissions offered him while in this country, as he said that we had our own competent native sculptors, and that if any one desired a work of his, the order must be given to him in his own Italy. On inspecting the Elgin marbles with the utmost attention, he expressed his extreme admiration of them, and added that to see the back of the Theseus alone was worth a journey from Rome. After his return also to his occupation there in his own studio he averred that his work was much benefited by what he had seen in our Museum of the sculpture of Phidias and his school. Thorwaldsen was never in London, but remarkable as he was for his powers in *relievo*, we may well conceive, by the expressions of his compeer in respect to the Parthenaic works in the round, how much Thorwaldsen would have been delighted with those in flat in the frieze. It may, indeed, be said that his own magnificent *relievo*, or rather series of *relievi*, illustrating the "Triumph of Alexander," offers the nearest approach to that classic work that has ever been effected by a modern artist. He produced two or three *replicas* of it, each differing in some degree from the other, each also, it is said, having been an improvement on the former one. Canova never designed so important a *relievo* as this one, although he did a great many not nearly so extensive, some of which possess great beauty. It may be doubted, however, whether any of them are so attractive and charming as the "Night and Morning" by the Dane, which not only were repeated several times of the original size in marble in the studio of the sculptor himself, but also on a variety of scales by others, forming also the subjects for *cameos* without end, and also for decorations for vases and for *plaques*, &c. This "Night and Morning," indeed, may be said to be household goddesses all over the civilised world.

Although Canova visited London, he declined to go to St. Petersburg, notwithstanding that he received warm invitations from the Russian court, accompanied with proffers of employment, of which, however, as is well known, he had abundance during his life after he had first made a name. He was in Paris, however, more than once; indeed, Napoleon sat to him there for his portrait as well as at Rome, and also for an heroic classic statue of him executed for himself, which now by the irony of Fortune is in Apsley House. In his communication with the great conqueror the simple Italian sculptor was very candid in his remarks. By the desire of Napoleon he examined the Musée of the Louvre for the purpose of ascertaining what improvements could be made in the disposition of the many celebrated antique statues which had been spoliated at that time, chiefly from Italy, to add to the treasures of that grand collection. On being inquired of by the consul whether they were not judiciously arranged, he replied with expressive brevity, "*certo stavano meglio in Italia*,"—certainly they were better placed in Italy,—a comment which comprised two meanings, a simple opinion as to arrangement, and an implied rebuke. There is no doubt, however, that Canova was a favourite with Napoleon. There was, indeed, some country kinship between them, as the Bonapartes were recorded to have been originally of an Italian family before they removed to Corsica. In return, no doubt, also, Canova admired the renowned warrior and ruler, as, indeed, almost all did who came within his magic influence, but his real regard was reserved for Josephine, of whom he ever spoke with a gentle deference approaching the affectionate. It was no marvel that he was highly esteemed by those in high power at that time in France. His style was so congener with the fashions of government culminating in the Empire, for the Republic, Napoleon, and Canova, all emulated the Classics. The very furniture of the Empire was a sort of thready Classic, and the dress of the ladies and the modes of their coiffure were something between the Greek and the Roman, with a something superadded which we English are fain to characterise as peculiarly French. In all this the somewhat artificial poses of the sculptor's female figures, the play of their delicate hands, and the little tresses surrounding the oval of their faces found their counterpart, and in return re-acted on the fashion and toilettes of the day. But in this respect the art of Thorwaldsen was quite different. There is a Northman's simplicity and Scandinavian force in his work which has nothing in common with the style of the French Empire, nor, indeed, with any mere fashion, and is thus more calculated to last in favour with the world of art.

Canova doubtless had a peculiar view of beauty in the female face. He carried to an extreme the straightness of the classic profile from the roots of the hair to the tip of the nose, and made the upper lip almost of an exaggerated shortness. Indeed, however refined his female visages are, they cannot justly be regarded as very natural. There is in them occasionally a degree of affectation, and the same remark may apply sometimes also to the expression of his figures, as has been observed of his group of the Graces. Both Thorwaldsen's groups of the same subject are free from this, but are somewhat attenuated, and neither his nor those of Canova are so finely composed as in the small picture of the Graces, by Raffaelle, in the collection of Earl Dudley and Ward, executed by the great artist in 1508, of which there is an excellent engraving of the same size as the original picture, produced by F. Forster, in Paris, in 1841. Indeed, there is every probability that Raffaelle, like his compeer, Buonarotti, could have been a fine sculptor as well as magnificent painter, if he had had time during his short life to apply himself to both arts, for many of the groups and figures in his pictures are suited, with but little variation, to the sister art.

Both our sculptors seem to have possessed amiable dispositions, and, although in the latter portion of his life Thorwaldsen has been charged with parsimony in trivial things, he is credited with having had a very open hand in relief of distress, and that he would sometimes astonish by the amount of a gift. Canova, by all who had his friendship or acquaintance, is spoken of as one of the most kindly of men, and among the minor traits of this disposition it is told of him that, one morning a trusted assistant having come late to the studio, and in response to a remark thereon by the sculptor having replied that it was because he did not know the time, not possessing a watch, Canova drew forth his own and presented it to him.

Before we leave the subject of Venus and the Graces, we may remark that Gibson, in his celebrated tinted Venus, which has been the subject of so much discussion, followed the example of Canova in representing her as partly draped, which treatment he used to speak of as of advantage to the appearance of the flesh of a statue as affording it contrast by its many shadows. However, it is totally unlike the same subject as presented by either of the above sculptors, but bears more resemblance, especially in the legs, to the Venus de' Medici. It is said that at one time he thought of transforming his Venus into an Eve, but that he was deterred from this by the requirement in that case of concealing by her hair the back of the neck, to which arrangement, as he considered that a very beautiful part of the female form, he could not reconcile himself.

Both Canova and Thorwaldsen received great honours during their lifetime, and their reputation had not to wait for the fiat of posterity. Canova was created a Marquis, and Thorwaldsen was treated on an equality by crowned heads. They both also received magnificent funeral honours. The body of Antonio Canova lay in the Cathedral of St. Mark, and received solemn obsequies there before it was removed to his native village of Possagno, among the Asolano hills, at the foot of the Venetian Alps, where it had always been his desire that his remains should rest. Those of Bartholomew, by his intimates called Bertel, Thorwaldsen found their repose in a mausoleum beneath the museum of his works at Copenhagen, which contains, among many others of his productions, his famed series of the statues of Christ and the Apostles. They both departed this life in the manner they desired. Andersen, the celebrated author, narrates that having told Thorwaldsen of the sudden and painless decease of Admiral Wulff, the translator of Shakspeare and Byron into Danish, the enthusiastic exclamation of the aged sculptor was, "Well, and is it not an admirable and enviable death?" Just a year after this, in the Theatre Royal at Copenhagen, Thorwaldsen had just risen to let a lady pass by his stall, when seeing him bending down she inquired, "Have you dropped anything, Sir?" He made no reply, and was supposed to be fainting. He was taken without delay to the Charlottenberg Palace close by, where an attempt was made to bleed him, but no drop of blood followed. The great sculptor had ceased to live.

Canova's decease was on the contrary gradual, but he was perfectly resigned, and his expressions were those of a sincere Catholic. After receiving the last offices of the Church one of his remarks was, "We come into this world to play our parts; and to do our duty. Happy is he who has done it well."

In their youth both these great men fully illustrated the saying of Sir Joshua Reynolds,—"The enthusiastic desire to excel is the first thing required to excel," and in the close of their life they still kept up the same spirit. With Canova the winter of 1820–21, the last of his life, was passed by him with more than his usual diligence on important works, and with Thorwaldsen the morning of his decease was spent in modelling. The Italian died in his sixty-fifth year, in 1821, in Venice, at the house of an intimate friend, in the Piazzo San Marco; and the Dane in his seventy-fourth, at Copenhagen, in 1844.

A BIOGRAPHICAL SKETCH AND ITS LESSONS.

The scene of this narrative is laid in the Isle of Ely,—that solitary eminence which, encircled by the sluggish Ouse, breaks the monotonous level of the lone fen country,—whereon 1,200 years ago Saint Etheldreda in her flight from Egfrith, laid the foundations of her monastery, rousing with hymns of unaccustomed praise the wolf and the otter from their lair, and the stork and the bittern from their immemorial home.

The lapse of centuries has wrought but little change in this desolate region. No forests have been cleared by the encroaching industry of the husbandman, nor has the earth been cumbered and the heavens darkened by the hideous but inevitable accompaniments of our spreading civilisation. Far as the eye can reach the land lies wrapped in its mantle of grey mist, its long level lines broken here and there by a row of poplars, standing as sentinels over the quiet little homesteads which dot the landscape, their red tiled roofs and chimney-tops telling sharply out in "the purer ether and diviner air" above

the level of perpetual mist. The description of the locality by an old chronicler will in the main apply. Still "it is a watery waste, affording only deep mud with sedge and reeds, and possest by birds, yea rather [he adds] much more by devils."

And such was its aspect in the first quarter of the fourteenth century, in which our story opens. It is one of the saddest periods in our annals. The hand of a recent historian, whose early death we all deplore, has painted it for us with unexampled power and fidelity, and it is scarcely possible to deepen the shades of the picture he has left us. A despotic king, a dissolute Court, a turbulent baronage "grinding the faces of the poor," a despairing peasantry, a country harried by bandits; wars in France, wars in Scotland, wars on every hand, just and unjust, waged on any or no pretext, and pursued with unrelenting and undiscriminating ferocity; and behind all this the twin spectres of plague and famine! The conflict of man with man, and of nation with nation, was as fierce and persistent as though the message of peace on earth had never been delivered, and man's only business here was to kill and be killed. And yet one catches here and there, as through a rift in the encompassing gloom, glimpses as of a brighter world, visions of peaceful and holy lives, homes of art, culture, and religion.

In the year of grace 1314, the fatal year of Bannockburn, with its savagery and shame, there is, so the chronicler of St. Alban's tells us, in his cloister at Ely, a young monk, renowned for skill in the goldsmith's art. The word was then accurately descriptive. If one reflects for a moment upon the part which that art played in both ecclesiastical and civil life, the priceless relics which have come down to our day, the countless treasures which were "borrowed" by monarchs perplexed between a hungry army and empty coffers,—on those other treasures which were cast into the melting-pot by a rapacious king and his greedy court; if one thinks of the sacred vessels used in the services of the Church, the shrines, the lamps, the jewelled crosses, the costly trappings of kings and courtiers, one will begin to realise the scope of that beautiful art in which this young monk excelled, and to appreciate that skill which could distinguish him amongst so many cunning fellow-artists; but, in addition to this special gift, he was, we are told, no less remarkable for his acquaintance with the mechanical arts, and their application to the business of life. Clearly, then, this is no ordinary man. A proficient in both art and science; endowed, moreover, with other graces, of which we shall hear more anon. Thus equipped, he turned his mind, the records say, to the study of architecture. We need no assurance that the art never had a more promising student, and we can well believe that distinction in his new sphere was sure and speedy. His bishop, John de Hotham, a munificent patron of art, a courtly prelate, and a Lord Chancellor to boot, employed on Royal embassies, speeding hither and thither at his king's behest, charged with delicate and weighty duties, having a wide knowledge, therefore, of men and cities, and versed in all the lore of statecraft,—he saw the stuff of which this monk was made, and quickly got him elected sub prior, charging him with, as there is some reason to think, the design,—certainly, with the joint execution with John of Wisbech,—of the beautiful St. Mary's Chapel (now Trinity Church), attached to the cathedral church of Ely. The foundation-stone was laid by our hero, Alan, in 1321, and we have clear evidence that he was at the same time engaged in the design of Prior Crauden's Chapel, the new sacristy, and many minor monastic buildings. So evident is his supremacy in his new calling that he is forthwith elected sacristan, and, in virtue of this office, he has the sole charge of the fabric of the cathedral and its accessory buildings.

There were pressing reasons why this charge should be put into capable hands. The central tower of the cathedral,—the weak point in cathedral construction from that day to this,—had been giving the monks some anxiety, causing them sad distractions during the singing of the Divine offices, ominous cracks and fissures in the four supporting piers making themselves unpleasantly obvious. Alan at once closed the choir against the monks, screened off the western arch of the tower, and allotted the nave for the services of the church, doing, in fact, exactly what is now being done in the neighbouring cathedral of Peterborough. Nor were the precautions in Alan's case taken a whit too soon, for on the night of February the 12th, 1322, the massive Norman tower, without further warning, fell "with a sound as of an earthquake," shaking the town to its foundations, frightening the poor monks out of their five wits, startling the screaming wild-fowl from a thousand marshes, and breaking the heavy slumbers of the husbandman in many a neighbouring grange. With the morning's light the extent of the calamity was all too evident. The tower in falling had carried with it the westernmost bays of the choir and the attached portions of both transepts, burying all in hopeless ruin. The terror and perplexity caused by the catastrophe is well expressed in the records of the time. But Alan was equal to the emergency, and we know how he set about his work of repair. After clearing the site he removed the bases of the four old piers which had given way down to the floor level, and there he left them; advancing the boundary of his new tower one bay into each arm of the cross, he secured eight points of support for his central structure in place of the original four. These eight piers he proceeded to underpin with concrete, and he satisfied himself by careful excavation of the sufficiency of his new foundations.

His next step was, with prudent forethought, to repair the marsh causeways by which his heavy loads of stone and his other materials were to travel, and he strengthened the bridges they would have to cross. One road, characteristically named Seggewick, was repaired at a total cost of 7½d., a fact which throws a little light on the altered value of our modern currency. He next despatched trusty messengers to bargain for building materials. "Simon the glazier's boy" was sent to Barnack to bespeak stone, and after the manner of boys contrived to loiter out of his way, and lose himself. Oak, and lead, and other necessaries were duly bargained for, sheds were erected for the workmen, and Peter, the mason, and his brother were put in charge of the stonework. The story of the building of the octagonal dome and lantern is too trite for repetition. One of the happiest thoughts that ever entered the mind of man, it was carried out with surpassing skill. The result was not only supremely beautiful as a work of art, but it was, in every sense of the word, original. There is no evidence to show, all the evidence is against the presumption that its architect ever travelled beyond his convent bounds, or was acquainted, except, perhaps, by hearsay, with the domed churches of the East. Moreover, the system of construction used in them differs in principle from that employed at Ely, and Alan of Walsingham's masterly work remains to this day unique amongst the cathedrals of Europe.

His next work was to rebuild the western bays of the choir, and these, as re-designed and constructed by him, rank amongst the most beautiful of all the examples of our Middle-Pointed English Gothic.

In the year 1341, upon Prior Crauden's death, Alan was elected prior, and in 1344 his convent showed further their sense of his worth by electing him with one voice to the then vacant bishopric. He ceased, as a matter of course, to hold the office of sacristan. The works so ably designed by him had been carried to a successful completion, only the internal decoration and fittings remaining to be done, and these could be carried out by subordinates with such general direction as Alan might still be able to exercise. But the election of the convent was set aside by the Pope in favour of one Thomas de l'Isle, a Dominican friar, who Micawber-like, was "on the spot" (Avignon) when the vacancy "turned up." The benefices were at this date filled by foreigners, and many and angry were the remonstrances on the subject. It was alleged that "the unlearned and unworthy were promoted rather than the poor and learned," and the high places in the Church were occupied by "suspicious persons who do not know the faces of their flocks, nor understand their language, neglecting the cure of souls, and shearing the sheep instead of feeding them." Alan was, on the next opportunity, a second time unanimously elected by the monks as their bishop; but again the choice of the convent was overruled, and Simon Langham, afterwards archbishop of Canterbury and cardinal, was consecrated in his stead.

In 1363, after fifty years of residence amongst them, his convent continued to hold him in undiminished esteem, but he was then approaching man's allotted limit of three score years and ten, and although the date of his death is not certainly known, it is believed to have taken place in the following year.

It is recorded of him that he was not only, as his works indeed testify, a consummate artist, a daring and successful engineer, but that he was a wise and capable administrator, and that notwithstanding the vast outlay which the works undertaken by him occasioned, the convent and its possessions grew and prospered under his rule. He was buried in the church he loved so well, and which his genius has done so much to adorn; and his epitaph, no longer extant, breathed a hope in which we all must surely join, that he would be rewarded by a seat amongst the just in Heaven.

These few notes concerning him have been set down partly because his career embraces that half of the fourteenth century, which exactly marks the culmination of our native architecture, an arc cut from the very zenith of that great artistic movement which, rising in this Western Europe in the twelfth century, declined and disappeared in the sixteenth; partly also because this Alan of Walsingham combines in the range and catholicity of his attainments all the qualities of a typical architect.

His life has many lessons for us. His education was such as it befits each one of us to adopt. The training of the eye and hand in works of art proceeding with equal steps with the study of physics and the natural laws which govern the universe. Then a practical acquaintance with building work,—probably working as an artificer,—certainly in the capacity of a "clerk of works" before his final assumption of the chief control. We see that a great architect is necessarily a man of many gifts, and that his work offers a field for the exercise of the highest qualities. We see also that then as now the highest honour does not always wait upon merit; that as in our day so in his, "Princes foot it in the dust, while lacqueys to the saddle vaulted"; and finally, for our encouragement and consolation, that time sets all things right. The prelate who snatched the bishopric from Alan,—what is he now to us? His name would be forgotten but for his accidental connexion with that of him whom he supplanted, while his defeated rival has taken his place for ever with the great of all time.

Of the personality of this "Flos operatorum" we know but little; of his birth and parentage, nothing. We may reasonably conclude from his name that the county of Norfolk may claim him as one of her many illustrious sons, and of him she may well be proud.

His could have been no common nature to secure so early and retain so long the love and regard of all around him; and we cannot but chafe at the veil which hides from us all further knowledge of the *man*. He has left us amongst the carvings of his cathedral portraits of his prior and of his bishop. Of himself, his work is his only monument. Apart from this, his history is almost a blank. The simple piety of his calling forbade the loud, vain-glorious, self-assertion with which a later age has made us but too familiar.

But Fame (uncourted) guards his memory, and his name shall outlast the noblest of his works,—the crown and glory of the Isle of Ely.

THE DECORATIVE TREATMENT OF METAL IN ARCHITECTURE.

CANTOR LECTURES, SOCIETY OF ARTS

The third course of Cantor Lectures of the Society of Arts for the present session has just been concluded. The course consisted of three lectures on "The Decorative Treatment of Metal in Architecture," and the lecturer was Mr. G. H. Birch, A.R.I.B.A., at whose hands the very interesting subject has received able elucidation.

In his first lecture, which treated of the precious metals and bronze, Mr. Birch quoted Reichensperger's definition of architecture as an "aggregate of various beautiful arts, working principally by means of proportion," and traced the rise and progress of the subsidiary arts in architecture, especially those concerned with the decorative treatment of the precious metals in ancient architecture. He spoke at some length of the use of these metals in Egyptian, Assyrian, Babylonian, Persian, Jewish, Greek, and Roman architecture, and in buildings erected since the beginning of the Christian era. Passing on to speak of bronze, he described its nature and qualities, its use in pre-historic times, and

its employment in connexion with architecture, commencing by referring to the circumstantial account given by Herodotus of the hundred gates of brass or bronze which existed round Babylon. As to the form and fashion of these brazen gates, they were not of solid metal, but were of wood, strongly bound and clasped with bronze straps, richly ornamented with figures in relief. There are now in the vestibule to the Assyrian Gallery in the British Museum a pair of these gates, almost as fresh and as perfect as they were left by the workmen 2,750 years ago.* The use of bronze at Mycenæ, in Etruria, and in Rome, was also described in detail, and many examples cited.

Mr. Birch, in his second lecture, traced the history of bronze decoration in architecture from its zenith under the Cæsars to its decline until it became again prominent in the Lombardic school and reached its apotheosis in Italy under the Renaissance or Cinque Cento. The principal examples were described with some minuteness, and the lecturer passed on to speak of Spain and France, in which countries bronze as a material for architectural ornamentation had been more sparingly used than in Italy. In connexion with decorative bronzework in Germany, the lecturer mentioned the shrine of St. Sebald, Nuremberg, by Peter Vischer, and other examples of work done by the Vischer family. Waltham Abbey, in Essex, was referred to as affording perhaps the earliest instance of the use of copper or bronze in connexion with architecture in England. Harold's original church was said to have been adorned with plates of gilt metal; and in the deep incised spiral lines which decorate some of the pillars there are traces of their having been filled in with metal, the rivets remaining. The lecturer next proceeded to speak of ornamental ironwork, the art of the blacksmith, and of the architectural use of wrought iron in the North of Europe, prefacing his remarks on this head by a brief historical sketch of the use of iron. Among other examples described (many of which have been illustrated in the *Builder*) were works in Nuremberg, Augsburg, and other German cities, in some of the old Flemish towns, and in France, Italy, and England.

The author commenced his third lecture (delivered on Monday evening last) by observing that the art of the blacksmith appealed more to one's sympathies than many of the finer and more manipulative metallic arts, for in the blacksmith's art the individuality which invested each specimen was due to the fact that the beholder knew that that particular object was once a shapeless mass of red-hot metal, laid upon the anvil, hammered and re-hammered, and cut and turned, until shape and form were given to it and it left the anvil a thing of life and beauty, telling of patience and skill on the part of the workman, and carrying with it the genuine "ring" of the anvil and hammer. This was particularly the case with English ironwork of the seventeenth century, when wrought ironwork began to be more extensively used for domestic buildings than it had ever been used before. The Great Fire of London created a revolution in house-building. Timber and plaster structures had disappeared and made way for brick. The overhanging stories were no longer allowed. Basements had to be protected by iron railings, and the entrances to the mansions of the rich citizens, which were generally set back from the street, were decorated with iron gates and grilles. The erection of a new cathedral in the revived Classic style required that the smith's art should be represented in its fittings and railings. Externally the cathedral was, until lately, entirely surrounded by a very handsome railing of Sussex iron, made at Lamberhurst, and many of the smaller openings externally are filled with ornamental grilles of charming design and workmanship. Internally, the screens which separate the north and south aisles of the choir, the gates which formerly closed the choir-screen (now removed further eastward), the grilles in the backs of the oak stalls, and various other railings about the building, are all of them no mean specimens of the art of the blacksmith in England. All the internal ironwork at St. Paul's Cathedral is not, however, thoroughly English; although all made in this country, some of it was designed by one Tijou, a French Protestant refugee; but in Mr. Birch's opinion Tijou's work was confined to the choir enclosures. Tijou is also supposed to have worked on the handrails to the state staircases at Hampton Court Palace. Of late years we had lost a number of the finest specimens of the smith's art of the period in question. Lindsey House, Lincoln's Inn-fields (called also Ancaster House), on the west side, had some very fine and curious iron grilles placed between six tall piers of the finest brickwork, surmounted by Portland stone vases. The ironwork has gone, and so have four of the piers,—two giants only survive. Powys House, in Great Ormond-street (destroyed to make Powys-place), had a similar enclosure. Within the author's own recollection, several very fine wrought-iron gates in the City had been removed and sold as old materials. Bridewell Hospital, in New Bridge-street, Blackfriars, still possesses a superb pair of folding-gates, the finest specimens in the City. Some of the houses in Lincoln's Inn-fields and Bloomsbury-square still retain some of their old wrought-iron staircase rails. At Nos. 35 and 46, Lincoln's Inn-fields are to be seen some very fine specimens; a panel on the first-floor landing of the first-named house is one of the best specimens of ironwork of this period to be seen anywhere. At No. 5, Bloomsbury-square (corner of Hart-street) there is a good wrought-iron staircase rail; the house itself is interesting as being the town-house of the elder Disraeli. The entrance-gates to the gardens of the honourable and learned societies of Gray's Inn and the Inner Temple are very good specimens of the smith's work; and in some of the suburbs of London,—such as Hampstead, Clapham, Stoke Newington, Stratford, Bow, and Kensington, — indeed, wherever the old red-brick houses with tiled roofs and quaint dormer windows were to be seen, there would be found a great deal of ironwork of the same period. Although hitherto the lecturer had referred to London examples more particularly, the provinces were equally rich in good specimens. At both the Universities there would be found admirable specimens in some of the college gardens, notably at Clare College, Cambridge, and at Trinity College, Oxford, and in the gates to the Clarendon Press buildings in the latter city. But the crowning glory of this particular phase of metal-work was to be found in the South Kensington and Bethnal-green Museums, in the gates or screens which formerly adorned the gardens at Hampton Court Palace. There are twelve of them, and the graceful variety and charming design which characterise them is extraordinary. National emblems and attributes, such as the rose, thistle, and harp, are freely introduced, and the manner in which the freedom and beauty of the wreaths and scrolls and the foliage of the acanthus contrasts with the upright bars of the constructional lines of the gates is beyond all praise. Purists may object to natural flowers being imitated in wrought-iron, and perhaps, strictly speaking, the material has been slightly lost sight of by the talented designer of these wonderful gates; but the exuberant fancy and exquisite taste displayed in their arrangement, and the technical skill by which difficulties have been overcome, silence every objection, and one can only look in admiration and wonder at the superb result. Huntington Shaw, the blacksmith of Nottingham, may well, indeed, rank first among our blacksmiths. The City churches are rich in specimens of the smith's art, where it is used not only in fittings such as altar-rails, sword-rests, and hat-rails, but also in a more legitimate architectural manner, as was to be seen in the Church of St. Dionis Backchurch, where the organ-gallery was supported by square Corinthian pilasters whose caps and panels were very delicately worked.

Lead.—Lead, like iron, was seldom found pure, and had to be separated from its ore. The use of it dated from very remote times. In a passage in the Book of Job (xix. 24), the words "graven with an iron pen and lead in the rock for ever" show that the peculiarity of the metal in being easily molten and run in a fluid state into an engraved surface was thoroughly understood and appreciated. But even in Roman times the use of lead was not so general as one would imagine from the easily-fusible properties of the material. "As heavy as lead" was one of our most familiar proverbs. How, then, was it possible to invest a material seemingly so unpromising with any amount of life, or to infuse into it the quickening spirit of art? This was a question which might be reasonably asked nowadays, when we confined the use of the material to piping and all the horrid paraphernalia of sanitary science. In the Middle Ages, when lead was used often prosaically enough, it was also made a vehicle for conveying an art lesson, and was impressed with a native beauty intrinsically its own. Apart from its use as a medium for covering roofs,—and more especially the roofs of large ecclesiastical buildings or civic halls, where the exquisite soft tones of the lead-covered roofs served as a foil to the stonework, lead was also ornamented, and such ornamentation was applied in strict accordance with the capabilities of the material. The ridge-line of a roof was treated so as to mitigate its harshness, and was softened off by a cresting, plain and simple at first, during the twelfth, thirteenth, and fourteenth centuries, but gradually, with the architecture itself, becoming more and more elaborate, until it culminated in some of those wondrous crestings of beaten and cast work which were produced at Blois and Rouen at the commencement of the Renaissance. Lead was also employed to cover those quaint dormer windows which in Mediæval architecture play such an important part in all large buildings. Here the lead was used in various different forms; not only were the sides and roof of the dormer covered with it as a protection, but the construction was ornamented by the use of finials or vanes made of wood or iron internally and covered with lead. These crowned the summit of the dormer, while the sloping sides of the gable were adorned with crockets, in many cases cut out of sheet lead and beaten and bossed out to the form required round a central support, to give rigidity to the whole. Many of the large cathedrals on the Continent, especially in France, possess most exquisite little spires, or, as they are called in France, "*flèches*." These rise at the intersection of the main roofs, and in some cases lead plays a most important part in their decoration. Could there be anything more lovely, or more appropriate for its position, than the exquisite *flèche* which surmounts Amiens Cathedral? Apart from the constructive skill displayed in the manner in which this is built so as not to exert any undue thrust or pressure upon the roof,—in itself a marvel of carpentry,—its exterior oaken carved work, statues, niches, pinnacles, and traceries are covered with lead, and it is one of the most beautiful works of art which the Middle Ages have bequeathed to us. Unfortunately, the upper portion has suffered considerable mutilation in some clumsy repairs executed in the past century, which repairs were requisite on account of the *flèche* having been struck by lightning and its upper part partially destroyed by fire. Owing to these circumstances the *flèche* was considerably diminished in height, but Viollet-le-Duc, in the fifth volume of his "Architectural Dictionary," p. 470, gives a restoration of its original state, from drawings preserved. It was originally profusely painted and gilt, traces of which remain. In London, we had a modern example of these lead-covered *flèches* crowning the roof of the central hall of that much-abused and severely-criticised pile of buildings, the New Law Courts; both in regard to form and the ornamental treatment of the leadwork, this *flèche* would bear comparison with many of its Mediæval prototypes. At Chalons-sur-Marne, the two western towers of the Church of Notre Dame have leaden spires, one of which, the south-western one, is singularly decorated, another metal having been pressed into the service, viz., tin. The employment of this last-named metal, and the manner in which it was applied, showed how thoroughly the men of those times understood the science (if it might be so termed) of polychromatic decoration. Gilding and painting the leadwork in patterns, although highly effective, and extensively used at that period, had been found to be not so durable as could have been wished, and the expense of reinstating was excessive. The mode of decoration with tin was therefore devised, not for the sake of covering up or concealing one material with another, but to add another beauty to the work by means of the use of a metal which would be free from oxidation, and which would form an agreeable contrast with the dull tones of the lead-work by its own intrinsic brilliancy. There were traces of this form of decoration on the lead work of several of the French buildings of the Middle Ages, but the example at Chalons-sur-Marne was the best-preserved. This spire, and the process of tinning, were described by the late Mr. W. Burges, A.R.A. (a former Cantor

* These gates, and the circumstances attending their discovery, have been described in the *Builder*. See "The Brazen Gates from Balawat," vol. xxxvii. (1879), p. 531.

Lecturer), in some papers he wrote on lead-work in the *Builder* in 1856.* The lead which was intended to be decorated was prepared with a thick coat of lamp-black and size, and the pattern traced with a point; all that portion of the surface to be tinned was removed with a shave-hook, so as to leave it clean and bright, and after being rubbed with sweet oil the solder was applied with an iron in the ordinary way. Mr. Burges further stated that at Chalons the tinning process had been applied a century after the spire had been erected, but that the usual plan was to do the tinning in the shop before fixing the lead in position. The perfection which the French plumbers attained can be seen by studying some of those truly exquisite finials which abound in France. The fashion of casting statues in lead became very general. Many of the figures which adorn the gardens and fountains at Versailles are of lead. In London we had two, viz., the very graceful kneeling figure of a blackamoor supporting a sun-dial, in the garden of Clement's Inn; and the statue of Shakspeare which surmounts the hideous portico of Drury-lane Theatre; this statue has been painted stone-colour. No one ever better appreciated the capabilities of lead as an architectural ornament than Sir Christopher Wren. To take St. Paul's Cathedral as the first instance, how pleasing was the contrast between the carefully-considered curves of the lead-covered dome and the Portland stone of which the building was constructed; and how superior for effect was the lead surface of the exterior of the dome than would be the surface of a stone dome! Everybody knew the extraordinary effects of black and white on the exterior of the stone-work of St. Paul's, effects due partly to the weather and partly to what was now discovered to be a species of fungoid growth, and not so much to dirt and smoke as had been supposed. How very disastrous and subversive of the present grand effect of the dome would be the appearance it would present if it had been carried out in stone, with one side of the dome "as black as your hat," and the other side almost as white as snow! Wren had evidently a predeliction for lead, for out of the thirty-one spires which he built in London alone, twenty-two were in lead, of which nineteen still remain. Among many other instances of the artistic treatment of lead, the lecturer instanced the cast-lead cisterns, very few of which now remain. The ornamentation on these was sometimes very rich; the same was to be said of some of the old rain-water pipe-heads. Enough had been said to show that the plumber's occupation could be elevated to the position of a positive art.

Zinc and its use in architecture was a subject almost unnecessary to touch upon. The material might no doubt be used advantageously abroad, but it did not seem capable of long withstanding our peculiar London atmosphere. Some few years ago it was largely used for ornamenting ridges and dormers and terminations to roofs; but the difficulty of allowing for expansion and contraction from variations of temperature was very great. Most of our modern bronze statues were, to a certain extent, alloyed with zinc, and it was to that cause that we must attribute their black and grimy appearance. The lecturer believed that the reason for using it was that it enabled the copper to become more readily fusible and to run more easily; but if it really detracted from the imperishable qualities of bronze its use was regrettable.

In conclusion, the lecturer said he had, so far as he was able in the time allotted to him for these lectures, demonstrated how the various metals had been used in connexion with architecture from the earliest known times. To adorn buildings in these days with solid plates of gold and silver would be an anomaly, besides being almost an impossibility. However, we could "overlay our buildings with fine gold," very fine gold, in the shape of ordinary gilding,—a form of ornamentation which, judiciously applied, whether in connexion with painted decoration or not, was always effective and harmonious. But it required skilful handling. For his own part he should like to see the parts which accentuate the lead work of the dome of St. Paul's gilded, so as to carry up the eye to the golden gallery and ball and cross. One marked feature of the late Mr. Burges's scheme for the decoration of St. Paul's was the employment of bronze, gilded; and, whatever might be the opinion respecting the use of bronze in London, it could not but be hoped that justice would yet be done to a material so easily manipulated and so durable in its substance. The judicious use of iron grilles or railings, either surrounding or partly protecting large public buildings, was in itself undoubtedly a great help to the architecture, and more especially so when such enclosure or railing partook somewhat of the character of the building it protected. In London, among other examples in which the iron railings, apart from their intrinsic beauty of design, do lend themselves to enhance the architectural design, are the New Law Courts, by the late Mr. Street, and the large block of red-brick buildings at the junction of Carey and Serle-streets, known as New Court Chambers, by Mr. Waterhouse. It was, however, matter for great regret that the vast sums of money expended upon the railings and gates of the British Museum, the Houses of Parliament, Buckingham Palace, and the Embankment Gardens, had not been productive of something more artistic. The railings in front of the British Museum, from their extreme heaviness and mass, and the profusion of chocolate paint and gilding, only make the dark and forbidding pile of building behind look the more gloomy and severe. A redeeming point about them is the small defence or boundary of simple bars and standards surmounted by charming little seated lions, modelled by the late Alfred Stevens. In the new enclosure railing round Palace-yard, at the Houses of Parliament, the idea evidently was to produce a railing in keeping with the architectural surroundings, but the profusion of painting and gilding only attracted attention to a design which was both heavy and pretentious, and in which the material seemed to be completely lost sight of. As to the railing enclosing Buckingham Palace, where one would have looked for a handsome termination to the historic Mall, remembering the traditions of Hampton Court and old Buckingham House, with its metal grilles and statues, we found the embodiment of the most commonplace mediocrity. In the railings of the Embankment Gardens the result was most unfortunate. There was no possible objection to a cast-iron railing; for cast iron was as capable of artistic treatment as wrought iron, as might be seen in the castings exhibited by the Coalbrookdale Company; but on the Embankment we saw a cast-iron railing utterly unsuited for the purpose, consisting of a series of minutely-designed panels, perfectly invisible even from a very short distance off, from their very intricacy and monotony of effect. But although the lecturer, and many others with him, failed to appreciate this ornate example of brittle cast iron, there were evidently others of a very different opinion; for they seemed to be very anxious to obtain specimens of these cast panels (which they could very easily do by a judicious tap or two), for the purpose, it was to be presumed, of studying their beauties. To such an extent was this appreciation carried, indeed, that the authorities would do well, while there was yet time, to deposit in some popular museum (such as the well-known one in Baker-street) a perfect specimen of one of these panels, so that future generations might see what the pattern originally was. The idea of a railing in this position, the lecturer went on to say, is not a happy one. Standing anywhere above, either at the top of the steps at Westminster Bridge, or on the footway of the railway bridge, and looking down on the graceful sweep of the Embankment, the want of a well-defined second line of demarcation is painfully apparent. Such a line of demarcation would have been provided by a dwarf stone or granite wall, surmounted either by a stone balustrade, or by dwarf iron grilles between frequent piers or pedestals. We had instances of iron railings and grilles in London which we need not be ashamed of, and modern ones too, notably the screen dividing Holland Park from Kensington-road, designed by Mr. Thomas Jekyll, who was one of the first to put into active practice the principles which actuated the smiths of the seventeenth and eighteenth centuries. Another noteworthy example, from the designs of a living architect, was afforded by the entrance-gates to the College of Minor Canons of St. Paul's Cathedral, in Warwick-lane, Newgate-street; these gates and the grille filling the interval between the top of the arch and the panelled wooden doors of the gate-house were carried out from the designs of Mr. Ewan Christian by Mr. William Shrivell, blacksmith, Castle-street, Long Acre. Among other objects of iron, in which there was great room for improvement, the lecturer instanced our street lamp-posts, which he hoped would give way to ornamental brackets when the electric light came to be generally adopted for street illumination.

At the close of the lecture, Mr. Cobb, who occupied the chair, moved a vote of thanks to Mr. Birch for the exceedingly able and interesting manner in which he had dealt with his subject in this course of lectures. This was carried by acclamation, and the visitors proceeded to inspect the numerous specimens and drawings exhibited in illustration of the various points of the lecture.

* Vol. xiv., pp. 48, 411, 418.

BEN JONSON AT LINCOLN'S INN.

"I was last week taking a solitary walk in the garden of Lincoln's Inn, a favour that is indulged me by several of the Benchers who are my intimate friends and grown old with me in this neighbourhood."—STEELE, *Tatler*, No. 100.

On the 7th instant we noticed the alterations which have been carried out at Lincoln's Inn Chapel, and adverted to the opening ceremony of the following day.* In its account of that service a contemporary sets forth that "it is said that Ben Jonson worked with his trowel on some of the walls [of the chapel] which now stand."† The chapel was practically begun in the 15th James I. (1617), when the Bench appointed a committee of members "to consider of materials for this chapel. . . . . The model thereof was recommended to the contrivance of Inigo Jones, who . . . . estimated the charge of the same at 2,000*l*." The benchers' subscriptions not amounting to this sum, the balance of 1,800*l*. was raised by a graduated tax upon all members of the Society. Jonson was then forty-four years old, had produced some of his most celebrated plays and, with Inigo Jones, many of the masques in which the Court so much delighted. Neither the author of "A New View of London,"‡ Strype (Stow's Survey, 1720), Seymour (1735), Maitland (1739, and again in 1756), Noorthouck (1773), nor Pennant (3rd edition, 1793) says anything to connect Ben Jonson with the laying of any of the bricks of Lincoln's Inn. Yet he certainly did for a few months§ labour at his step-father's trade, and this after he had in his sixteenth year gone up to Cambridge, where, according to Fuller, "he was statutably admitted into St. John's College.‖ But the same causes which in a later age summarily shortened his great namesake's career at Pembroke, Oxford, compelled Jonson to leave college; he returned home to serve as apprentice to his mother's second husband. Speaking of his necessitous means at this time Fuller says in his "Worthies," vol. ii., "Let them not blush that have, but those that have not, a lawful calling. He helped in the building of the new structure of Lincoln's Inn,¶ where having a trowel in his hand he had a book in his pocket." Aubrey, writing to the same effect, goes on to say that a knight or bencher walking through and hearing him repeating some Greek names out of Homer, discoursing with him and finding him to have a wit extraordinary, gave him some exhibition to maintain him at Trinity. Fuller, too, affirms,—"Some gentlemen pitying that his parts should be buried under the rubbish of so mean a calling, did by their bounty manumise him freely to follow his own ingenious inclinations." But his biographer Gifford declares neither friend nor admirer followed him to his humble employment, and that as, in his own words, "he could not endure the occupation of a bricklayer," he made one desperate effort to escape from it altogether, not by returning to Cambridge, but by withdrawing to the Continent and volunteering into the army then engaged in Flanders.

As appears by an inscription beneath his arms at the east end of the former roof, the new chapel was consecrated by George Mountain, Bishop of London, on the Feast of the Ascension, 1623, Dr. Donne, a past member, and then Dean of St. Paul's, preaching the dedicatory sermon, from the text of St.

* See p. 473, *ante*.

† The *Standard*, 9th April current.

‡ Printed for John Nicholson, at the King's Arms in Little Britain, and Robert Knaplock, at the Bishop's Head in St. Paul's Churchyard. 1708.

§ Malone, in his "Shakspeare," vol. i., p. 624, says for five years, 1588 to 1593,—clearly a mis-statement.

‖ No note of his matriculation is to be found. The names are omitted from the Register, June, 1589—June, 1592. If, when at Westminster, Jonson was on the foundation, and proceeded regularly to Cambridge, he would enter at Trinity. He was born in the early part of the year 1574.

¶ The wall (since destroyed) built 35th Elizabeth (1592) along New-street, now Chancery-lane.

John's Gospel, x. 22, 23. It is not a good example of a style for which its architect had little taste. But the windows,—the work of one Hall, a glass-painter in Fetter-lane,*—are justly admired, being equal in point of colour, according to Winston, in his work on Glass Painting, to the richest decorated glass of the best period. Laud had reason to express surprise that so much abuse should be raised against his own at Lambeth, whilst these figures of Apostles and Saints escaped censure. Yet he would not further speak of this lest he should "thereby set some furious spirit in work to destroy those harmless goodly windows to the just dislike of that worthy society." The open crypt beneath, since railed off to form a burial-ground for the benchers, was formerly a customary place of resort. Pepys (27th of June, 1663) describes his visit to the new garden, "and so to walk under the chapel by agreement."

At this period Lincoln's Inn consisted of Old-square, whose earlier portions were lately pulled down, to be followed ere long by the remainder, with its quaint exterior chimneys, presenting some interesting examples of Jacobean brickwork. The old hall, remarkable for its four bays, but disfigured by later alterations, was erected on the site of a previous one about the year 1502, chiefly through the beneficence of John Nethersale, a member of the Society. Another member, Sir Thomas Lovell, treasurer to King Henry VII., contributed largely to the erection of the Gatehouse tower, finally completed in 9th Henry VIII., at a cost of 153*l.* 10s. 8d.† The timber came from Henley-on-Thames; the bricks and tiles are of clay, dug out of the Cottrell Garden or Coneygarth, a plot of ground adjoining Lincoln's Inn-fields. A sum of 16*l.* 7s. 5d. was paid for forty-three cartloads of freestone, the wrought work of the chimneys, and the arms over the entrance. The last-named include within garters the royal escutcheon placed between that of Henry Lacy, the great Earl of Lincoln (or, a lion azure, or purpure), and the chevrons quartered of the Lovells.‡ The existing gates were ordered to be set up 25th Henry VIII.; and a few years later Chancellor's-lane, that had long borne an evil name as "a foul and dirty way," was levelled and paved. Traces of its former vaulting remain beneath the ceiling of the gateway. In the reign of Queen Mary were constructed the kitchen and the walk under the trees in the Coneygarth, and in the early years of her sister's reign the gates referred to above were put up, with a brick wall and gateway on the western side along Ficquett's Fields, and sundry additions made to the hall and kitchen. In King James I.'s reign were built the chambers which lately adjoined the chapel and those which form the south-eastern and south-western angles of Old Square. (The corresponding chambers at the north-eastern angle have been replaced by what is the last work of the late Sir George Gilbert Scott.) The garden at the same time was enclosed, and though one now looks in vain for the shaded walks of which Ben Jonson speaks, one may there find any summer's evening the perhaps no less gratifying spectacle of troops of children from the purlieus of the neighbouring St. Clement's, Gray's, and Staple Inns, happy little urchins to whom the benchers, herein setting a good example to the trustees of the Fields, do not deny admittance. Ficquett's (or Templar's) Field is at this date occupied by part of the Royal Courts of Justice, Carey-street (Jackanapes-lane), New-square (Little Lincoln's Inn-field), and Serle-street. Until the Dissolution it belonged to the Priory of St. John of Jerusalem. Passing from Sir John Birkenhead, author of the "Mercurius Anglicus," to Henry Serle, part of the field took its shape of New-square, which, however, forms no portion of Lincoln's Inn proper, at the end of the seventeenth century. Serle's arms and those of Lacy are carved on the Carey-street gateway. Stone-buildings is the uncompleted design of Sir Robert Taylor, the working drawings being made by Leech, his clerk, who, entering of Lincoln's Inn, became Master of the Rolls. The modern hall and library, the work of Philip Hardwick, were opened by the Queen, 30th October, 1845.

* See Bagford, Harl. MS., No. 5,910, fol. 51.

† The louvre dates from 6th Edward VI. In that year the charge is thus accounted for: carpenter's work and timber, xlvs.; the smith's for the vane, viiis; the gilding thereof, xis.; the plumber's work, viiil. xs.; and the glazier's, xxxis. The arms in lead of Lacy, with Quincy's and the Earl of Chester's, on one side, are removed.

‡ See the inscription beneath:—"Insignia hæc refecta decorata Johanne Hawles Armig, Solicitatore Generali thesaurario. 1695."

Lincoln's Inn originally arose over the ruins of the earlier monastery of the Black Friars and the town house built by Ralph Nevil, bishop of Chichester, chancellor, in the place and garden (at the southern end of the lane) granted to him by King Henry III. This house, the "noble palace" so called by Matthew Paris, was standing in Queen Elizabeth's reign, and Bishop's-court and Chichester-rents yet commemorate its position and name. Arriving in England with their prior, Gilbert de Fraxineto, in the year 1221, the Black or Preaching Friars under Archbishop Langton's patronage were granted a piece of land "without the wall of the city by Holbourn, near unto the Old Temple." Hence they removed fifty years later to their settlement by Mount Fitchet and Baynard's Castle on the left bank of the Fleet.*

In the time of Richard de Wiht, "St. Richard," Nevil's successor, the bishop's inn and the deserted monastery became appropriated to students of the law, though in what manner is not clearly ascertained. Tradition runs that Henry Lacy, Earl of Lincoln, having a grant by patent from King Edward I. of "the old friar house *juxta* Holborn, being a person well affected to the study of the laws," assigned its professors this residence, but we are not told whether by gift or purchase. Subsequent grants exist of leases to the students and benchers by bishops of Chichester of portions of the estate appertaining to the see when finally by a deed, dated 12th November, 22nd Elizabeth, the whole inheritance was conveyed for 520*l.* to one Richard Kingsmill and his brother benchers †

Once singularly distinguished by various sumptuary enactments for regulating the costume, toilet, board, and expenses of the fellows and students, renowned for its moots and disputations, its masques and dancings, its "grand Christmassings" and "ancient and solemn revels," ‡ Lincoln's Inn claims more eminent men than any other kindred house. First on the roll is Sir John Fortescue, Lord Chief Justice *temp.* Henry VI., and author of the learned discourse "De Laudibus Legum Angliæ," composed in France when he was attending his royal pupil Edward, eldest son of that sovereign. On the 4th of February, 2nd Henry VII., was admitted Sir Arthur Plantagenet (Viscount Lisle), a natural son of Edward IV. Sir Thomas Lovell, made a knight-banneret on the field at Stoke (1487), was "double reader" in 21st Edward IV., Chancellor of the Exchequer for life to King Henry VII., and executor of his will. Having attained to the dignities of Knight of the Garter, President of the Council, and Constable of the Tower, he was buried in the chapel of the Holywell nunnery, which he had refounded at Shoreditch. To these should be added the names of such men as Sir Thomas More (migrating from New Inn), Egerton (Lord Ellesmere), Shaftesbury, Mansfield, Spelman and Lambard (antiquaries), Prynne, Denham, Selden ("the great dictator of learning to the English nation"), Oliver Cromwell, Sir James Ley (whom King Charles I. created Earl of Marlborough), William Pitt, Erskine, Brougham, Campbell, W. Canning, Sugden, and Sir Matthew Hale. The last-named bequeathed the greater part of the valuable manuscripts preserved in the library. On the third story of No. 1, Old-square, Lord Mansfield, then Mr. Murray, had chambers §; at No. 24, on the ground-floor to the left, Thurloe, Cromwell's secretary, had chambers from 1645 to 1659. In William III.'s reign the Thurloe papers were accidentally discovered in the false ceiling. In this room Cromwell, unfolding his treacherous scheme for securing the persons of the king and his brothers, was overheard by Samuel Morland, Thurloe's underclerk, who feigned to be asleep. Cromwell, secretary, who feigned to be asleep. Cromwell, who had not at first seen him, was on the point of despatching Morland with his dagger, but assured by Thurloe that Morland had sat up for the two past nights together, satisfied himself by passing his weapon several times over Morland's face. Morland, alive to all that passed, contrived to forewarn the princes.* Warburton, Usher, Donne, Tillotson, and Heber, were preachers at the chapel; there, on the 3rd of November, 1668, Sir William Dugdale gave his daughter in marriage to Ashmole. On the former chapel staircase stood the tablet which the benchers erected to the memory of Spencer Perceval, who, at the time of his assassination by Bellingham, resided in Ancaster House, now No. 59, Lincoln's Inn-fields.

* The bit of old wall recently demolished in St. Martin's-court, and Little Bridge-street, Ludgate hill, composed of materials of the London Wall at that spot, was the survivor of the wall of their convent here.

† W. Herbert's "Antiquities of the Inns of Court and Chancery," 1804.

‡ The dancing was at one time obligatory. See the curious order of the 6th February, 7th James I., punishing the junior barristers by putting them out of commons for not dancing before the judges on the Candlemas-day preceding, and threatening that for the next negligence they should be fined or disbarred.

§ Lord Campbell's "Chief Justices," ii., 336.

* See Burnet's "History," and the letter of 14th August, 1656, in the Thurloe State Papers.

DISCOVERY OF AN ANCIENT CELTIC CROSS.

An interesting archæological discovery has lately been made in the parish of St. Teath, near Camelford, in the county of Cornwall, of a relic believed to be of Celtic Christianity in the south-western corner of England. This consists of a massive granite monolithic cross of the Greek type, measuring no less than 15 ft. in extreme height. The head or superimposed cross of this monument is, like some other ancient crosses, not accurately circular, but slightly elliptical in form, the diameter along the horizontal arms being 23 in. and that along the vertical shaft of the cross 26 in. The arms project for about 1 in., and gradually widen towards their extremities in the same manner, but not in so marked a degree as the limbs of the cross so well known under the designation of the Maltese cross. These arms are raised, and united by intervening segments of a circle not quite truly circular. The spaces between the segments and the arms are pierced through in the usual manner, the piercing following the lines of the segments and arms. The two sides of this ancient cross resemble each other in design, but the one which was in all probability looked upon as the front face appears to have been in some degree more carefully carved and finished by the mason than the other. The long shaft, which supports the ornamental cross already described, measures 21 in. by 15 in. at the base, and 13½ in. by 11½ in. beneath the fillet immediately below the cross. The angular corners of the shaft are rounded off, and each of the four sides or faces is enriched with deeply incised lines or channels that form borders, within which are enclosed spaces replenished with sculptured ornamentation. The exact devices or subjects of these sculptures have not, however, at present been determined, on account of the deteriorated condition of the face of the stone from weathering and improper treatment.

The greater portion of this shaft, a mass of about 8 ft. 6 in. in length, split longitudinally, sadly hacked and defaced, was discovered to have formed the coping of the wall at the west entrance of the churchyard for a period of upwards of forty years. Two smaller fragments, each measuring about 1 ft. in length, had been sunk into the ground to form blocks for the pivots of the churchyard gates; and a larger piece, comprising about 1 ft. 6 in. of the rest of the shaft, and a portion of the lower limb of the cross itself, was also let into the ground and drilled with a socket-hole for the reception of the bolt of the gates. The upper part of the cross, containing the two lateral arms and the upper limb, had been worked square, and utilised as a quoin for one of the side walls. The chips and small pieces struck off in this shameless act of Vandalism are, it is feared, irretrievably lost, but the same care which has resulted in the recovery of so large a portion of the monument will be exercised in the search for these fragments. The tenon of the shaft, and the greater part of the mortised plinth or base into which it was originally fixed, are also missing, but it is believed that they are not very far away from the site which has yielded the recovered pieces. This plinth appears to have been of an oval or elliptical form, for a small portion of it with one angle of the mortise was found on the original site of the cross, not far from a pond or pool lately called the "Dimmickom" pond, now occupied by a blacksmith's shop, to the south of the churchyard wall, and close by the east drive to the vicarage. We are inclined, from the above description of this monolithic cross, to attribute it to a date ranging somewhere between the seventh and the ninth century, but the determination of the details of the sculptures on the faces, which

will not be very difficult when the stone is reared up again in its original position, will materially assist conjecture as to age. It has been suggested by some that this fine but seriously-mutilated work, of undoubtedly early Christian art, in Cornwall, was erected towards the middle of the fourth century, subsequently to the persecution by Diocletian, when, writes Gildas, "the Christians were brought back to a state of ease, the victorious cross was displayed, the churches were rebuilt," &c. If this monolith be a "cross of victory," may we not accept the testimony of Gildas as literal rather than figurative? If so, after occupying its pristine site for nearly a thousand years, this stone cross was most probably overthrown by those who took a prominent part in the destruction of similar ecclesiastical objects in the stormy days of the seventeenth century. Even within the memory of an aged parishioner it was used as a bridge across the outlet of the pond already mentioned. It was removed about the year 1835, by the Rev. Joseph Fayrer, then vicar, into the churchyard. Mr. Fayrer's intention to restore and repair it was, however, frustrated by reason of the loss of the tenon and the fragmentary condition of the base, for the cost of repairing the base or procuring a new granite base then proved an insurmountable obstacle. In the year 1841, during the time of the Rev. Thos. Amory as vicar, the relic received the treatment described above. About the same time a handsome Norman capital from the church was converted into a pig-trough, to which practical purpose it still subserves. Other contemporary acts of a similar character could be mentioned. The restoration, however, has been undertaken and already commenced by the Rev. Thos. Worthington, temporarily in charge of the parish during the absence, on account of illness, of the hard-working and enterprising vicar, the Rev. William Rowe. It is likely to prove a somewhat expensive undertaking, but we trust that Mr. Worthington, to whom the credit of the ingathering and repair of the fragments is due, will not be left to bear the burthen alone. It is a work deserving of the co-operation of all who reverence the Celtic vestiges of Christianity in their country.

WORK FOR SCOTLAND TO DO.

In the speech Mr. John Bright recently made to the students of Glasgow University, as Lord Rector, after glancing over the whole of our colonial possessions and relations, in his incisive manner, he informed them that 78 persons out of every 100 in Scotland lived in a dwelling consisting of only one room or of two. Notwithstanding the general progress made in many departments of social life, the general growth of wealth, and the special industry and thrift of the Scottish people, only twenty-two persons out of every hundred enjoyed the comfort and decency of a home with more than two rooms in it. In the face of this fact it is evident bonnie Scotland has a great task to accomplish.

Moreover, in these days of increasing comfort in railway travelling, we may take it for granted Scotland will gradually come to be regarded as the summer residence of the wealthy, even as it has been considered for some long time the happy hunting-grounds of the "upper ten." As in old times the prosperous citizen took up his abode at a day's journey's length into the country to recruit his health, or enjoy recreation, so, by and-by, we may conclude, a day's journey will take him into the "dark, and true, and tender North." Whereas Weymouth and Tunbridge, Brighton and Hastings, Ramsgate and Margate, and other places, have each been within the convenient distance in question, as modes of conveyance have gradually improved, so may Scotland come to be equally accessible to the John Gilpins and Dick Whittingtons of the future, with their great followings. Thus, there will be a call for thousands of houses in Scotland that her numerous visitors may be suitably provided for, over and above the present need of better house accommodation for her own sons and daughters. And now we have a word of timely counsel. Let Scottish architects and builders keep up their nationality in these new opportunities. Let them preserve Scottish architectural mannerisms. When the London citizen arrives in the North, let him find something new, and bracing, and commendable in the architecture and not feeble imitations of second and third-rate London houses. No style of house could be so suitable to the climate and to the traditions of the soil as the strong and sturdy edifices built by former generations, of which there are sufficient examples to yield and suggest a countless variety of outline and detail, all in admirable keeping.

Before Sir Walter Scott's delightful fictions caused the brown moors, the green hills, the glens and mountains, and the little grey towns to be visited by autumnal visitors in thousands, and before Dr. Johnson's celebrated tour in the Hebrides, detailing his astonishment at all he saw and heard, and all he experienced in the way of discomfort, as when he stepped out of bed into pools of mud upon the floor of a country inn, raised a storm of indignation, there were other writers who have given us curious pictures of the simplicity and hardships of Scottish life in some of its phases. Mr. Kenneth Macaulay, writing in 1764, tells us what the village of St. Kilda was like at that date. It consisted of two rows of flat-roofed houses, facing each other, with a tolerable causeway between them. He says, "The walls of these habitations are made of a rough, gritty kind of stones, huddled up together in haste, without either lime or mortar, from 8 ft. to 9 ft. high. In the heart of the walls are the beds, which are overlaid with flags, and large enough to contain three persons. In the side of every bed is an opening, by way of door, which is much too narrow and low to answer that purpose. All their dwelling-houses are divided into two apartments by partition-walls. In the division next the door, which is much the largest, they have their cattle stalled during the whole winter season, the other serves for kitchen, hall, and bedroom. . . . . After having burnt a considerable quantity of dried turf, they spread the ashes with the nicest care over the floor of that apartment in which they eat and sleep." This process is repeated till the cottagers are ready to sow their barley, and the houses are so full of this compost that their internal height is reduced to about 4 ft. or 5 ft. Doubtless, there has been some improvement since this distant day, and the customs of the inhabitants of St. Kilda were not general; but, as Mr. Bright has forcibly stated, it is an overwhelming fact that only twenty-two persons out of 100 are comfortably housed in Scotland at the present time. We look to the setting in of a great tide of sanitary reform in this matter.

THE LATEST PHASE OF THE THIRLMERE SCHEME.

It is frequently unfortunate that the legal knowledge of the community is increased at the expense of parties who can but little afford it. The recent arbitration between the Corporation of Manchester and the Countess Ossilinski fortunately could not be said to be of this character. The litigation, for litigation it was, arose out of the well-known scheme for supplying Manchester with water from Thirlmere. The form which it took was, in the first place, that of an arbitration as to the value of certain land which belongs to the Countess on the borders of Thirlmere, and its final, or at any rate, most recent, phase was an attempt by the Corporation of Manchester to upset the award of the arbitrator. With the general facts and figures of this arbitration we have nothing to do, but there is one part of it, and that which was recently discussed before a Divisional Court of the Queen's Bench Division, which in these days seems to be decidedly instructive from an arbitrator's point of view. It seems to be admitted that the arbitrator took into consideration that the value of the land was enhanced by the capabilities of the ground for the storage or collection of water for the supply of any town which might be accessible, though the Court did not find that it was certain that the arbitrator did take this fact into his consideration, yet it appears that the Court practically considered that he did. But the important point to be borne in mind is that this fact of the value of the land for the purposes of a reservoir might, the Court considered, be properly taken into account as an element of value. It must be confessed, however, that if this element be carefully considered, it is really very doubtful whether it should have been taken into consideration; and for this reason: a particular piece of land may be suitable for a reservoir, but unless some other persons than those who require it at the moment wish to make use of it as a reservoir, then this purpose for which it may be suitable does not add to the value. Thus, a piece of land may be suitable for building, but it may be years and years before it can be utilised for this purpose. It would be ridiculous to take its value as building land, in such circumstances, into consideration. In the same way, it may fairly be considered that, had not Thirlmere been fixed on as a reservoir by the city of Manchester, its use for the purpose would have been so remote and so unlikely that its applicability for such a purpose could not be properly taken into consideration. We do not mean to say that the award in this case could be upset, because it was open to assumption that the arbitrator had rejected this circumstance. But what we desire to point out is that arbitrators should not even consider too remote possibilities. It would, to take another example, be absurd if one railway desired a piece of land for their undertaking, and it was peculiarly suitable for the line, and there was no other scheme dreamed of, or on foot, for an arbitrator to take this fact into his consideration. To consider these remote possibilities is really to add a value to the land which is taken which, under ordinary circumstances, it would not have. Unless the Corporation of Manchester had determined, or were about to determine, to take Thirlmere as a reservoir, would any ordinary purchaser have taken its capability for a reservoir for a great town into consideration? Certainly none would have done so. Therefore it is obvious that when a large city or a great commercial undertaking requires land for its particular and special purposes, these special purposes, unless they form circumstances which any ordinary purchaser would consider, should not enter into the mind of an arbitrator as an element of value. The only effect of admitting such facts as these is to make persons or corporations with compulsory powers pay an absurdly high price for the land which they require. Let every real element of value be considered, and the usual ten per cent. addition for compulsory sale be allowed, but do not let purely extraordinary elements, which would not arise except for the fact that the undertaking requires it, be considered. So great are the values which are involved in this Thirlmere arbitration that it is probable more may yet be heard of it in the Law Courts. Meanwhile, however, it is well that arbitrators should not suppose that this arbitration gives them the right to take into consideration all sorts of special and remote circumstances which an ordinary purchaser would not consider.

MR. CHARLES FOWLER.

Mr. Charles Fowler, F.R.I.B.A., having resigned the office of Hon. Sec. of the District Surveyor's Association, occasion was taken on Friday last, the 13th instant, to present him with a testimonial on behalf of the members as a mark of their regard, as well as a slight acknowledgment of the great value of the services he had rendered them in the discharge of the duties of Hon. Sec. of the Association for a period of twenty-one years. Mr. Jennings, from the chair, made the presentation; Mr. I'Anson, Professor Kerr, and Mr. Woodthorpe concurred in bearing testimony to the personal esteem in which Mr. Charles Fowler had ever been held by the members, to their appreciation of the excellence of his professional character, and the consistent manner in which he had stamped the work of the association with his own high standard of what was right and fitting in their duties and responsibilities.

Mr. Fowler reminded the members that he had succeeded one who had created the work of the Association, and had placed it on a very high footing (the late Robert Heaketh.) If he had been able to maintain that work it was mainly due to the kind assistance he had received from the members themselves. They had a highly technical and difficult Act to administer, and the principal object he had endeavoured to keep steadily in view before them was uniformity of practice, in the belief that the public interest is best served by a strict and uniform interpretation of the rules of the Act.

The testimonial consisted of a handsome antique silver loving-cup, and some smaller table ornaments, also of silver.

We desire to add personally a warm expression of our high esteem of the character of Mr. Charles Fowler.



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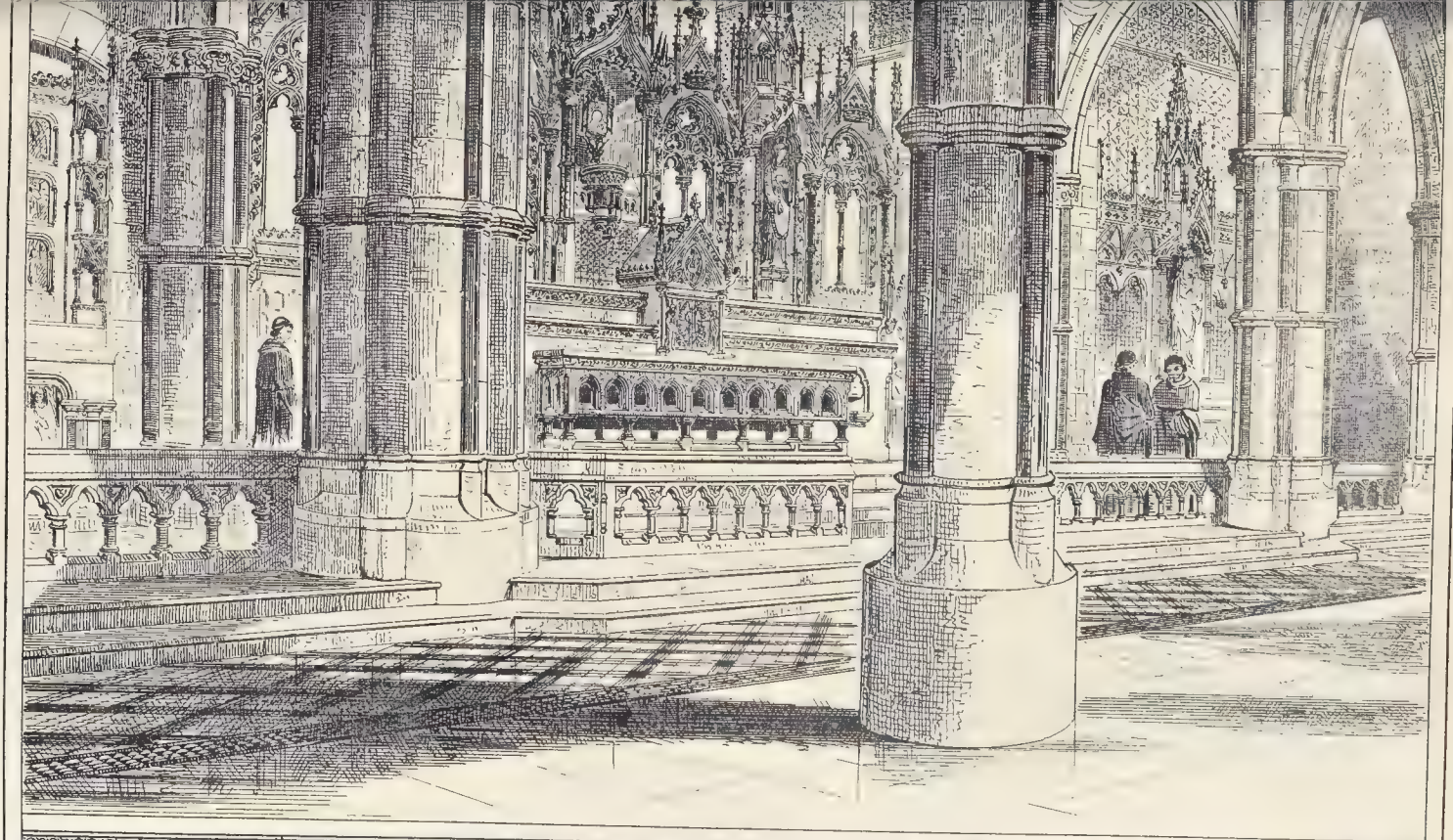
THE NATIONAL LIBERAL CLUB, NORTHUMBERLAND A



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ARING CROSS.—Messrs. F. & H. Francis, Architects.





Church of the Sacred Hearts of Jesu & Mary West Bromwich

Messrs. J. A. Hansom & Son Architects

Photo Lith. printed by James Akerman, 6 Queen Square W.C.





CHURCH OF ST. JOHN, WARSAW, AT TIME OF PRAYERS.

CHURCH OF ST. JOHN, WARSAW.

Although Warsaw, as viewed from Praga, one of its four suburbs, and lying on the right bank of the Vistula, creates an imposing effect, a closer acquaintance with the city dispels much of the first favourable impression. Warsaw is a town of old date, but was a place of insignificance until the annexation of Lithuania by Poland; after which, the territory of the Republic being extended to the west, Cracow was no longer sufficiently central to be the capital. In 1566, the Diet was transferred from the old to the new capital of Poland. In the war with Sweden, in the middle of the seventeenth century, Warsaw was occupied by the invaders. When Charles XII. advanced in 1703 to Warsaw, it surrendered to him without opposition. In 1793, the Russian garrison that occupied it were expelled by the Poles, on receiving intelligence of the success of Kosciusko near Cracow. That gallant leader, when obliged to change the scene of contest, retreated on Warsaw, and defended it with success against the Prussians, during the summer of 1794, obliging them eventually to raise the siege. A different fate awaited Warsaw on the arrival of Suwarrow and the Russians. Praga being taken by assault, and delivered to pillage, the capital submitted without opposition. On the final partition of Poland, in 1795, this part of the country fell to the share of Prussia, and Warsaw had no other rank than that of capital of a province, until the end of 1806, when the overthrow of Prussia led to the formation of an independent state, called the duchy of Warsaw. Of this state, it continued the capital, until the evacuation of Poland by the French in January, 1813. Since 1815, it has, in a manner, retained the character of a capital, being the residence of a viceroy representing the Emperor of Russia.

The town is divided into an old and new quarter, exclusive of its four suburbs. It covers a great extent of ground, the length of the town and suburbs being between three and four miles, its breadth between two and three miles; but large spaces are occupied by gardens. A rampart and fosse surround the city, and the Russians have constructed a large citadel for its defence. The population is now nearly 200,000 souls. The old town, consisting of one main street, with smaller streets joining it on each side, is miserably built, with the exception of a few public edifices. In recent years, Warsaw has grown into a beautiful city, with fine buildings, and wide streets and squares. Many of the principal streets have been paved, and wooden buildings are gradually disappearing. All the squares are of large dimensions, one of the best being the Sigismund-square, in the centre of which a column of Polish marble, adorned with a bronze statue of Sigismund III., was erected in 1643. In the Cracow suburb stands the equestrian statue of Prince Joseph Poniatowski, by Thorwaldsen. The new town extends along the banks of the Vistula to the extent of nearly three miles. It contains several churches, public buildings and barracks, a town-hall, and the Jardin de Saxe. The castle is a large quadrangle, with halls where the Polish Diet and Senate once held their sittings.

We said above that the general effect of Warsaw is very imposing, and a nearer examination of its numerous churches and fine buildings, which there is plenty of room to see to advantage, as well as of the palaces of the nobility, confirms the first favourable impressions of its architectural features. A closer acquaintance, however, says a writer, will dispel much of the pleasure with which a stranger will be disposed to regard the external appearance of the streets and buildings. On passing the arched gateway which pierces many a noble-looking front, he will be surprised to see the mean and irregular erections which compose the rest of the quadrangle, and his sight will not be the only sense which will receive an unpleasant shock. Although admirably situated for drainage, there being hardly a street in the city in which there is not a good natural fall, Warsaw was up to the present time had no sewers. But this will shortly be changed, for an extensive system of sewerage, with an outfall into the Vistula, is in course of construction.

The suburbs are less badly built than the old town, which has, however, some good buildings, amongst which is the old town-hall, a collegiate church formerly belonging to the Jesuits, and the cathedral of St. John, of which we give a view in this week's *Builder*. That church was founded in 1260 by one of the Masovian dukes, and is joined to the royal castle by corridors. It contains a standard taken by King Sobieski from the Turks before Vienna (1683), and an excellent altar-piece by Palma Nowa. Another church, that of the Holy Cross, has a handsome façade, and was built by Joseph Ballotti in 1682-96. The Church of the Capucines contains a splendid monument of marble, erected in honour of King John III. (Sobieski) by his countrymen. The Russian cathedral is also a handsome edifice.

THE NATIONAL LIBERAL CLUB, CHARING CROSS.

On the motion of the Marquis of Hartington, at a meeting held on November 17th, 1882, it was resolved, "That a club be established in London for furthering the interests of the Liberal cause, to be called the National Liberal Club, at which Liberals throughout the kingdom may obtain every club comfort and advantage, and where they may meet in friendly intercourse to exchange information and views." All sections of the Liberal party were represented at this gathering. Indefatigable labours had been carried on by a small committee for some months, particularly in the direction of ascertaining whether a club on the basis suggested was needed. When the list of original members was closed, in the first week of January, 1883, over 2,500 members had been registered. In that membership, between 500 and 600 towns and other places in the United Kingdom were represented. More than 400 of the members were officials connected with Liberal organisations in the provinces. There are now, we are informed, considerably more than 3,000 members. Liberal clubs and associations, too, are becoming affiliated with the club.

A temporary club-house of a convenient character has been obtained at the corner of Northumberland-avenue and Charing-cross, looking into Trafalgar-square. Five floors are placed at the service of the members, viz.: First-floor,—reading and writing rooms (three), library, reception-room for strangers; second floor,—grill-room and four dining-rooms; third floor,—billiard-rooms, smoking-rooms, card-room; fourth floor,—country members' bedrooms; fifth floor,—kitchens, store-rooms, &c. Several rooms on the ground-floor and basement are also included in the premises secured. The building, of which we give a view, was designed by Messrs. F. & H. Francis, architects, London, and has since been internally arranged for the club by Mr. F. W. Waller, architect, of Gloucester and London. It is expected that the club-house will be ready for the accommodation of members during May next, when the institution will be inaugurated by a large dinner at the Royal Aquarium.

The Right Hon. W. E. Gladstone, M.P., is the president of the club.

THE ROMAN CATHOLIC CHURCH, WEST BROMPTON.

The Servite Fathers of St. Mary's Priory, in the Fulham-road, are to be congratulated on another acquisition to their church in the form of a permanent high altar and also a pulpit. The work is now in course of erection by Mr. George Porter, sculptor, of 402, King's-road, Chelsea, who supplied all the work except the statues, which are by Mr. Boulton, of Cheltenham, and the tabernacle by Mr. George Hardman, of 126, Fulham-road. The stone for the super-altars (two) and reredos is Caen, and for the altar itself alabaster is used, all the shafts being of marble. The altar and pulpit will cost together about 1,000*l*. The centre pinnacle or flèche, that over the expositorium, is 35 ft. in height above the predella and 38 ft. 6 in. above the nave floor. The expositorium is approached from each side by steps between the altar and reredos. The Friars' choir being in the rear of the altar, access is provided thereto on each side of the sanctuary, and to enable the full length of the church to be seen and not shut off the choir as formerly by the high super-altars, the reredos is to a large extent composed of rich open tracery work. The large niches contain figures of the Sacred Heart of Jesus and the Sorrowful Heart of Mary, this being the dedication of the church; and the small ones St. Philip Benizi and St. Juliana Falconieri, two illustrious saints of the Servite order. This St. Philip, although not actually the founder, is looked on as the great light of the order, and is described as its "illustrious promoter" (*Propagator insignis*) by Papal bull. The altar front is arranged in panels, on the lines of the Roman antependium Gothicised, to allow of an actual antependium, showing through the panels to suit the five ecclesiastical colours, or of the antependium being omitted without loss. The foliage is treated in the Early English style.

The pulpit base is a large clustered column, with elaborately-carved caps mingling their foliage, thereby increasing to the size of the pulpit proper, which is arranged as a circular arcade, the backing being filled in, but pierced in the upper parts. The spandrels of the arches are filled in with mezzo-relievo carving, amongst which are represented the emblems of the Evangelists. The capping is richly carved in alabaster.

Both altar and pulpit are from the designs of Mr. Joseph Stanislaus Hansom, F.R.I.B.A., of South Kensington, who, together with his father, the late Mr. Joseph Aloysius Hansom, designed the church, monastery, and lady altar.

The work is to be completed by the 1st of May, when the ceremony of its benediction will be performed, which is expected to be largely attended. It is only about fifteen years since the Servite Fathers, or Servants of Mary, landed in this country, renting a small cottage, and building a very small temporary chapel. They are now the largest religious community of men in London, and have had to find an outlet in their new monastery at Bognor, opened last summer. They are able to say that during their sojourn in this country they have never allowed a year to pass without the erection of some important work. The altar and pulpit are the work of 1883, and the Prior is now contemplating building an enlarged lady-chapel as the next work.

WREN'S CITY CHURCHES.

This was the subject of a paper by Mr. A. H. Mackmurdo, architect, read by the author before the members of the College for Men and Women, Queen's-square, Bloomsbury, on Saturday evening last. The City churches of Wren were, he observed, the children of the seventeenth century, and they brought straight down to us the impress of not merely individual character, great as that was, but the impress of the age's character. Having reviewed the salient characteristics of the seventeenth century, and traced the progress of the Renaissance movement northwards, the lecturer referred to the works of Inigo Jones, who, though he freed architecture from the vagaries of untutored taste, could do little more, being obliged to leave the rest to Wren, his follower, and thus becoming to Wren what Bacon was to Newton, and what Girtin was to Turner.

The lecturer went on to say,—The Great Fire of 1666 came as a purifying power to cleanse a city so fouled by the black pestilence that life was scarcely safe within its walls. The timber huts in which the London poor had huddled and hovelled for centuries were fit but for the fuel of flames. Yet it happened that in the cleansing fire the old cathedral and eighty-seven parochial churches fell a prey to the unsparing flames. Wren had just returned from Paris, whither he had been bound on a Continental tour. Bernini had fired his enthusiasm for Renaissance architecture by showing him his drawings of St. Peter's, Rome, just completed, and of the Louvre, then building. He was summoned to the king, and after a few days' interval this Surveyor-General had completed a plan for the rebuilding of the entire city, a plan which, had it been adopted, would have saved us the alterations we are now obliged to make at so heavy a cost. But no one was far-sighted enough to see the value of his scheme, and the old lines of the narrow and meandering streets were in almost all cases adhered to in the rebuilding. In the reconstruction of the cathedral and City churches, however, he was, with little exception, not interfered with, and fortunate was it for us that it was so. The population had been, by the plague and civil war, considerably thinned, and there needed not to be rebuilt all of the churches destroyed. Wren, therefore, was at liberty to choose the most advantageous sites, and erected fifty-one churches in place of the eighty-odd burned down. The characteristic of the age was a

consciousness of all-pervading law; not a thing was done but by a conscious principle. The form of a poem was planned out according to the strictest laws of form, of metrical harmony, and ideal proportion; the unity in form, the exact relations of line to line, and stanza to stanza, were strictly kept throughout. The spirit of the age exacted the same care from Wren in the planning of his cathedral and the design of her daughter churches. And this strict unity of composition and severity of form observed in the cathedral classes it as chief among the epic poems of architecture, while the playful and individual character of the surrounding steeples stamps them as pure lyric compositions. Yet these lyrics in stone are but portions of one great composition centred in the cathedral. As forming together a single group, these steeples, therefore, must be thought of; each member was placed and planned with designed relation to other members around it, and in strict relationship to the whole. Each member of this cluster, like a member of the human body, has a peculiar office to fulfil,—has its structure determined by its function, and affected by its position. This was a principle newly discerned, and for the first time applied: had it been known, it probably never would have been applied, for it was alien to the spirit in which the Goth worked. The Goth built instinctively, and not by conscious reasoning; he professed obeyance to no rule but the rule of thumb, hence the want of unity in his design, the doubtful stability of his construction. The Goth thought of each structure as being in or by itself complete, just as by his religion he looked upon individuals as separate units, each a soul alone responsible for his acts in this world and his salvation in the next. Further, had this principle been known, no single man had ever an opportunity of applying it so fully. Never was presented an opportunity of designing so great and important a group of buildings, a group of buildings extending over the entire area of the greatest city in the world. Such an opportunity was given to Phidias or Palladio never; such has never been offered any man since Wren's day, and happily was it that the good fortune which now gave the opportunity gave also the man to use it well. This characteristic of unity in design is, then, the first and most important characteristic of these City churches, a characteristic of which no other city in the world can boast, a characteristic which gives to London an interest above that enjoyed by any Continental town; yet an interest and a beauty too little valued, because unrecognised but by so few. Few are there who have ever seen this group of churches. This one has often seen this church, and that one another; but each has looked at the church he knows as one is in the habit of looking at a Gothic building, an edifice having no reference to any other. But these churches are not to be seen in this disconnected way. Go and look, I advise you, at the entire group on your first opportunity. From the tower of St. Saviour's, Southwark, the entire group is to be seen. I know no more magnificent sight, in any towns of France, Germany, or Italy. The most favoured view in either Cairo or Constantinople is not to be compared with this view of London, her domed cathedral lifting itself aloft, boldly centred among her square massive mansions and huge blocks of offices, its dome as soft in outline and tender in gradated light as any summer cloud; and not alone does she stand, but surrounded by her daughter churches, that minister each to the others by counterpoint of form, playing change of outline and variety of tone,—indeed, a most lovely sight. And this united group Wren was so careful in planning that no two similar outlines neighbour one another; seldom, even, has he placed together two steeples in equal strength of tone, but beautifully intermingled the varying strength of stone, lead, and brick. Thus the value that each is to its neighbour in its offer of complementary form, — at once harmonising and intensifying intended effects,—is only seen when these steeples are viewed in some such connexion. When, in walking up Ludgate-hill, we see the spire of St. Martin's brought clear against the dome of the cathedral, we discern a new majesty in St. Paul's, a new inimitable elegance in St. Martin's. We see what scale and distance is given to the building behind by the dark leaden tone of the steeple in front; we see how its slender form and subtle curves give such bigness and boldness to the cathedral dome that it seems now to cover an acre or more of ground, and to vie in buoyant grandeur with the domed and pillared clouds above. And in return for this good service done, the mother-church lends the little spire a delicacy and a gentle loveliness surpassing that she would of herself possess. Again, when walking up the old approach to St. Paul's, namely, Watling-street, we see Wren has so placed the steeple of St. Augustine's that its sharp terminal may prick the sky immediately in front of where the cathedral dome spans the ground; and we see here, as on the other side, what value each renders the other, how beautiful features are intensified and singular effects find their required complements. Both St. Paul's and St. Augustine's have, however, suffered a loss in the alteration this spire has undergone, a heavy and severe-lined spire now taking the place of one exquisitely proportioned and of sinuous outline, as may be seen in an old engraving. If we doubt the effect these forms have one upon another, let us, by means of a drawing, change the position of either of these buildings, and place, say the steeple of St. Benet's in the place of St. Martin's, and St. Mary-le-Bow in place of St. Augustine's; we shall then at once see how much St. Paul's loses, how much beauty is marred by ill-designed contrasts, and how impossible it is to alter the designed relations of this group. When thus we have once seen this family group of churches, not only do we henceforth think of them as having exceptional historic importance, but as having exceptional value on account of this artistic unity and completeness. We henceforth look upon all these churches as so intimately connected that St. Paul's bereft of its surrounding steeples would be to us as a body bereft of its limbs; likewise these churches without their metropolitan cathedral would be as so many disconnected members having no head nor trunk to unite them. This unity of conception, this law of relationship, and conscious proportioning of part to part, is peculiar to Classic art, the art that has been wedded to science,—the art of cultured, disciplined, and broadly-trained minds; and these are qualities found in the finest examples of every art, in poetry, painting, music, and sculpture. But Gothic or Romantic, art is devoid of these characteristics; indeed, they are irreconcilable with the spontaneity, spirited energy, and surprise which are the essentials of Gothic art, whether that art be architecture, sculpture, painting, or song. To see how important is this element of relationship, when next you go westwards stand in the garden before Palace-yard, and, looking upon the Gothic minster, the Church of St. Margaret, and Houses of Parliament, ask yourself whether the architect, when erecting these latter buildings, for a moment thought of their design as requiring any relation to the then existing buildings next them. Certainly no trace is there of any subordination of individual taste to this general principle of co-relationship; there is, so to speak, no social sympathy evident between these buildings, and one grieves to think how different might have been their effect had this law been observed and a sympathy insured,—the abbey asked to lend its aid to Barry's pile, the Parliament buildings assisting to intensify the spirited character of the old Gothic minster. But it is a part of and a piece with Romantic art, and as an example of this in poetry compare Langland's vision of Piers Plowman with an ode by Dryden, and you will find this characteristic of unity,—proportion and relation of part to part, line to line, and stanza to stanza, as evident and conscious in the one as it is conspicuous by its absence in the other. And, I beg you observe, herein lies the difference between Classic and Gothic art, in this recognition or non-recognition of general law or conscious principle; and not, as is generally supposed, in the pointed arch and buttress that the one possesses, and in the beam and round arch that the other has. For you may have pointed arches and buttresses and yet have pure Classic architecture, as in St. Clement Danes; or you may have round arches and horizontal beams while maintaining the pure Gothic character. This first characteristic of unity in grouping belongs, we said, to Wren's churches as a whole. It is the family characteristic; but it appears no less markedly in the design of each separate building. Of this and other characteristics which belong to the churches as individuals or members of the family we must now speak. Time will not allow my referring to the churches, so must ask you to allow me to confine my remarks to their steeples. As you must now know, Wren was an eminently practical man, as all far-sighted men are, and he at once saw the first requirements of a City steeple. Built in a narrow street, the lower part of it never to be seen except from a position immediately in front and under one side of it, —therefore never seen, except in steep perspective and part by part, your head requiring to be thrown further back to enable you to see each succeeding stage,—and built against buildings of irregular and coarse projection,—a web of windows and cornices, a network of vertical and horizontal lines,—it must, to look well and dignified under these conditions, be kept flat and full of repose, not a feature added that is not imperative, its simple lines leading the eye upwards, its doorway and belfry windows of exceeding simplicity, its projections of subtle delicacy, its surface unbroken as a maiden's sleep. No ornaments, either, must be added where their effects can never be fully appreciated; no related proportions of space to space, or of opening to opening, when these are are impossible to be seen; no projections given which steep perspective must make coarse. These are the first requirements, and these Wren rigidly observes. The calm, quiet grandeur and unbroken repose of his towers is very marked, and their most beautiful feature. As you walk down Fleet-street, and approach St. Martin's Church on Ludgate-hill, you feel this sense of beauty growing upon you; as you walk down Cheapside, and approach St. Mary-le-Bow, you feel its beauty, because so harshly broken by the projecting clock. Look at this tower from 100 yards or so down the street, and in your imagination remove this protruding clock, and what grandeur of surface is here, the sheer unbroken fall of its front like that of some precipitous Alp! He will break this even surface on no account. Obliged to build a balcony from which the sovereign may view the City pageants, he has given it the slightest projection, thrusting it back as far as he dare. Again, the door pediments, which any other man would have projected from the front, Wren has sunk back beneath a circular hood. Thus, where proper to the position, this repose of surface is strictly kept. But it is otherwise where the buildings are so placed that the architect can calculate upon the view of their lower stories never being broken, and can thus ensure for them a distant view. When, too, they stand more or less isolated from other buildings, Wren introduces beauty of relations and boldness of light and shade. For when a tower can be seen from a distance sufficient to take in at a single glance the whole of its height, the relative proportions of its parts can be fully appreciated. When, too, recesses can be seen from some distance veiled in the soft shade of smokened air, they are made a thousand times more lovely than when seen near at hand with sharp shadows marked. Again, the columned portico and foliated arch is only seen clothed in its own peculiar charm of airy drapery, and skirting of soft cloud from a somewhat distant point. In cavern shade, beside a narrow street, where all its changing mystery and breadth of gradated space can never be seen, it shames the architect and sorrows the beholder of it, for it is a beautiful feature misplaced, and labour thrown clean away. . . . Thus far at present for the lower part of Wren's steeples; our next consideration must be their treatment above. What, in the first place, are the requirements? In any city,—the City of London certainly,—the buildings, taken as a whole, are of about the same height; there is, say at 50 ft., a level stretch of roof, presenting everywhere a somewhat monotonous horizon. Any building lifting itself above this line at once attracts the attention, as we see it dark against the waning light, or bright as it catches the faint glister of sunlight withheld from buildings below. That portion, then, of a building which can command such advantages, that part of it which, while it attracts the attention, is seen under such happy conditions, should call forth the architect's greatest care and ingenuity to do justice to the occasion. He must make it exceedingly interesting in outline, because that outline is so clearly seen against the sky. He must make it of most beautiful proportion, since the proportions are seen, distance allowing the tower to be viewed as a whole. Wren fulfilled these requirements, and he is the only man I know in England who has fulfilled them. Let us see how he has done this. First as to the interest of outline. The least interesting outline for a roof is, as you all I hope are beginning to feel, that formed of two

straight lines sloped so as to lean one against the other at the top. We are all only too familiar with this form, a form not objectionable when forming a part of a severe piece of Gothic architecture of pure Gothic times, and excusable when used by those whose severity of life and simplicity of thought required it; but unpardonable when repeated by builders who are not Gothic, and have inherited a refinement unknown to the Goths; unpardonable in these days from an artistic point of view, but quite natural when we know how associations connected with religious feeling override and control all other influences. This simplest of roof-outlines, then, Wren uses as a painter uses his points of black: they are a foil to his colour and give a pearly quality to his grays. Here and there, as in St. Swithin's and St. Margaret Pattens, Wren gives us this simple spire as a foil to the richer outlines, and by contrast to give delicacy to chaster forms. He takes care, however, not to bring any of these hard forms near St. Paul's dome, or their too great harshness would then mar its soft effect. Again, where he does use the Gothic form he covers it with lead so that it may come dark in tone against the sky, and this he does to avoid the appearance of weakness, which, if light, this form always has,—a difficulty sometimes overcome by the Goths through giving an entasis of slight curvation to the spire about its centre, a curvature sufficient to counteract the apparent concavity of two perfectly straight and converging lines. When, however, we leave this simplest form of outline, we have before us an unlimited number of forms, every conceivable combination of ever-varying curve and arrangement of rectilinear line; there is no limit to the interest and variety we may thus give to a steeple top, the imagination need never repeat itself, never flag for want of invention, every motion of the pencil suggesting a dozen new forms and combinations of forms. A fertile imagination such as Wren's would have here a splendid opportunity of showing its plenitude and power, and the opportunity has not been lost. Without breaking the bounds of architectural propriety and dignity of form, Wren has given us in his fifty-three churches as many varieties of outline. Yet nowhere has he allowed his fancy to be fitful, never allowed mere picturesqueness to enchant him, nor the vagaries of an idle hour to mislead him. The result of calm choice of form and of severely-disciplined imagination in composition shows itself in each one of these steeples,—compositions so marvellously rich and subtle that time forbids my dwelling on the qualities of more than two or three.

The lecturer proceeded to describe the spires of St. Vedast's, Foster-lane, and St. Martin's, Ludgate-hill, and then went on to speak as follows:—

The mouldings of a building are those parts which require of the architect his greatest skill. Every building must be considered as an arrangement in light and shade of which the mouldings,—that is, the cornice, strings, and various projections,—are the telling points of light or telling points of shadow. Such, indeed, is their importance that you may test the power of any architect by the way he deals with his mouldings and observes in them the first principles of composition. The first principle to be observed in the design of light and shade, whether in painting, sculpture, or architecture is this: the lights are to be kept broad and unbroken; the shadows filled with varied detail. Hence any detail put in the broad lights must be of the tenderest, while bold carving and quick contours must relieve the shadows with a variety of reflected shade. This principle, observed in all fine sculpture and painting, has been much ignored by architects, to the detriment of architectural effect. It was never departed from by the Greeks; but since the Parthenon was built, this principle has never been observed by any architect as it was by Wren. You will find it everywhere rigidly observed by him. He never places carving on a projection, but underneath one, or within a recess, as the Greeks recessed their sculptures in the pediments, or shaded them by the peristyle. Figures he either places dark against the sky, or recessed within a niche, if on the face of a building; while a frieze under a bold cornice he relieves in its shadow by projecting brackets or carving. To obey the same principle he always gives his columns a background of shadow, very slight projecting pilasters being used on the face of the building; for a column is a moulding, and must be treated as such, while a pilaster is but an advanced portion of the surface,—a projecting face. As an example of these relative effects, compare the upper and lower tiers of the drum of St. Paul's, or the portico with the side walls. To return to the tower of St. Martin's, you will observe what small mouldings Wren uses in the shadows, what broad faces of slight projection he uses in the light. This, then, is the first principle regulating the design of each separate order of mouldings, but there is another very important principle which regulates the design of any entire group of mouldings used in a building, and it is that of their relationship. The various mouldings of a building must be so related to one another that a growing or decreasing richness must characterise them as they recede from the eye; that is, the primary mouldings must project the more as they ascend, while the secondary mouldings may project the more as they descend. It is thus in St. Martin's tower. . . . .

Before speaking of the influence Wren has upon us to-day, we must refer to the influence he had upon his pupils. It was no new thing to find a man parodied by his followers. It seems to be the lot of great men that their weaknesses shall be caught up, held before the public, and multiplied by their pupils. It was so with Michelangelo and Wren. It is so to-day with John Ruskin and Norman Shaw. Wren's pupils saw only novelty in their master's work, as in our day the disciples of Norman Shaw see only picturesqueness in his architecture. Hence such monstrosities by the pupils of Wren as St. John's Church Horselydown and St. Luke's, Old-street-road. Hence, again, the myriad suburban villas of timber and stucco by the imitators of Norman Shaw. Wren's influence upon us to-day, upon you and me as we walk day by day round and about his works, should be very great. But there are many associations which prevent the influence of art working freely upon us. The Church has been hitherto the chief patron of art, the especial patron of architecture. And it so happened that the days of the Church's widest influence were days when the Gothic spirit was dominant, the mind of the people as uncultured as it was unrefined,—hence the art, like the life of those days, was Gothic. It is not wonderful, then, that the rude art which was thus accidentally bound up with a particular set of associations, should, in an age of culture, be preferred to more refined forms. For not until we have disassociated Classic art from Paganism, and Gothic art from Christianity,—not until we have looked at each form of art as men and as artists, and not as religious sectaries,—can we fully enjoy the strong qualities that belong to each. The Greeks could not love the mountains because they imagined them the abodes of evil spirits. There are yet some Londoners who see grim gods and goddesses peer from out of every Classic cornice. But it is not so with all of us here, I hope. We know that whatever a man does well, that *is* well. Here in these steeples all is thought out well, and carried out well. We get here no stolen art, no showy construction, no mean or hasty conception. All that is done is the result of severely-trained skill on the part of a man endowed with a rare artistic sensibility. And Wren did so much for his age and for us, because, as all great men before him, he was intensely receptive, and free as far as could be from bias. He was slave to no particular style; he took what seemed to him best from Classic, Gothic, and Moorish art, knowing that the best in art, whatever its source, must necessarily harmonise, just as in the world of fact the most accurate most agree. . . . .

These monuments of England's greatest skill in architecture,—these speaking piles that tell of England's birth into the new world that looks for law, and loves all learning,—these children of the most perfect mother-church England possesses, are this day imperilled by a threatened destruction. The Church threatens to raze to the ground these her fairest fabrics, and sell their sites for pieces of silver. She cares no longer for them: their beauty is nought to her, their history nought. They are but worth the price of their sites in the market. Londoners, and, my English friends, care you not for these monuments of your past,—care you not to claim what is yours by legitimate inheritance? Will you not stir yourselves to save these buildings, which are the glory of London architecture, the boast of her city, and the members of her cathedral? Will you not claim them as national property, and guard them as such? Will you let the Church, because supported by State patronage, destroy as she will? No; it is time all historic monuments are put under public control, as is done in France, and thus preserved to the people; for the people do yet, and will yet more, care for them. But surely to our children it will not seem strange that the age which designed the New Law Courts should have destroyed Wren's City churches. Nor that when the Griffin and the Goth ruled the roast, it fared ill with those monuments whose glory was in their refinement and in their learning.

THE COMPLETION OF THE WELLINGTON MONUMENT IN ST. PAUL'S CATHEDRAL.

Our contemporaries are usefully calling attention to the state of the Wellington Monument designed and carried out by the late Alfred Stevens, in St. Paul's Cathedral, and we may at length confidently renew the expression of our hopes that the work of completing this monument, more or less in accordance with the artist's intentions, will be shortly proceeded with. It seems to be the inevitable condition of artistic work undertaken through official channels that a penny wisdom should supervene, and mar by penury what afterwards has, if possible, to be righted at considerable additional cost. Fortunately, in the present instance, the expense is not alarming; and both the First Commissioner of Works and his able permanent secretary, Mr. Mitford, have shown their resolution not to shrink from their responsibilities, and have proved their ability to successfully cope with and counteract the mistakes of their predecessors. Whatever may have been the misunderstandings which arose between the late Alfred Stevens and his employers, it is a matter of history that his work was very much hampered and he himself greatly harassed by the unsympathetic treatment emanating from Mr. Ayrton and his subjected secretary, Mr. George Russell. Both gentlemen, in course of time, had to make way for others to whom the duty of superintending public works is more congenial, and by whom it is not regarded merely as a means of snubbing artists and architects, and thwarting the projects entrusted to them to shape.

Alfred Stevens designed his monument to be placed, according to the published conditions, under one of the archways of the nave,—in a position where the clearly-defined and simple proportions of archway and supports should effectively harmonise with the varying outline of his monumental canopy with its splendid groups, one on each side, culminating in an equestrian effigy of the Duke of Wellington. But his estimates for the work were rigorously reduced, and his resources thereby cramped and crippled, through the malign influence of official red-tape and his own want of business qualities. The conditions, which virtually gave birth to Stevens's idea and composition, were altered, not in compliance with any artistic opinion of weight, but merely out of deference to the objections of an ecclesiastical dignitary. From beneath the arch of the nave the site of the proposed monument was transferred to an ill-lighted recessed chapel in the west of the south aisle. The circumstances of this transfer were made worse by the fact that this chapel or chamber was divided from the body of the cathedral by a substantial wooden screen, carved by Grinling Gibbons. The incomplete monument erected in the rear of this screen was no sooner opened to public inspection than it was at once evident that both Alfred Stevens's and Grinling Gibbons's works were injuriously affected. It seemed that one or other must give way. Either the monument should be placed in the site originally proposed under the archway, or the wooden screen should be removed. The removal of the screen would have improved the view of the monument in its cramped position. But, then, the injustice of removing the screen was proclaimed. No equestrian effigy was permitted to be placed upon the summit of the monument, although without it the artist's work was avowedly incomplete. The low ceiling of the chamber seemed to protest against the equestrian effigy. Thus an imbroglio of cross interests was deliberately connived at and created by an extraordinary pertinacity of wilful misenterprise. Poor Stevens was, in fact, driven to his grave

by the force of officially-concocted events, and he succumbed at length to their influence. He was no man of the world to be proof against short-sighted, bureaucratic energy.

It is not a question of condoning these malfeasances. Officialism was in the palmy days of its inartistic obtuseness triumphant. Others now hold the reins, and it is to their sense of artistic decorum, apart from any sentimental regard for the victim of a former *régime*, that the public look for the completion, at least, of the Wellington Monument. It is for another phase of officialism to again rise supreme.

Mr. James Fergusson, F.R.S., stated in a letter to the *Times* that an original equestrian statue, in plaster of Paris, by Stevens, is to be found in the vaults of St. Paul's; and he has pointed out how it may experimentally be placed on the crown of the canopy to the monument. It should, of course, be fairly coloured like bronze so that the effect may be properly judged. Although against a spirit of the times, the removal of Grinling Gibbons's screen cannot now well be avoided. It could be placed upon the corresponding side of the cathedral or elsewhere, where it would still remain as part of the church furniture. It is fortunately not so designed as to lose importance or merit by removal. The screen thus removed, the monument will seem, at any rate, less than it does at present to be confined in a chamber too small for it. The whole of the lower portion will be in view; and the dignity of its proportions generally will assert themselves. But even with these easily-carried out alterations, it will always be a matter for regret that the monument does not stand upon the site for which, and in relation to the surroundings of which, it was designed in the first instance. It would obviously be asking for, and expecting, too much to press for the reconstruction and completion of the monument upon its first intended site.

The account which Mr. Shaw-Lefevre gave of the projects connected with the new buildings for the War and Admiralty Departments, in a past number of the *Nineteenth Century*, however we may have differed with him on some points, was prefaced by a temperate but none the less fully appreciative sketch of some few of the architectural monuments and buildings adorning London, which we are bound to say leaves no room to doubt that the present First Commissioner of Public Works has a sympathy with the higher aspects of his functions as the controller of public constructions. The only stumbling-block in the correction of flagrant mistake, made by predecessors, is the difficulty which it may be fancied besets him in convincing the Treasury of the necessity of the measures he may now have to propose. Sufficient interest has already been exhibited by Parliament to enable him to prove the futility of any temporary obstruction which could be raised by the inner circle of Treasury clerks. The Chancellor of the Exchequer may probably be relied upon, when the question comes before him, to give a ready acquiescence in the propriety of submitting a proposition to Parliament to authorise the grant of a thousandth part of his surplus this year for the purposes of the Wellington Monument in St. Paul's. From the Dean and Chapter no opposition can be anticipated. However much they may hesitate in proceeding with the scheme for decorating the interior of St. Paul's, it is pretty well known that they are alive to the injustice done to what is destined to become one of the glories of the cathedral, and if the power to extinguish this injustice were vested solely in them they would at once use it.

Altogether, the present circumstances are as favourable as public opinion can desire. And it is with no overweening assurance that we rely upon them to evolve a result which has long been urged for accomplishment.

Kensington Town-hall.—On the recommendation of the Special Purposes Committee of the Kensington Vestry, it was agreed at the last meeting of the Vestry that a sum not exceeding 1,500*l.* should be expended in painting and finishing the hall, ante-room, large room, staircase, corridors, committee-room, and council-chamber. In respect of recoupment, the Finance Committee reported that the total sum received for the hire of rooms in the Town-hall for the half-year ending on the 25th ult., was 1,732*l.* 6s. 3d.

THE MANCHESTER SHIP CANAL BILL.

THE Standing Orders Committee of the House of Lords, at an adjourned meeting on the 13th instant, waived the objections made against the introduction of this Bill, which will now immediately be brought before the House of Commons Committee, having been already read a second time in that House.

The objection which Mr. Frere, the examiner for Standing Orders, held to be fatal to the introduction of the measure, appears to have arisen entirely from the good faith of the promoters. The estuary of the Mersey, between Runcorn and the bar, is so full of shifting sands that a survey is practically useless, as before it can be reduced to paper the channel may have entirely altered. Such, before the execution of recent works, was also the case with the estuary of the Seine. Under these circumstances the promoters of the Manchester Canal judged that it would be the best course to deposit no definite plan for the estuary, but to rely on the arrangements which were to be made with the conservators of the river and the Board of Trade, now exercising the functions formerly belonging to the Admiralty, for the careful determination of this portion of the navigable channel. In so doing, however, the promoters were unable to satisfy the examiner under Clause 2 A of Standing Orders, who reported accordingly. The Standing Orders Committee of the House of Commons, however, when the case was brought before them, unanimously gave permission to proceed with the Bill for the portion of the works from Manchester to Runcorn, and after a delay, increased by the intervention of the Easter holidays, the House of Lords Committee, by a majority of 10 to 6, has now taken the same course.

The promoters will now have the opportunity of bringing their case before Parliament. The exhaustive evidence with which they are prepared is of a nature that, if it may be to some extent anticipated by those who during the past year have been studying the subject of economic transport, will no doubt be a surprise to the public. The intense interest that is taken in the subject by the manufacturing districts and the centres of commerce has been attested by such petitions as were never before presented in favour of any public work.

MR. TINWORTH'S EXHIBITION.

THE collection of works in terra-cotta by Mr. Tinworth, which is open in the ground-floor rooms at 9, Conduit-street, contains some very interesting and suggestive work, not, however, showing any features different from those by which the artist's productions are already familiar to visitors at the Royal Academy. There are two types of work,—alto-reliefs of tolerably large size in uncoloured clay, and small studies, also alto-reliefs (in which phase we include "round" figures placed against a background) in coloured Doulton ware. Some of these small studies, uncoloured, with figures about 2 in. or 3 in. high, were, as far as we remember, the first things Mr. Tinworth publicly exhibited at the Academy, and they then attracted favourable comment by their naïve character and spirited action, which we from the first recognised, regarding them as promising a good deal more. At the same time we must say that a very large number of these miniature figures have been produced in plain and coloured ware, and that, once the novelty of effect of this kind of spirited miniature modelling is worn off, it becomes evident that there is a great deal of repetition in it, and that figures on so small a scale may be produced in great numbers, and have their attraction, without fulfilling any of the higher demands of modelling art. The heads in these little terra-cotta figures are in many cases hardly modelled at all, they hardly can be; they are pellets of clay with two holes dug in them for eyes, and a certain expression imparted to them, which is not very difficult on that scale, and with the help of the colours and glaze of the Doulton ware process; and many of the heads are too small even for these small figures. This habit of miniature sketching in clay, rather than modelling, appears to have been what Mr. Tinworth began with, and this perhaps explains why in the larger subjects which he has lately taken up there is still a good deal of the influence of the habit of sketching in small observable. There are four or five bas-reliefs, studies from life, on the same scale as the larger works, which are delicately and carefully modelled; but in the alto-reliefs relating to the history of the Passion, of which there are several, and which are the principal works in the collection, there is a good deal of effective, but certainly somewhat coarse, modelling of the faces, which suggests the idea of miniature work enlarged, and which will not bear comparison with really high-class sculptor's work. On the other hand, the spirit and originality of conception of the historic scenes are remarkable, and we may well wish that there were more of such a spirit to be found among the somewhat tame and respectable conceptions of too large a proportion of our contemporary sculptors. There is nothing in Mr. Tinworth's conception of the scenes before the Crucifixion in the least recalling the "Bible-picture" style of regarding such subjects. They are treated as if they had happened yesterday, and had taken place among people whose lives we knew and whose ways were familiar to us. The by-play in some of the scenes, among the subordinate figures, is very dramatic and true to life; one point in the new one, the release of Barabbas, may be mentioned, where the "robber," a man of most forbidding countenance, is handed out of the door between two of the guards, who evidently enjoy the joke of turning such a rascal loose again, and seem to be jocosely congratulating him on his good luck. These and many other points may be thoroughly enjoyed, but the higher phases of feeling, in what should be the more serious and pathetic figures, we do not find so well realised, and the spirit and originality of the whole cannot blind one to the fact that a good deal of this, clever as it is, is rather rough work in comparison with the claims apparently made for it. Not to say this would be unfair to others who maintain a higher standard of technique, and we cannot help thinking that an attempt has been made to push public interest in the exhibition a little beyond the point which, without extraneous help, it would have naturally attained.

EDINBURGH BUILDING NOTES.

ALTHOUGH house property continues to be a drug in the market, and has fallen one-fourth in value from what it would have brought about three years ago, yet, in the suburbs, villas and tenements continue to be erected. This may arise from the circumstance that builders have taken ground upon which they were bound, within a given period, to erect the specified description of dwellings, and that they are encouraged to speculate by the fall in price both of labour and material.

Of public buildings in progress we find that the new Lyceum Theatre is being pushed on vigorously. The materials used are common brick, to be encased in cement, a mode of construction necessitated by the requirements of the case and the amount of the funds at command. This, among other reasons, may have been the reason why Mr. Rowand Anderson, who is a purist as regards truthfulness of construction, may have declined to continue to act as architect for the theatre. Mr. Anderson's Conservative Club has now been roofed in with red tiles,—the first instance of the kind in the new town,—and carvers are engaged in putting the finishing touches to the elevation.

The new United Presbyterian Church at Viewforth is approaching completion, and the spire is already a conspicuous object, and, from its elevated position, will, when completed, form a marked feature in the skyline to the south-west of the city. The Chalmers Territorial Church at West Point is ready for roofing-in, and the tower is built to the point at which the spire commences. This church possesses a marked individuality, and is in good keeping with this ancient locality. The spire will not be so conspicuous as that at Viewforth, but will be seen to advantage from the Castle esplanade. St. Paul's Church, Carrubber's Close, has been completed, so far as at present estimated for, the nave not having been extended to its full length. The nave is in one span, with a high-pitched open-timbered roof, and is lighted by plain single lancets. The chancel is of two bays, of the same height as the nave, from which it is separated by the chancel arch, upon which there is erected a turret fitted for three bells. Under the chancel, and extending partially into the nave, there is a hall which, owing to the slope of the ground, is lofty and well

lighted. The building is simple and unpretentious, but from its height, and the effective treatment of the three deeply-moulded lancets which light the chancel towards Jeffrey-street, it forms a decided acquisition to this locality, which is conspicuous to visitors on their arrival at the Waverley Station.

The Governors of Heriot's Hospital propose to devote the sum of 12,000*l.* from the trust funds of that institution towards the extension of the School of Arts, and forming it into a Technical College. In order to carry out this scheme it will be necessary to purchase the Phrenological Museum, which is situated immediately to the west of the School of Arts, and to acquire the vacant ground which forms the westernmost site on the line of Chambers-street.

There is a hitch regarding the completion of the Museum of Science and Art, and although an instalment of 5,000*l.* was voted for the purpose last year, nothing has been yet done. It is expected, however, that the matter will be arranged satisfactorily, and operations begun in due course. A motion has been made for an addition to the Trades Maiden Hospital at Rill Bank, which would afford accommodation for 350 pupils. Mr. H. J. Blanc has prepared plans for the proposed addition.

Baillie Cranston's proposal for the formation of a new thoroughfare through the site of the old Infirmary does not seem to be warmly supported, or to meet with anything like general approval. It is contended that the formation of a viaduct would involve much expense, much more than any prospective advantage would justify, and it has been urged that if an open place were formed in front of the University, it would meet all the requirements of the case. The matter is still, however, under consideration, and it is not likely that the present energetic Lord Provost will allow the opportunity to slip of adding to the amenity of the city if a favourable solution can be arrived at.

His lordship has displayed remarkable energy in promoting the completion of the new Medical Schools. The sum required for this purpose is about 100,000*l.*, and towards that amount upwards of 30*l.* has been subscribed within a short time. Considerable alterations are to be made upon the interior of the old University buildings, which are to be carried out under the supervision of Mr. Robert Morham, Architect and City Superintendent. A sum of money was, some years ago, bequeathed for the erection of the dome designed by Adams for this building, but there are no signs of its being proceeded with.

The Parcels-post comes into operation in July next, and in connexion therewith arrangements are in progress at the different Scottish post offices for providing the necessary accommodation for this new branch of the service. In large towns where the buildings are the property of the Crown the requisite accommodation will, of course, be provided by the Crown, but as regards the offices in smaller towns where the post-office is carried on in the private properties of the local post-masters, the matter will be attended to by the district surveyors. In Edinburgh plans have been sanctioned for the construction of a considerable addition to the Post-office to the south of the present building. This addition is to be carried on pillars from the railway level up to the street floor, and will be connected with the Post-office by means of a gangway run through one of the existing windows. The parcels will be raised from or lowered to the railway platform by means of a hydraulic lift, which will also be available for the ordinary mails. The public posting-office for parcels is being formed out of a large room at present used for storage, and the entrance will be by the present west door on the North Bridge. We are informed that this addition to the Post-office buildings will not affect the elevation as seen from the south. It is to be hoped that this is the case, and that, in the exigency of the moment, a structure may not be raised which in the future will prove an eyesore.

At a meeting recently held, it was resolved,—

"That the meeting, recognising the propriety of a memorial to the late Dr. William Robertson, of New Greyfriars, resolve that the most suitable form for such a memorial is the erection of new mission buildings in the Grassmarket, to take the place of the existing Working Men's Church.

The expense of suitable buildings having been ascertained to be about 3,000*l.*, exclusive of the site already provided, this meeting resolved to issue an appeal for subscriptions to all interested, with the view of raising this sum."

Dr. Robertson was distinguished for his efforts in the formation of Industrial Schools and Mission Churches for the poor.

THE "WAITING GAME" WITH RESPECT TO MURAL PAINTING.

Sir,—The public are indebted,—immensely indebted,—to Mr. Cavendish Bentinck's letter in the *Builder* of last week, which reveals, and so concisely expresses, the high-minded policy of the Legislature with reference to mural painting as the "Waiting Game." From that letter we learn that the Legislature will wait till an artist leaps, fully armed, fully endowed, from the abysm of Time, upon whom, without the slightest fear of committing itself, it may spend a few hundreds of pounds in safety. Yet, strange to say, with a glaring inconsistency, it, at the same time, annually throws away thousands upon thousands of "good money after bad," in subsidising art-school upon art-school in the vain endeavour to make its ideal artist by a means that was never thought of, much less adopted, in the great art times.

To what end are the public to be dinned with lectures upon the history of art? Does the history of art teach them that Greece and Italy played a "waiting game" for artistic genius in the sense in which Mr. Bentinck reveals that England does? No; they employed the best artists they had, knowing full well, by common sense, that State encouragemant and progressive experience would bring them better. Thus it is that we see in the British Museum the monumental remains of the imperfect, crude, art of the archaic periods, in juxtaposition with the crowning works of Phidias. Thus it is, too, that we see preserved in Italy the imperfect efforts of the earlier masters, from Cimabüé to Giotto, co-existing with the greater works of Raffaelle and Michelangelo. The legislators of Greece and of Italy understood the law of progressive development, knew the right means of promoting progress, and never begrudged their gold for the purpose. They did not play a mean and contemptible "waiting game."

With regard to the contention of oil *versus* fresco, &c., we have only to say that, if a painter is fit to paint an oil picture for a mural decoration, he has also the power to paint a fresco. The simple question of an artist's fitness for such an undertaking depends upon whether he understands the principles of the "grand style" of design or does not. The merits of oil as a method of mural decoration were disposed of by the Royal Commission of the Fine Arts in the following words,—words which had immediate reference to the proper method to be used in the decoration of the Palace at Westminster:—

"The rich and varied effects which characterise oil-painting are ill applicable to a severe style of architecture. The brightness of tints, powerful relief, the finish of details are resources easily abused, especially when the artist has long been accustomed to them. Such means require, on the contrary, to be subdued and simplified, so as not to transgress the limits of a well-understood style of decoration. To these objections it may be added that oil-painting applied to walls has no principle of durability or solidity, especially when employed upon large surfaces." "But, even if we could succeed in rendering oil-paintings on walls durable, it would be impossible to give them those qualities fitted for architectonic decoration which specially belong to fresco, and which caused that method to be preferred by all the great masters of the Italian schools." And again: "The tendency of large surfaces of canvas to bulge, and thus to impair both the apparent solidity of the architecture and the effect of the painting, is a sufficiently obvious reason for its abandonment." "The absurdity of painting in oil upon walls into the composition of which lime has entered, is so evident that it can scarcely be attempted again," &c.

It may be quite true that oil-painting was extensively used in Venice for mural decoration, but this was an exception to the general practice in Italy. There may have been several reasons for this departure, but the chief was the fact that the practice of oil-painting made the *descensus Averni* of art easier. Venetian mural painting was not decorative art in the highest sense. With all its wondrous facility and charms of colour, it was lower in the scale of intellectual effort than the greater works in the Sistine and in the halls of the Vatican. Venetian art was, in the main, theatrical, spectacular. It was but one of the properties in Venetian pageantry and splendour. Art had overleaped its true mark and fallen on the other side. There is art and there is art; and it is in the want of power to discriminate between this and that that we recognise the superficiality of the amateur critic. Meter.

A VISIT TO THE METROPOLITAN RAILWAY COMPANY'S LOCOMOTIVE AND CARRIAGE WORKS AT NEASDEN.

During the last three years extensive new locomotive and carriage works have been in course of erection at Neasden, for the Metropolitan Railway Company. These large works, which have already been noticed in the *Builder*, have just been finally completed, and were fully opened for the various departments of locomotive and carriage manufacture the week after Easter. The works, which occupy an area of between seven and eight acres, are situated on the north-east side of the company's line to Harrow, a short distance beyond the Kingsbury-Neasden Station, the approaches to the works at this point diverging from the main line of railway by a network of metals. The buildings, consisting of nine blocks, are erected on each side of a central roadway, 60 ft. in width, and stretching to a length of half a mile in extent, along which four lines of rails are laid down. The buildings on the south-west side of this roadway comprise five blocks, at the head of which is the block containing the general engineer's offices. This building is 93 ft. in length and 40 ft. in width, and contains two lofty floors. Internally it is fitted with every convenience for the business of this department. On the ground-floor is the office of the principal engineer, together with the offices of the corresponding clerks, store clerks, storekeeper, and waiting-room. The upper floor contains the drawing-offices, the accountant's offices, the offices of the assistant-engineer, and the plan-room, a spacious apartment, 50 ft. by 25 ft. Adjoining the engineer's offices is the block containing the builders' workshops, two stories in height, and 205 ft. long by 42 ft. wide. Next come the permanent way, signals, and coppersmiths' shops, a building of one story, 22 ft. in height, 325 ft. in length, and 50 ft. in width. An adjoining block, consisting of two stories, 205 ft. long and 42 ft. wide, contains the stores. This building is very substantially erected, and of great strength. The walls are 4 ft. in thickness, and the upper floor rests upon strong iron girders, supported from the ground-floor by iron columns. At the extreme west end of the central roadway, in continuation of the several blocks on the south-west side already named, are the gasworks. These buildings consist of two blocks, each 78 ft. in length and 30 ft. in width, one of which is already completed and in working order. It should be observed that these particular works are not for the purpose of supplying gas to the locomotive and carriage works themselves, but for furnishing the portable gas to the company's carriages on the several portions of the line. The buildings on the north-east side of the central roadway comprise a large timber and drying-shed; and adjoining is the steam saw-mill, 134 ft. by 54 ft. The machinery is worked by steam power under the floor. The carriage repairing and painting shops are 164 ft. long by 163 ft. wide, and are in two blocks, each block having ten lines of rails, capable of holding thirty coaches. Adjoining these, again, are the locomotive shops, 221 ft. by 194 ft. They comprise the erecting-shop, the fitting and turner's shop, the blacksmith's shop, and the boiler-maker's shop. The erecting-shop, which consists of two stories, is very strongly built, the walls being 4 ft. in thickness. There are ten roads in it for engines, the number of engines which it will accommodate being ten. Immediately adjoining the locomotive shops is the boiler-house, 59 ft. long by 24 ft. wide, and having a chimney-shaft 80 ft. in height.

The whole of the works were designed by Mr. J. Tomlinson, the company's engineer, the first portion being carried out by Mr. Garlick, of the Saltley Works, Birmingham, and the second portion by Messrs. B. N. Smith & Co., also of Birmingham. Upwards of 800 tons of iron work have been used in the construction of the works, 350 tons of which, for the first contract, were supplied by the Horsley Iron Company, of Tipton, Staffordshire, and the remaining portion by Messrs. Stanley Hall & Co., of Queen Victoria-street, whose contract amounted to 4,000*l.* Mr. Clark has acted as clerk of the works during the progress of their con-

struction. The total cost of the buildings was upwards of 60,000*l.*, but in addition the company have expended 40,000*l.* in the fittings and machinery, bringing the entire cost of the works up to 100,000*l.*

It remains to be added that a still further large expenditure has been incurred in providing for the residential accommodation of the artisans and others employed at the works. The railway company are the owners of an estate of 200 acres in extent, situated in the immediate neighbourhood of the works, and of which the site upon which they stand forms a part. Upon a portion of this estate, about half a mile from the works, the company have just erected 100 workmen's cottages for those employed at the carriage works, together with ten three-story houses and provision shops. The cost of these buildings was 30,000*l.*, Mr. Jones, of Gloucester being the contractor.

THE LATE GREAT FIRE IN WOOD STREET.

EXTENSIVE NEW BUILDING WORKS.

THE restoration of several of the extensive warehouses and other premises in Wood-street, Philip-lane, London-wall, and Addle-street, which were destroyed by the great fire, is now in progress. Amongst the greatest sufferers were Messrs. Rylands & Sons, and Messrs. Foster, Porter, & Co., and the premises of these firms are at present in course of re-erection. Messrs. Rylands & Sons' establishment covered an exceptionally large area, stretching eastward from Wood-street to Philip-lane, with a long frontage to London-wall. The portion of the property now in course of reconstruction is that at the north end of Philip-lane. The external walls up to the stone cornice and window-heads of the first floor have been found to be comparatively uninjured, with the exception of one part, where new stonework is being built into the window arches. The rest of the elevation, consisting of three lofty floors, is being entirely rebuilt, and has already been carried up beyond the second floor. The elevation is faced with red brick and Dumfries stone dressings, each floor having three-light mullion windows. Internally, the building is being completely reconstructed from the basement. Messrs. J. & J. Belcher are the architects, and Mr. Braid, of Chelsea, is the contractor.

The ruins of the adjoining block in Philip-lane, also belonging to Messrs. Rylands & Son, which consists of five floors, still remain shored up, but it is stated that the rebuilding of this block will immediately follow upon the buildings now in progress.

The Cheshire Cheese Tavern, at the corner of Philip-lane and Addle-street, which, amongst other property, suffered by the fire, has just been rebuilt.

The property destroyed by the fire, having its frontage to Wood-street, the whole of which belongs to Messrs. Foster, Porter, & Co., and Messrs. Rylands & Sons, is likewise about to be rebuilt. The rebuilding of this portion of the property has been delayed in consequence of negotiations with the Commissioners of Sewers respecting the widening of Wood-street. Terms have now been agreed upon, under which it is understood that this part of Wood-street will be widened to the extent of 5 ft., and the erection of the new buildings will be at once commenced. Those for Messrs. Foster, Porter, & Co. extend from the corner of Addle-street a considerable distance along Wood-street, having a frontage to that thoroughfare upwards of 100 ft. in length, where Messrs. Rylands & Sons' frontage commences. As regards Messrs. Foster, Porter, & Co.'s premises, the old materials were cleared away shortly after the fire, and this week the preliminary work of excavations and getting-in the foundations for the intended new buildings has been commenced, Mr. W. Brass, of Old-street, being the contractor. This portion of the work is expected to be completed ready to receive the superstructure in about six weeks. Messrs. Ford & Hesketh are the architects.

With respect to the adjoining property, for Messrs. Rylands & Sons, some weeks must necessarily elapse before the commencement of the new buildings. The *débris*, walls, and old materials are now in course of removal; but there yet remains much to clear away before the foundations for the new buildings can be proceeded with.

MEXICAN ANTIQUITIES.

AT the village of Mitla, which lies between twenty and thirty miles from Oajaca on the tableland of Mixtecapan in Mexico, some important archæological discoveries have recently been made which are calculated to throw fresh light upon the ancient native architecture of America. An extensive series of remains have been found of ancient palaces and tombs, the former of which are remarkable for their resemblance in one most essential feature to the architecture of ancient Greece and Rome. These Mexican palaces all present the same form of construction,—that of lines of columns supporting a roof. This style is believed to be peculiar, so far as concerns America, to that portion of Mexico where the remains have been found. The ruins have recently been examined by M. Emil Herbruger, who has taken a number of photographs of them. He was not permitted, however, to carry out any excavations. He states that the principal hall has six columns, and is 37 mètres long and 7 mètres wide. Every column is 3½ mètres in height, and is of solid stone. The tombs are all of the same dimensions, and are in shape like the capital letter **T**. The walls are adorned with stone mosaics. The floor lies at a depth of 1 mètre from the surface, and at the entrance stands a monolith column. There are several columns 3 mètres high and 1½ mètre in diameter. Each tomb is 5 mètres in length and 1½ mètre in width. At first M. Herbruger and his Indian servants used the tombs as sleeping-rooms, but the natives soon refused to sleep in them as they said they were visited by ghosts at night. The explorer intends shortly to publish the result of his researches in detail, and to accompany the work with illustrations derived from the photographs he took of the ruins.

FRENCH SCIENTIFIC EXPEDITIONS.

THE French Minister of Education proposes that a grant of 115,000 francs (4,600*l.* sterling) shall be made this year for the despatch of a scientific mission to Tunis. He will also propose another vote of 129,000 francs (or 5,160*l.* sterling) for the purpose of converting the present temporary scientific mission to Egypt into a permanent arrangement, and then to reconstruct it under the title of the "Institute for Oriental Archæology." The Tunis expedition, which it is contemplated to maintain for three or four years, will devote itself partly to archæological researches in that country and partly to botanical and geological investigations. The members of the mission will consist of a number of young savants, who will be placed under the general supervision and direction of the "Institut de France."

THE CAPITAL OF ENGLISH RAILWAYS.

THE total capital of the twelve great English railways up to the close of the year 1882 amounted to 505,030,000*l.*, as against 492,833,000*l.* at the close of the year 1881, showing that upwards of twelve millions had been added to the capital of these several companies during the intervening twelve months, representing a considerable increase of works and increased mileage during that period. The capital of the London and North-Western Company at the end of the year which has just closed was 86,817,000*l.* The Midland company is next in amount, with a capital of 70,747,000*l.* Then comes the Great Western Company, whose capital is 68,143,000*l.* The North-Eastern Company follows with a capital of 56,170,000*l.*; the Great Eastern, 37,332,000*l.*; the Lancashire and Yorkshire, 35,084,000*l.*; the Great Northern, 33,951,000*l.*; the Manchester, Sheffield, and Lincolnshire, 24,917,000*l.*; the London and South-Western, 24,171,000*l.*; the London, Chatham, and Dover, 23,735,000*l.*; the London, Brighton, and South Coast, 22,610,000*l.*; and the South-Eastern, 21,353,000*l.* The relative increase of capital of the different companies during the year showed that of the London and North-Western Company to be 2,016,000*l.*; the Lancashire and Yorkshire, 1,768,000*l.*; the Great Eastern, 1,664,000*l.*; the Great Northern, 1,304,000*l.*; the Great Western, 1,061,000*l.*; the London and Brighton, 664,000*l.*; the Manchester, Sheffield, and Lincolnshire, 600,000*l.*; the North-Eastern, 535,000*l.*; the South-Eastern, 578,000*l.*; and the London, Chatham, and Dover, 278,000*l.* The present aggregate length of these several railways is 11,086 miles, divided as follows:—Great Western, 2,241 miles; London and North-Western, 1,755 miles; North-Eastern, 1,508 miles; Midland, 1,260 miles; Great Northern, 901 miles; Great Eastern, 873 miles; London and South-Western, 797 miles; Lancashire and Yorkshire, 495 miles; London, Brighton, and South Coast, 432 miles; South-Eastern, 382 miles; Manchester, Sheffield, and Lincolnshire, 290 miles; and London, Chatham, and Dover, 154 miles.

THE BRADFORD CHIMNEY DISASTER.

LIEUT.-COL. SEDDON, R.E., has sent in his report to the Home Secretary on the causes of the fall of the Newlands Mill Chimney, Bradford. The report, which is printed *in extenso* in the *Bradford Observer* of the 14th inst., entirely confirms the conclusions at which we arrived, and to which we gave expression, at the termination of the inquest on the bodies of the fifty-four unfortunate operatives who were killed by the disaster.* After describing in detail the foundations and construction of the chimney, and the attempt to straighten it, Col. Seddon recounts the circumstances attending the subsequent history and fall of the chimney, and in conclusion makes the following remarks on the causes of its failure:—

"The failure of this chimney was undoubtedly due to the damage done to the structure in the operation of straightening. The only wonder is that it survived that operation for twenty years. One cut would have been serious enough, but the second was fatal to the slice of masonry between the two cuts. The weight of the shaft above, at least 2,200 tons, giving a uniform pressure of 7 tons per foot super., rocking in every wind on this weak spot, slowly but surely disintegrated the masonry; the loose rubble backing, in yielding, threw the weight on the damaged outer casing and the inner brick lining, which latter stood on two independent single-brick cylinders, 30 ft. high, the inner one of firebrick exposed to all the heat of the ascending gases, and the other of red brick laid without any stretchers, at any rate for the greater part of its height. The leaning of a chimney and cracks in the shaft would not be sufficient of themselves to cause any apprehensions of immediate danger in a district where the majority of the chimneys are more or less cracked and many are considerably out of plumb, but, as it happened, those who examined this chimney were misled by a knowledge of its previous history into thinking that the rapid development of the cracks and bulges was merely due to the vibration of the chimney in the wind loosening the old portions of the outer casing which had been built up after the straightening without being tied into the backing, and which had again become loose and undergone similar repairs about sixteen years before. The chimney was in reality daily resting more and more on its outer skin, to remove which as decided was no doubt a fatal error. Before, however, this could be done, piece after piece of the outer shell was pinched out, and the rocking of the shaft in the wind on the Wednesday night and Thursday morning completed the destruction of the chimney. A heavy gust came, and the damaged backing, having lost the little tie previously afforded by the outer casing, burst out, and all was over. It is easy to be wise after gaining experience, but the history of this chimney is so exceptional that I doubt if any one would have anticipated any immediate danger. The cutting-straight of brick chimneys is an operation of common occurrence, but I am not aware of any stone chimney, except this one and another close by, belonging to Messrs. Sugden & Briggs's works, having been so treated. I unhesitatingly say that it was an operation which ought never to have been performed. The design of the chimney was radically bad in almost every particular, and, although the actual cause of its falling when it did was the damage done to it in straightening, I feel certain that even without that operation it could only have had a limited life, and unless taken down in time, it would certainly have fallen some day or other. The system of constructing chimneys or any other walls to carry heavy weights, of three or four different parts, each too weak in itself, and yet so put together that they cannot possibly work in unison, cannot be too strongly condemned; whilst the necessity in large chimneys for the firebrick lining being perfectly independent of the structural part of the shaft is now universally recognised. The fall of this chimney ought to be a warning in future to any one who, dispensing with proper professional advice, takes upon himself the responsibility of carrying out works upon the safety of which the lives of so many may depend. Here we have a self-constituted architect and engineer, with a thoroughly bad design to begin with, for an 85-yard chimney, in which the uniformly-distri-

* See *Builder*, p. 163, *ante*.

buted pressure at the base of the shaft would amount to over nine tons per foot super., first deciding, after getting about 10 yards above the ground line, to carry the shaft up to 100 yards instead of 85 yards, with the idea of making it look lighter (this was abandoned after the failure at 70 yards); and next weakening the structure considerably by inserting recessed panels all the way up to ornament the face, and that in spite of the advice of his builder to the contrary. It may not be out of place here to point out that there is a limit to the useful height of a chimney as regards draught; whilst the increase of draught due to increase of height is frequently more than counterbalanced by the losses due to sudden changes of direction in the underground flues, and their want of gradual easing into the chimney, as well as by the unnecessary admission of cold air into the interior of the chimney. Looking to the possibility of there being other factory chimneys in a dangerous condition, as well as to the evidence of the Bradford Borough Surveyor as to the difficulty of getting to know of such cases, whilst he has no power to inspect such structures without some grounds to go upon, it is worthy of consideration whether the factory inspectors might not be empowered to make inquiries on this subject, and to report any cases which may come to their knowledge."

We have received from Mr. John Waugh, C.E., of Bradford, an interesting and concisely-written report on the subject, illustrated with plans and sections. Mr. Waugh, it will be remembered, assisted Colonel Seddon in his investigations. Mr. Waugh's report is addressed to the Directors of the Yorkshire Boiler Insurance and Steam Users' Company, to whom he is engineer, and although primarily written for the benefit of steam-users (all steam-boiler owners being more or less interested in chimney construction), it is likely to prove useful and instructive to a wider circle of readers. Mr. Waugh, whose report is in agreement with that presented by Colonel Seddon, concludes by making the suggestion that all "suspicious-looking" chimneys should be inspected *internally* once in every two years. Had the Bradford chimney been so inspected, say a twelvemonth before its fall, its internal condition, as revealed after its fall, "would have put another construction upon the mistaken opinion as to the cause of the cracks in the outside casing,—an opinion only based upon outside inspection, and prevailing, unfortunately, even up to the day of the falling of the chimney."

ST. PAUL'S SCHOOL, KENSINGTON.

VISIT OF THE ARCHITECTURAL ASSOCIATION.

It does not seem to be very widely known that St. Paul's School, founded by Dean Colet in 1512, will, in the course of a year or two, migrate from its confined quarters in St. Paul's Churchyard to West Kensington, where a large and important building, on the south side of the Hammersmith-road, has been for some time in progress of erection for the reception of the scholars. This building (of which we have already published a view,* together with plans of the three principal floors) was visited on Saturday last by a party of members of the Architectural Association, by permission of the architect, Mr. Waterhouse, R.A. The visitors were conducted over the works by Mr. Richards, the clerk of works. The building has made good progress, the contractors being Messrs. J. Parnell & Son, of Rugby. Externally, the building is of red Suffolk bricks and red terra-cotta, the roofs being covered with brindled tiles. The terra-cotta has been made by Messrs. Doulton & Co., of Lambeth, each piece being made hollow, and the interior filled with a concrete composed of 10 of fine gravel to 1 of cement, to give solidity to the whole mass. This concrete is found to be sufficiently strong for the purpose, while not liable to expand to such an extent as to crack the terra-cotta. All the concrete used in the building, including that in the tracery of the windows, is chambered and filled in in this way. The bricks used are without frogs, with the view of preventing a redundant use of mortar by the bricklayers, and so diminishing the chances of settlement. The facing-courses are set in black mortar, and a very good effect is obtained by bevelling the horizontal joints, each joint receding at the top and sloping outwards in a downward direction. On the occasion already referred to we described the leading dimensions of the building and its chief apartments. Among these are, on the second-floor, the large and small lecture theatres, in the centre of the building, so arranged that the partition between them may be readily removed and display one grand theatre, 88 ft. long and 40 ft. wide, with lateral extensions at the south end, which will make the theatre 64 ft. wide at that part. The great hall, where all the scholars may be assembled on certain occasions, stands at the south-west angle of the building, on the ground floor, and will be a noble apartment, 80 ft. long and 50 ft. high to the panelled ceiling, having, in addition, at its south end, a semi-circular apse, in which will be placed the platform. The dining-hall, 125 ft. long, and which, with its corridor, divided from it only by an open arcade, is 41 ft. wide, occupies nearly the whole of the west flank of the building, on the second floor. The whole of the eastern flank of this floor of the building is to be occupied by the physical and chemical laboratories. Among other important rooms, the library, 50 ft. by 36 ft., is placed at the north end of the west wing, on the first floor. Connected with the school building by a cloister will be the master's house, while in the rear will be an extensive play and cricket ground, which will no doubt be gladly exchanged by the young Paulines for the cavernous and pillar-obstructed den set apart for their physical exercise in the building in St. Paul's Churchyard.

* See *Builder*, vol. xliii., pp. 274, 276.

THE BEACONSFIELD NATIONAL MEMORIAL STATUE.

This statue, erected in Parliament-square Westminster, was unveiled on Thursday last by Sir Stafford Northcote. The statue is draped in a peer's robes, which partially uncover the left leg and show the diplomatic dress sword. The right hand holds a scroll, while the left has gathered below the chest the folds of drapery. The head, looking down to the left, is a reproduction of the bust for which his lordship gave Mr. Raggi some sittings but a few days previously to his fatal illness. The statue has been carried out by Mr. Raggi from a small sketch in clay 15 in. high, the second which Mr. Raggi designed by order of the executive committee. It is 9 ft. high, and has been cast in bronze metal by Messrs. Young & Co., of Eccleston Works, Pimlico, and chased by Mr. Raggi.

The pedestal is of polished red Aberdeen granite, and is worked out of five solid blocks. The height is 10 ft. 6 in, and the total weight is about 25 tons. The inscription is cut in the panel at back; and the front panel will be filled with coat of arms in bronze.

The pedestal was supplied and erected by Messrs. Alex. Macdonald, Field, & Co., of the Aberdeen Granite Works, 373, Euston-road.

OBITUARY.

Dr. William Farr, C.B.—We announce with regret the death of Dr. William Farr, C.B., formerly Superintendent of the Statistical Department of the Registrar-General's office, which occurred on Saturday night last. He was born in 1807, at Kenley, in Shropshire, was educated at Shrewsbury, and afterwards proceeded to the Universities of Paris and London. After discharging the duties of house surgeon of the infirmary at Shrewsbury for a short time, he continued the practice and teaching of medicine in London. He also gave his attention to journalism, editing the *Medical Annual* and the *British Annals of Medicine*. From an early age he showed a strong taste for statistical inquiry, and in 1838 he was appointed Compiler of Abstracts in the Registrar-General's Office, where he organised the statistical department, of which he was made superintendent. In this capacity he assisted in taking the census in 1851, 1861, and 1871, and was sent by the Government to attend statistical congresses on the Continent. He was author of a large number of articles, contributions to medical journals, and papers relating to statistics of health and kindred subjects. He was also corresponding member of the French Institute.

Lord Talbot de Malahide.—The death is announced of Lord Talbot de Malahide as having taken place at Madeira on Saturday last. James Talbot, Baron Talbot de Malahide, and Lord Malahide of Malahide, county Dublin, in the peerage of Ireland, and Baron Talbot de Malahide, county Dublin, in the peerage of the United Kingdom, by which last title he held his seat in the House of Lords, was the eldest son of James, third lord, second son of the first Baroness, by his wife Anne Sarah, second daughter and co-heir of the late Mr. Samuel Rodbard, of Evercreech House, Somersetshire, and was born on the 22nd of November, 1805. He was a Fellow of the Society of Antiquaries, and for many years President of the Archæological Institute of Great Britain and Ireland.

General Scott, R.E.—Major-General Henry Young Darracott Scott, C.B., F.R.S. (late Royal Engineers), died on Monday morning at his residence, Silverdale, Sydenham, aged 61. The late General Scott was educated at the Royal Military Academy, Woolwich, and entered the Royal Engineers in 1840. He acted as instructor in surveying and practical astronomy at Chatham, and also as examiner of military topography for the military education department at the War Office. He retired from the army in 1871 as major-general, and became Director of Buildings at South Kensington, acting as architect to the Royal Albert Hall and Science Schools on the death of Captain Fowke. He had just finished superintending the construction of the buildings for the great International Fisheries Exhibition.

Mr. George Wright, for twenty-five years assistant surveyor and sanitary inspector for Lee and Kidbrook, under the Plumstead District Board of Works, died on the 10th inst., at the age of fifty-nine.

NEW BANK BUILDINGS IN THE CITY.

A new block of bank buildings has just been erected at the corner of Abchurch-lane, King William-street. The building has been erected for Messrs. Brown, Janson, & Co., by whom they will be opened for banking purposes in the course of next month. It is a four-storied structure in Portland stone, with a handsome and elaborately carved elevation. The ground-floor, extending in depth to the churchyard of St. Nicholas Acons, which it overlooks, is very richly fitted and decorated, the floor being laid in marble of varied patterns and colours. This portion of the building forms the banking-house, and will be exclusively occupied for banking purposes, the upper floors being let as offices. In erecting the premises it was necessary to preserve a footway between Abchurch-lane and Nicholas-lane, and this has been effected by a passage between the entrance to the bank and that to the offices above.

The building has been erected from the designs of Mr. J. Whichcord, Messrs. Learid, King, & Co. being the contractors.

ALHAMBRA THEATRE.

The tenders for the first contract for the re-erection of this theatre are as follows:—

	Weeks.	
McLachlan	48	£42,170
Ashby & Horner	47	40,363
Perry & Co.	41	38,854
Langmead & Way	52	38,720
J. Clemence	52	38,510
Patman & Fotheringham	48	37,709
W. Brass	26	32,883
Clarke & Bracey	33	32,451
Merritt & Ashby	36	32,233

As time is of the utmost importance to the company, the tenderers were informed that a fine of 50*l.* a day would be levied for failure to complete within the agreed time. The relative position of the tenders, adding 50*l.* for each day in excess of the shortest time named, will therefore be thus:—

McLachlan	£48,770
Ashby & Horner	46,936
Langmead & Way	46,520
J. Clemence	46,310
Patman & Fotheringham	44,309
Perry & Co.	43,304
Merritt & Ashby	35,233
Clarke & Bracey	34,551
W. Brass	32,883

Tenders were also received from Messrs. Trollope, Messrs. Rider, and Mr. Chappell, but as the form of tender sent out had been varied by them, the amounts are not included in the above lists.

As the Board of Works has not yet passed the plans for the new building, no contract has been entered into.

J. Jones & Sons, who have carried on business at Bankside, Southwark, as iron merchants and hot water engineers, for upwards of forty years, have removed to 42, Farringdon-street, owing to expiration of lease.

PROPOSED SANITARY INSPECTORS' ASSOCIATION.

Several inspectors think it very desirable that such an association should be formed of inspectors and other officers who are engaged in the performance of sanitary works for London and suburbs, whereby they could meet periodically for reading papers, &c., and to help one another generally on all matters pertaining to the office of inspector of nuisances. All who are interested in the formation of such an association are requested to communicate with either Mr. A. H. Lukes, 20, Berkeley-road, Gravesend, or to

Samuel C. Legg,
No. 62, Gayhurst-road,
Dalston, London, E.

GLASGOW SOUTHERN HOSPITAL.

The committee have now awarded the premium in this case to the plan sent in under the motto "Hygiene" (No. 1), the authors of which are Messrs. Campbell Douglas & Sellars, Glasgow. The next five plans in order of merit, as determined by the adjudicators, are "Isolation," by James Fairley, Edinburgh; "Torsitan," by Messrs. Mills & Murgatroyd, Strutt-street, Manchester; "Coila," by Francis Stirrat, Glasgow; "Echelon," by Messrs. Keith Downes Young & Henry Hall, London; "Rutherglen," by Messrs. S. & A. Smith, Hastings. It may be mentioned that there were forty-six competitors, and that besides many local architects, these embraced architects from Paris, London, Manchester, Birmingham, Liverpool, Halifax, Hull, Belfast, Edinburgh, Dundee, and other places of importance.

NOTTINGHAM NEW MUNICIPAL OFFICES COMPETITION.

The following is a list of candidates selected for final competition:—

Motto.	Name.	Address.
Esto	J. W. Hickson ...	6, Exchange-street, Manchester.
J'Espère	Truman & Pratt ...	Nottingham.
Suitability ...	Charles Bell.....	9, New Broad-street, London, E.C.
Light.....	Geo. Corson.....	35, Cookridge-street, Leeds.
Order.....	Y. Thomason	Bennett's-hill, Birmingham.
Might, Light, and Right	Verity & Hunt	37, Regent-street, London.
Simplex	W. Haury	7, Whitehall-place, London.
Childe Harold .	J. H. Oldham ..	23, John Dalton-street, Manchester.

DOUBLE COMPETITIONS.

Sir,—Now that the Institute has decided to recommend in future the system of double competitions, our Leeds Architectural Society would be glad if you could find space for the circular forwarded by them to the Fellows of the Institute, which contains the reasons leading them to oppose the double competition plan as being a retrograde movement, and one that will seriously damage the position of the profession.

Did the Institute represent the opinion of the architects of this country, or had they even endeavoured to ascertain or follow the feelings of those for whom they profess to speak, our Society would have loyally accepted their decision, and have submitted with a good grace to the will of the majority. As long, though, as the Council of the Institute consists of eighteen metropolitan architects to four provincial ones, whilst the country architects outnumber the London ones by eight to one, they cannot be fairly held to speak with the voice of the profession; and our Society, with others, may honourably hold themselves free to openly oppose decisions made in the interests of a class, and wholly against those of their fellows generally.

J. Wreghitt Connon.

*** The question having been settled at the Royal Institute of British Architects, it would seem to be useless to reopen it at this moment.

SURVEYORSHIP ITEMS.

Deal.—Mr. H. T. Wakelam, of King's Lynn, writes respecting the Deal Surveyorship as follows:—"Your correspondent must have been misinformed respecting the above, at least regarding that part which refers to myself; I certainly was one of *five* selected for the appointment, but having been appointed to the Borough Surveyorship of Oswestry from 110 candidates, two days previously (*i.e.*, on the 3rd inst.), I wrote to the town clerk of Deal acquainting him of it; also informing him *that I should not be present* at the election on the 5th inst."

Oswestry.—As will be seen by the above, Mr. H. T. Wakelam, Deputy Borough Surveyor of King's Lynn, was appointed Borough Surveyor of Oswestry on the 3rd inst. There were 110 applicants for the post, from which number five were selected. The voting resulted as follows:—Wakelam, 15; Helme, 5; Roberts, 3.

ARCHITECTS' BENEVOLENT SOCIETY.

Sir,—In the remarks I made at the Architectural Association in proposing a vote to the Architects' Benevolent Society, I am sorry that I conveyed the impression that this should supersede the subscriptions of members. I feel strongly that the Society should be supported by every individual engaged in the profession, according to his ability, and there are few that cannot contribute at the rate of one penny per week, or, say, 5*s.* per annum. If each member of the Association would do this, we should be able to subscribe upwards of 200*l.* per annum. I hope the amount voted will head an annual list containing a large number of names, and that the same may be done by other societies in the kingdom, so that the Architects' Benevolent Society may be of increasing use and benefit.

J. Douglass Mathews.

THE SMOKE ABATEMENT COMMITTEE'S OFFICIAL REPORT.

Sir,—In your issue of the 31st of March (p. 429, *ante*), I proved, in reference to Mr. F. Edwards's assertion, that, for the purposes of the tests, there was not a pin to choose between the South Kensington 8¾-in. chimney and the Manchester climbing-boy chimney, 14 in. square; that, in fact, one was just as good as the other. Thus I disposed of his mare's-nest; and his statement in your issue of April 6th, that I muttered something about the chimney being too small, is absolutely untrue. But he discovered another mare's-nest in the assumption that members of the committee disclaimed responsibility for the tests. This statement is false and libellous.

Mr. Edwards, in the same letter, refers to a report by me, quoted in an advertisement in the *Sanitary Record*, on what he calls "fireplace for domestic use," from which 13,000 cubic feet of air, heated to from 380° to 440° was delivered per hour, "fit only," he says, "for a baker's oven." Here, again, his plausible disingenuousness may be exposed. The stove in question is the "Manchester Stove," designed for heating large halls and public buildings, and is not a domestic stove at all. As a matter of fact, it was tested, not in the testing-house, but in the Exhibition Building at Manchester. Nor was it "selected for public approval," as Mr. Edwards disingenuously asserts elsewhere. It was submitted for test, like all the other subjects for test, on the initiative of the exhibitor.

I must confess I am weary of Mr. Edwards. I like fair play and square play in discussion. His deliverances on the sizes of chimneys are not particularly disputed, and they may be very valuable, but they are beside the question.

D. K. Clark.

*** The discussion must end here.

Books.

The Iron and Coal Industries of the United Kingdom: comprising a Description of the Coalfields and of the Principal Seams of Coal, with Returns of their Produce and its Distribution, and Analyses of Special Varieties. Also an Account of the Occurrence of Iron Ores in Veins and Seams; Analyses of each Variety; and a History of the Rise and Progress of Pig-iron Manufacture since the year 1740, exhibiting the Economies introduced in the Blast-furnaces for its Production and Improvement. By Richard Meade, Assistant Keeper of Mining Records. With Maps of the Coalfields and Ironstone Deposits of the United Kingdom. London: Crosby Lockwood & Co. 1882.

The author of this important work has done what many, with sources of information at hand as good as he was able to avail himself of, probably have shrunk from performing; that is to say, written a comprehensive yet lucid history of the two staple industries of these islands. Although much information exists on these subjects, it is too widely diffused to be practically useful. Mr. Meade has therefore condensed all that has been published separately in the various branches of those industries, and, at the same time, given such details relating to our coal, iron, and steel trades as ought to be included in a work of this nature. We have no space to enter fully into the consideration of these several questions; but an idea of the contents of the bulky volume will be formed by the following brief summary. In the first part of his work the author treats of the different coalfields of the United Kingdom separately, and gives the extent of the beds, together with analyses of the several kinds of coal found in each. He also gives the production from the earliest period recorded, as well as the population engaged in mining at the time of preparing his work, and the cost of raising the mineral in the different localities. Finally, the resources of the various coalfields are shown, together with some calculations as to their probable duration. This portion of the work possesses special interest, and will instil confidence into those timid souls who were alarmed some years ago by the unfounded predictions as to the early exhaustion of our coalfields. Mr. Meade shows them that the total area of the coalfields of the United Kingdon is 7,876 square miles, and he estimates, upon data collected by the Royal Coal Commission, that the reserve of coal possessed by Great Britain in 1880 amounted to 135,288,613,038 tons, which, at the rate of consumption of that year, would be equal to 920 years' supply. Some of the coalfields would hold out longer than others. Thus, the Bristol coalfield is calculated to have reserves which will last for 5,122 years. But as more recent returns have shown that the consumption of coal is still increasing, the estimate for the whole kingdom will have to be much reduced. On the other hand, the conversion of electricity into power has made such vast practical strides lately that it is highly probable that a great saving will be effected in the consumption of our old power-producer, coal.

Turning to the second portion of Mr. Meade's volume, the results arrived at by him are quite as startling as those contained in the first part. He treats the iron industries of the United Kingdom in a similar manner as the coal trade, and from this treatment we learn that the development of the iron trade has been as enormous as that of the other branch. Taking, for instance, the production of pig-iron, we find that from the 17,350 tons of crude charcoal metal produced in 1740 the production has risen to nearly 8,000,000 tons in 1880. The author traces the various stages through which the iron industry had to struggle before it attained its present importance, and gives a complete history of the improvements and economies which have been introduced into the manufacture of iron in all its branches. The quantities of coal and iron ore used in the production of iron are given, and the returns bearing upon economy in the use of coal in the smelting operations of the blast-furnace have been collected and stated. Lists of all the works engaged in the manufacture of finished iron, as well as of steel, by the Bessemer, Siemens, Siemens-Martin, and Thomas-Gilchrist processes, have been included. An important feature of the work, finally, is the chapter on the foreign iron ores imported into this country, with a description of their general character, and analyses of the leading descriptions. We have indicated enough to show that the book which Mr. Meade has produced is a very valuable one. He states that he endeavoured to meet the want for an historical work on the coal and iron trades of the United Kingdom. We have no hesitation in saying that he has given us a complete history, brought down to recent times, of those important industries.

VARIORUM.

A Diary of Royal Movements is the title of a work announced by Mr. Elliot Stock as shortly to be published, containing a record of personal events and incidents in the life and reign of Queen Victoria.

Instruction in Fire Extinction.—A correspondent suggests that the means of preserving life and property from the terrible effects of fire are as worthy a subject of study as the "first help to the wounded," or "what to do until the doctor comes" in cases of illness. Why not then, he asks, give to people of all ages the same facilities of instruction in the one subject as in the other, by the establishment of classes, with competent teachers, for the purpose of imparting a knowledge of the chief means of preventing fires in houses, and how best to act at the moment when they do occur? Many house-owners, he feels convinced, would be only too glad to avail themselves of such instruction, and to enable their servants to do likewise.

Miscellanea.

The Late Lord F. C. Cavendish.—Memorial Cross.—There is now standing at the eastern end of Undercliff Cemetery, near the Bradford Cemetery Company's workshops, a large freestone cross, which is to be ultimately erected in Bolton Abbey, as a memorial to the late Lord Frederick Cavendish. The cross has been subscribed for by the tenants on the Duke of Devonshire's Bolton Abbey estate. Spending so much of his time there, he was in frequent intercourse with the Duke of Devonshire's tenants, and how he impressed others during that intercourse is shown by the existence of this cross, by which it is intended to perpetuate a worthy memory and mark a tragic end. The cross has been temporarily placed in its present position, so that the public of Bradford may have an opportunity of seeing it before it is removed to Bolton Abbey. The monument is of imposing appearance. It is 17 ft. in height, and is carved out of the fine white freestone supplied by Mr. Chas. Waterhouse, Bolton Wood Quarries, Bradford, which experience has shown to be eminently adapted for monumental purposes. The cross itself stands upon a pedestal about 4 ft. 9 in. high by 4 ft. square, and the pedestal in turn is superior to a block 7 ft. square and 2 ft. thick, which forms the base of the whole. The carving has been entrusted to Messrs. Farmer & Brindley, of London; Messrs. Mawson, architects, Bradford, prepared the designs; and the stone was worked under the supervision of Mr. T. W. Spencer, manager for the Bradford Cemetery Company.

Messrs. Bumpus's New Premises, Oxford-street.—Messrs. Charles Williams & Co., of Ferry Ironworks, Cubitt-town, supplied the constructional ironwork used in this building, described and illustrated by us last week.

The Royal Mail Steamer, "Hawarden Castle," which recently proceeded down the Firth of Clyde for the purpose of being tried on the measured mile at Skelmorlie, is described as a fine specimen of Clyde shipbuilding. She has been constructed by Messrs. John Elder & Co. for the Castle Mail Packet Company's South African service. The grand saloon, placed in the midship portion of the ship, is about 44 ft. square, and is finished in a Classic style of architecture, specially designed, the principal woods used in the decorations being walnut and oak. The first-class staterooms are unusually large and well finished, a number of them being fitted for only two passengers. The saloons have all been finished from designs by Mr. J. M. MacLaren, architect, London.

Competition—Christmas Card Albums.—1,100*l.* in prizes have been given by Messrs. Hildesheimer & Faulkner, publishers, the judges being Mrs. Wm. Duffield, Miss M. Ellen Edwards, and Miss Alice Havers. In class A the following are the three chief competitors:—First prize, 100*l.*, Miss Patty Townsend, Attleboro' Hall, Nuneaton; second prize, 75*l.*, Mr. W. E. Wilson, Laurel Bank, Brook-road, Heaton Chapel, Stockport; third prize, 50*l.*, Miss H. M. Bennett, Ashdale, Honor Oak Park, Forest Hill, S.E. In class B the following:—First prize, 100*l.*, Miss Patty Townsend, Attleboro' Hall, Nuneaton; second prize, 75*l.*, Miss Mary Capes, 80, Victoria-road, Clapham Common; third prize, 50*l.*, Mr. Ernest Wilson, Brook-road, Heaton Chapel, Stockport.

The Forest of Hainault.—The last vestiges of the once fine old forest of Hainault, in Essex, are rapidly disappearing. Under direction of the Office of Works—the land being Crown property—the processes of disafforesting and bringing into cultivation have been in progress for the last quarter of a century. Fine light soil, which once bore a somewhat stunted variety of oak, and was covered with undergrowth, is now laid out in extensive farms held on comparatively easy terms. Few people regret the change, except, perhaps, the wayside innkeepers, whose business has fallen off considerably since the forest ceased to be a place of public resort.—*Land.*

Cable Tramways.—It is stated that the Hallidie Patent Cable Tramways Corporation, Limited, have just completed negotiations with the Huddersfield Corporation for a twenty-one years' lease of their tram lines. Arrangements are being made for carrying out the conversion of the tram lines to the cable system as quickly as possible, and the lines are to be opened for traffic within five months from this date.

New Jerusalem Church at Anerley.—The dedication and opening services in connexion with the New Jerusalem Church, at Waldegrave-road, were held on Thursday, April 12th last. The new building is entirely of concrete, devised in the Gothic style of architecture by Mr. W. J. E. Henley, and erected under his superintendence by the Concrete Building Company. The nave will seat about 500 persons, and provision is made for galleries when required. The decorations are novel in church-work, the red concrete showing to great advantage. The acoustic properties are said to be excellent. There is a spacious lecture-room and school under the church, and every provision for carrying on the work connected with the church. The building has cost about 4,000*l.*, the freehold site being generously given by Mr. Alex. Wilson.

The Fire at Rochdale Town Hall.—It appears that the fire at Rochdale Town Hall arose from an escape of gas. The spire, which was chiefly composed of wood covered with lead, and gilded, was entirely destroyed, as was also nearly the whole of the interior of the clock tower. The Free Library was much injured. The whole extent of the damage is estimated at about 70,000*l.*

Formby's Cement Works Company, Limited.—The second annual general meeting of this company was held on Wednesday, the 18th inst., when a dividend at the rate of 10 per cent. per annum, free from income-tax, was declared, and the retiring directors, Mr. Alfred Kitt, C.E., and Mr. J. Eldin Gorst, Q.C., M.P., were re-elected.

Building Trades' Artisans in the United States.—A *Times* telegram from New York, dated the 15th inst., says that several strikes for advanced wages are threatened in that city, chiefly in the building trades. The carpenters ask $3½ per day, the painters $3½, and the plasterers 4½,—in other words, an increase of from 10 to 15 per cent.

The Slade Professor of Fine Art at Oxford.—Mr. Ruskin will, during the present term, give a course of three lectures, each being given twice. The lectures will be given on Wednesdays and Saturdays, in the Museum, Oxford University, and the first lecture on Saturday, May 12, will be on "Recent English Art."

Building Trades Exhibition.—On Friday evening, April 13, Mr. Philip Shrapnel, Secretary to the above, was entertained at a complimentary banquet by the exhibitors, and was presented with an address, engrossed on vellum and handsomely framed.

TENDERS.

For the construction of the Ranelagh and King's Scholars' Pond sewers relief sewer for the Metropolitan Board of Works. Sir J. W. Bazalgette, engineer:—

C. Killingback	£132,000 0 0
Nowell & Robson	128,800 0 0
Pearson & Son	128,500 0 0
Williams & Co.	103,300 0 0
Kellett & Bentley	102,000 0 0
W. Webster	101,300 0 0
Mowlem & Co.	97,000 0 0
McCrea & McFarland	96,300 0 0
Martin Wells & Co.	96,000 0 0

Accepted, subject to the usual inquiries.

For the erection of new town-hall and municipal offices, Newport, Mon. Mr. T. M. Lockwood, Chester, and Mr. E. A. Lansdowne, Newport, joint architects:—

For Grinshill Stone.

T. Shepton, Cardiff	£28,850 0 0
Stephens & Bastow, Bristol	26,950 0 0
W. Bowers & Co., Hereford	26,528 0 0
Lean & Sons, Gloucester	25,920 0 0
C. Miles, Newport	25,890 0 0
Tindal & Arbuckle, Cardiff	25,669 0 0
Jones & Son, Newport	25,587 0 0
D. Davies, Cardiff	25,000 0 0
Thos. White, Swansea	24,970 0 0
G. F. Marshall, West Smethwick	24,200 0 0
P. Horsman & Co., Wolverhampton	24,081 0 0
Forse, Bristol	23,350 0 0
S. Warburton, Manchester	23,324 0 0
E. Gabbutt, Liverpool	23,164 0 0
J. Linton, Newport (accepted)	23,121 0 0

For the enlargement of Neckinger-road Board School. Mr. E. R. Robson, architect. Quantities by Mr. Ch. W. Brooks:—

W. Shepherd	£2,169 0 0
Atherton & Latts	2,100 0 0
P. J. Jerrard	2,083 0 0
F. Johnson	2,058 0 0
W. Oldrey	1,958 0 0

For the enlargement of Fleet-road Board School. Mr. E. R. Robson, architect:—

Pritchard	£5,879 0 0
Steel Bros.	5,835 0 0
C. Goad	5,649 0 0
W. Brass	5,498 0 0
Roberts Bros.	5,367 0 0
E. Lawrence	5,256 0 0
W. Oldrey	5,184 0 0
Wall Bros.	4,946 0 0

For new printing-offices, Fetter-lane, for Messrs. R. K. Burt & Co. Messrs. Brown & Marsland, architects. Quantities by Mr. W. B. Brown:—

Dove Bros.	£12,275 0 0
L. H. & R. Roberts	11,972 0 0
Marsland	11,585 0 0
Rider & Son	11,268 0 0
E. Conder	11,088 0 0
Ashby Bros.	10,987 0 0
Colls & Sons	10,885 0 0
E. Lawrance	10,832 0 0
W. Brass	10,787 0 0
J. & J. Greenwood	10,771 0 0
Macey & Sons	10,596 0 0
Nightingale (accepted)	10,572 0 0

For pulling down and rebuilding the Swan public-house, and adjoining premises, 42 & 44, High-street, Islington. Mr. Frank Matcham, Rugby chambers, Bedford-row, architect. Quantities by Mr Frederick Thomson:—

John T. P. Rosch	£2,350 0 0
Dove Bros.	2,460 0 0
Williams & Son	2,379 0 0
Wm. Shurmur	2,196 0 0
John Sharman	2,191 0 0
Richardson Bros. (too late)	2,113 0 0
Bangs & Co.	2,089 0 0
M. Manley	2,066 0 0
Kirk & Randall	2,000 0 0
Wall Bros.	1,996 0 0
E. Toms	1,939 0 0

For erecting sheds for the Yarmouth Urban Sanitary Authority. Mr. J. W. Cockrill, Borough Surveyor:—

Davy	£578 0 0
E. Howes	562 0 0
Fox	464 0 0
Bland	464 0 1
Want	426 10 0
Bray	410 0 0
Harbert	360 0 0
S. Wood (accepted)	355 0 0

For repairs to the jetty, Great Yarmouth. Mr. J. W. Cockrill, Borough Surveyor:—

Winter & C. Gilham	£99 16 11
Powell	98 15 10
Warren	80 0 0
Bray	78 0 0
Harbert (accepted)	60 0 0

For the construction of about 1,750 ft. of 3 ft. 6 in. brick culvert, with all necessary side entrances, ventilators, &c., in Park-road and Crouch End:—

Pizzey, Hornsey	£2,186 0 0
Bell, Wood Green	2,030 14 6
McKenzie, Williams, & Co., City	1,914 0 0
Wilkinson Bros., Finsbury Park	1,845 0 0
Bottoms Bros., Lavender Hill	1,811 0 0
J. Strachan & Co., Wood Green	1,686 19 10
Dunmore, Crouch End (accepted)	1,601 0 0

For alterations and additions to 54, High-street, Islington, for Cabmen's Coffee Palace, for Mr. J. E. Matheson, Mildmay Park.

W. Reason, 100, St. John's-street (accepted).

For alterations and additions to the Adelphi Theatre, for Messrs. A. & S Gatti. Mr. Spencer Chadwick, architect:—

Langmead & Way (accepted).

For pulling down and rebuilding the Swan public-house, High-street, Islington. Mr. Frank Matcham, architect:—

			Fittings.
Roach	£2,350	0 0	£200 0 0
Dove Bros.	2,245	0 0	215 0 0
Williams & Son	2,183	0 0	196 0 0
Shurmur	1,980	0 0	216 0 0
Sharman	1,980	0 0	211 0 0
Bangs & Co.	1,882	0 0	207 0 0
Manley	1,866	0 0	200 0 0
Kirk & Randall	1,795	0 0	215 0 0
Wall Bros.	1,800	0 0	196 0 0
Toms	1,752	0 0	187 0 0

For rebuilding premises, New-street, Bishopsgate. Mr. E. A. Grüning, architect:—

Shurmur	£2,790 0 0
Hayward Bros.	2,749 0 0
Clarke & Bracey	2,696 0 0
Larter & Son	2,650 0 0
Holland & Hannen	2,582 0 0
Lawrence	2,572 0 0
Colls & Son	2,475 0 0

For repairs to St. Peter's Church, Hackney-road:—

Niblett	£434 0 0
Roberts	427 0 0
Taylor	395 0 0
Shurmur	390 0 0
Anley	356 0 0
Thompson	293 10 0
Jarvis & Son	293 0 0

For alterations and decorations at Warfield Park, Bracknell, Berks, for the Right Hon. Lord Ormathwaite. Mr. W. H. Milnes, 5, Westminster Chambers, architect:—

Holliday & Greenwood, London (accepted).

For alterations and repairs to three houses and shops in Wardour-street, Soho:—

Holliday & Greenwood (accepted).

For the construction of a new road with sewers, on the Cedars Estate, Walthamstow. Messrs. Wm. & F. Houghton, 61, Old Broad-street, surveyors:—

J. G. B. Marshall	£500 0 0
Thos. Wainwright & Co.	470 0 0
T. Huntley	467 0 0
J. C. Trueman	430 0 0
J. W. & J. Neave	370 0 0
J. Bloomfield	360 0 0
G. Acock	347 0 0
A. T. Catley	350 0 0
G. Impey	333 10 0
E. Wilson	330 0 0
J. Strachan & Co.	326 0 0
J. Jackson	322 0 0
J. Bell	320 0 0
P. G. Pound (accepted)	268 17 0

For building six shops, High-road, Kilburn, for Mr. E. T. Cave. Mr. Walter Graves, architect. Quantities by Mr. Pollard :—

Langridge & Son	£6,500	0	0 !
Howard & Dorrell	5,367	0	0
J. O. Richardson	5,239	0	0
Spenser & Co.	4,965	0	0
Ward & Lamble	4,620	0	0
Simons & Mackley	4,469	0	0
R. Julian	3,990	0	0 !

For chapel, Trinity road, Wandsworth-common. Mr. T. H. Vernou, architect. Quantities by Messrs. Searle & Hayes :—

Tuness	£2,567	0	0
Osbourne	2,520	0	0
Holloway	2,319	0	0
Higgs & Hill	2,202	0	0
F. Higgs	2,241	0	0
W. Johnson	1,999	0	0

For additions of billiard and drawing rooms to the old Rectory-house, Wimbledon, for Mr. Samuel Willson. Mr. E. J. Milner Allen, architect :—

H. Harmer, Wimbledon (accepted)	£835	0	0

For boundary-wall to enclose Parsonage, Garford-street, Poplar, for the Bishop of London's Fund. Mr. Benjamin White, architect :—

Parrish & Hawker (accepted)	£140	0	0

Accepted for new shop, warehouse, &c., at Leyland, Preston, for Mr. Frederick Hackforth :—

Brickwork.—Thos. Croft, Preston.
Stonework.—D. Tullis & Son, Preston.
Plumbing, &c.—R. Croasdale, Preston.
Joiners' Work.—A. Tomlinson, Leyland.
Slating, &c.—Jas. Bowling, Leyland.
Plastering.—Thos. Spibey, Leyland.
Shutters, &c.—J. Stone, Ulverston.
Total amount of Tenders, 382*l*.

For the erection of warehouse premises, 3, Union-street, Whitechapel. Mr. J. W. Brooker, 2, Railway-approach, London Bridge, architect :—

Drake	£2,098	0	0
Battley	2,059	0	0
W. & F. Croaker	1,846	0	0
Lawrence	1,842	0	0
Morter	1,835	0	0
Hubble & Trott	1,668	0	0
Holloway	1,647	0	0
J. Taylor (accepted)	1,610	0	0

For alterations and additions to premises, Deptford Bridge. Mr. J. W. Brooker, architect :—

Hall	£506	0	0
Hubble & Trott	495	0	0
Battley	487	0	0
Holloway (accepted)	467	0	0

For additions to Girls' School, South-street, Coventry, for the Coventry School Board. Mr. Herbert W. Chattaway, Trinity church-yard, Coventry, architect :—

J. Wilson, Coventry	£180	0	0
J. Makepeace, Coventry	169	0	0
A. Waters, Coventry	165	17	0
A. Lester, Coventry (accepted)	139	0	0

For the erection of warehouse, smith's shop, &c., in West Orchard, Coventry, for Messrs. Matterson, Huxley, & Watson. Mr. Herbert W. Chattaway, architect :—

J. Makepeace, Coventry	£3,495	0	0
C. Garlick, Coventry	3,200	0	0
J. Marriott, Coventry	2,844	0	0
J. Warwood, Coventry	2,693	0	0
T. Mayo, Coventry	2,550	0	0
C. Haywood, jun., Coventry*	2,545	0	0

* Accepted.

For finishing stabling at Bailey's-lane, Stamford-hill, for Mr. A. Sanders. Mr. Edward Brown, architect, 18, Hanbury-street, Spitalfields :—

Belcher & Ullmer	£1,290	0	0
Hawkings	966	0	0
Christoffer (accepted)	825	0	0

For alterations at the Bricklayers' Arms, Hassard-street, Hackney-road, for Messrs. Truman, Hanbury, Buxton, & Co. Mr. Edward Bond, architect :—

Marr	£638	0	0
Jackson & Todd (accepted)	529	0	0
Taylor	440	0	0
Shurmur (withdrawn)	397	0	0
Painters' Work			
Paddon (accepted)	52	10	0
Rogers	52	9	0
Pringle	45	19	0

For the erection of five shop dwellings, Merton-road, Tooting, for Mr. W. Clark :—

Brickwork (labour only).			
Bull	£274	0	0
Flexmore	245	5	0
Stevens	225	0	0
Amoss	155	0	0
Jordan (accepted)	155	0	0
Carcassing			
Jordan (accepted)	45	0	0

For building a town residence at South Kensington, for Mr. G. Pimsell. Mr. R. G. Spencer, architect. Quantities by J. W. Peters & Son :—

Fletcher	£7,843	0	0
Wells	7,800	0	0
Bolsome	7,737	0	0
Higgs	7,730	0	0
C. H. Sharp (accepted)	7,723	0	0

For the erection of house in the Hamilton-road, Ealing, for Mr. H. R. White. Mr. Robert Willey, 66, Ludgate-hill, architect :—

Waters, Ealing	£1,550	0	0
Turner & Sidley, Ealing	1,470	0	0
Penny & Durrant, Ealing	1,440	0	0
Nye, Ealing	1,430	0	0

For freehold residence, Arableside-avenue, Tooting Bec Common, for Mr. C. B. Humphrys. Mr. F. Wheeler, architect, 119, Cheapside :—

Hill Bros., Streatham (accepted)	£1,420	0	0

For the removal of the Hornsey Cricket Club pavilion, on the Amen-in principle, the tender of Mr. John Spengall, of Battersea Park-road, was accepted.

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The Builder.

VOL. XLIV. No. 2099. SATURDAY, APRIL 26, 1883.

ILLUSTRATIONS.

Design for an Academy of Music.—Mr. Robert A. Briggs, Architect 570
The Prince's Hall, Piccadilly Art Galleries (Double-page Engraving).—Mr. E. R. Robson, Architect 572
Cloisters of the Monastery of St. Jerome, Belem 573
The Proposed Kahlenberg Monument.—Herr A. Streit, Architect 574
Plans for an Academy of Music 575

CONTENTS.

Egyptian Art 547
Architecture among the Poets 548
Sir Christopher Wren and "His Majesty's Workes" 550
The Institute of Painters in Water Colours 551
Foreign Notes 551
The "Impressionists" in London 552
"First Principles" 553
Marmaton Building, Paris 554
Raffaelle as an Architect 555
The Amsterdam Exhibition 555
Makers of Metals of the Greeks and Romans 556
The New War Office and Admiralty 557
Crystal Palace School of Engineering 557
Paris Municipal Budget 557
Gigantic Bridge in New York: The East River Bridge 557
A Danish Building Society 557
The New Art Galleries in Piccadilly 557
Design for an Academy of Music 558
Cloisters of the Monastery of St. Jerome, Belem 558
The Kahlenberg Monument: The Beneficiary of the Relief of Vienna in 1683 558
Art-Union of London Distribution 558
Domestic Dwellings in Southern Sweden: Royal Institute of British Architects 559
The Bicknell Institution 559
Architectural Association Notes 561
Amateur House Decoration: Edinburgh Architectural Association 563
Glasgow Institute of Architects 563
The Preservation of Heidelberg Castle 563
Employers' Liability Assurance Corporation 563
Kidderminster Parish Church 563
Building Patent Record 563
The Competition for the New Public Offices 564
The Cantor Lectures on Metal Work: Geometrical Considerations 567
Church-Building News 567
Dissenting Church Building News 567
Miscellanea 567

Egyptian Art.



IN our former article* the architecture of Egypt was considered as applied to tombs and temples, the principal monuments of the country, but architecture embraces several other edifices. As public buildings, palaces are next in importance, but it is uncertain if the remains of palaces have reached the present day. They have more completely disappeared than the houses and private buildings, for elevations of some of these have been preserved. It is supposed that the palaces were made of sun-dried bricks and wood, and although different from the temples, yet consisted of rectangular courts, entered by gateways, and surrounded by the offices and sleeping-places of the monarch and his court. The remains of Tel-el-Amarna give some idea of the palace of the monarchs of the eighteenth dynasty. Those of the labyrinth, if really preserved, would have imparted a knowledge of a palace of the twelfth dynasty, while the so-called Pavilion at Medenat Haboo, although not admitted to be a palace, is yet a public building trophaic, monumental, or guard-house distinct from the temple. Perhaps the edifice of Tel-el-Yahoudeh, which has vanished so rapidly, was also a palace, made of sun-dried bricks, with its walls inlaid with alabaster ornaments, or figures and glazed tiles, with raised bas-reliefs, representing foreign captives. Of the fourth and sixth dynasties no vestiges of palaces remain.

The Egyptian house was also a rectangular construction, with a surrounding-wall and gateway, which last had a great importance. The house itself, like the modern mansion, was often in the midst of a garden or park, with plantations of trees and ponds, and in some respects resembled the French *pavillon*. It had two, if not three stories and a flat roof. The square windows had external blinds. The flat roof had no chimneys or shadoofs, like those of modern Egypt. The summit of the walls was often crenelated, and the portico had columns like a suburban villa. Granaries, stables, and offices were within the walls, and all was kept out of the public gaze except the door. The Egyptian occupant was exclusive and retired within his "castle."

The military architecture consisted principally of long walls with occasional forts; such was the long wall on the east of Egypt. Cities were protected by outlying forts. The best example of a fort is that of Semneh. These forts were of sun-dried bricks, and their profile resembles that of a modern fortification. The walls were from 50 ft. to 80 ft. high, and their thickness from 26 ft. to 12 ft, and the upper part so thrown back as to render scaling by a ladder impossible. The curtains of the sides were protected by rectangular bastions or towers at close intervals, so as to enable assaults to be repelled by the javelin and arrow. To judge from the paintings, the great defect was that the garrison was not sufficiently defended by the parapet, and the defenders had to fight *en barbette*. These forts were capable also of being undermined, but were good enough against Negroes, unprotected with battering rams and ignorant of artillery. They had, however, an outer wall or glacis and ditch. For this part of the subject M. Perrot might have advantageously consulted Sir Gardner Wilkinson's account of these forts in the "Transactions of the Royal Society of Literature."

Some attempt has been made to divine the material first in use, and wood is supposed to have borne the palm; the mastabas and sarcophagi have been conjectured to be imitations of wooden houses or other structures, and the coloured representations on sarcophagi, with billet mouldings, chequers, and diapers, appear to favour the idea.

Allusion has been already made to the materials employed,—the granites, basalts, sandstone, limestone, and bricks,—but the blocks and other materials were not of large size, and the researches of Mariette have shown that the constructions had none of that accuracy attributed to them by enthusiasts calculating by theodolites, for walls are neither exactly parallel nor parallel walls of the same height. Nor were the layers, which are ashlar fashion, quite perpendicular in all parts. Heavy blocks were transported in sledges up ramps or inclined causeways of sun-dried brick to the required height of the wall; these platforms were afterwards cleared away from the wall, which was then exposed. Traces of platforms remain.

The arch, now admitted to be an Egyptian invention, preceded by the stones *en décharge* of the Pyramid, and some slightly curved vestiges of the mastabas, is well illustrated in its varieties by M. Perrot, and its high antiquity proved by numerous examples. So are the columns: these followed the square supports or piers, and the polygonal column is supposed to have arisen from the natural desire to obtain more air and light, from which arose the Doric column, with its flutes and abacus. At a later period both piers and columns had busts of the goddess Athor, perhaps imitated from sistra or standards and statues. The distinguishing mark of Egypt, the inscription, is often placed on a projecting band in front of the column as a kind of reminiscence of the pier. The polygonal column which sprang at first from the ground, subsequently adopted the torus. The Doric order arose from this, and the triglyph is found in connexion with the Egyptian type. M. Perrot has traced the evolution of the column from the bunch of buds of the papyrus to the blown papyrus capital, the whole column then resembling a single stem of the papyrus, as shown in the papyrus sceptre, the base rounded. Besides the lotus capital, columns are found with capitals in shape of inverted lotus-flowers, which make the capital terminate in a conoid shape. Another kind of capital appears to have conventionally represented the palm-tree, or a bouquet of palm-leaves tied at the base round the upper part of the column. Great difference of opinion prevails about the flowers supposed to be the prototypes of the capitals of columns, and great diversity was introduced at a later period, for a Nubian temple of the age of Tirhakah, about 730 B.C., has caryatide columns in shape of the god Bes or Bessa. Other columns at Philæ have the papyrus shape surmounted by the head of Athor, bearing a cornice. Long before, columns with Osiride royal figures had been attached to piers at Medenat-Haboo. Under the Ptolemies and Romans the columns became more florid. Amongst the arrangements of the architecture, unexpected results have been found by Brugsch Bey, the capitals of those of Luxor, in the reign of Amenophis III. having been plated with copper, which had subsequently been plated, and it will be recollected that bronze rosettes in Greek architecture were sometimes attached to Ionic volutes. Certainly the proportions varied, and the architectural canon followed a regular law, and each style or order, if the term may be used, had its canon of the number of diameters that the height of its column should attain. The actual law of proportion in its details is not given by M. Perrot. One passion appears to have animated the architect of all ages: on piers, pilasters, and shafts of columns he always placed inscriptions, and at the most flourishing period, the eighteenth dynasty, commenced to introduce subjects such as the adoration of the local gods by the monarch,—an arrangement found in Greek architecture, in the names of public benefactors inscribed on columns; and the mythical subjects introduced on the lower part of shafts of certain columns in the temple of Artemis at Ephesus. The cornice or gorge is also treated in detail, with its curved projections ornamented like palm-branches, and semicircular torus, with a carved ribbon running round it, the curved projection surmounted by a plain moulding; so have also the doors, with their converging and not parallel sides, the colonnades and their arrangements, the windows, clearstories, and other contrivances for lighting the temples, also the peculiarities of the obelisks, the curva-

* See p. 435, *ante*.

ture of the surface, the metallic caps at the pointed top. The monument at Begig is classed with the obelisks, but its shape is so abnormal as to render it doubtful if it is an obelisk at all. Egypt swarmed with obelisks; San or Tanis is quite a field of broken ones, but they have been transported at all times to other sites from the time of the Ptolemies, and Egypt has long been stripped of these portable and elegant shafts to adorn other places than the temples of Egypt.

The profession of architects was highly esteemed in Egypt and the superintendent of public works, like the President of the Board of Works here, was often a person of the highest importance, and probably selected without reference to special knowledge of the art. The Egyptian architect did not place his name on the edifices he constructed, but carefully commemorated his merits on his tomb-stone or other monuments he made for himself. There is a succession of architects from the time of the Pyramids to that of Darius of about twenty-two generations, and some of the architects of the principal constructions are well known from the monuments, although they were not allowed, like the democratic architects and sculptors of Greece, to place their names on the work they designed or executed.

Sculpture is supposed to have arisen from the statues required for the tombs as a permanent residence for the *ka* or manes, should the body be entirely destroyed by time. This theory which has been extensively promulgated experiences great difficulty on account of the number, as it is difficult to conceive how a single manes could be attached to twenty statues. The thirteen statues of Chephren, the monarch of the second Pyramid at Gizeh found in the neighbourhood, probably belong to the same category, and so do the statues, mentioned in the texts, of the Pyramid of Ameni of the eleventh dynasty. Some of these statues of individuals are still in existence. There is an admitted development of art, from the third to the fifth dynasty; it shows evidence of decided archaism improving to the highest point under the fourth and fifth dynasties into a freedom and naturalis which may vie in these respects with the efforts of Greece and Rome, while great expression is not wanting in the countenance which does not assume an air of apathetic indifference, but the Egyptian natural countenance was by no means a model of beauty. The high art of the diorite statue of Chephren, the builder of the second period, and the wooden statue which bears the sobriquet of the Sheikh-el-Beled, is universally acknowledged. The early statues in stone however were made with the portions between the limbs reserved, and the limbs not detached from the body, the Egyptians being unable to advance beyond the sculptured pier. The statues even of the hardest stone were coloured in tempera, the whole surface having been covered with a layer of whitewash for the purpose on which the paint was laid. In some stone statues the eyes have hollow sockets and were evidently inlaid like those of wood. When not inlaid the eyes were painted. Mr. Flinders Petrie has some fragments of diorite statues of Chephren with the tempera still adhering.

In wooden statues, the limbs are detached; colour was used, more or less, and the eyes inlaid with bronze sockets and lids, obsidian pupils, and ivory or crystal whites, and there was, without doubt, much more freedom of attitude and execution; those of men, which are generally walking, have, as a rule, the left foot first. Females do not walk, but stand with both feet together; so do men when in groups at their side. No doubt at all periods the Egyptians endeavoured to produce idealised portraits as far as their genius would allow, and the wooden figures, and those of soft limestone, afforded the greatest facilities for the purpose, but the type of mankind from which they derived their canon did not conduce to a high order of beauty. Nor did the attitude appropriate to architectural details and considerations allow of much freedom or diversity, and the statue remained a pillar in the human form. In wood, however, greater licence was permitted, and the material permitted rounder forms, and not the sharp and angular lines required for stone. Yet occasionally even in stone, conventionality, as in the dwarf and idiot Nemhetp, was thrown aside and his head and legs represented in their hideous naturalism. Animals were also even, when the human form crystallised into a conventional type, sculptured in accordance with an idealised nature, and if the lion has a frill instead of a mane, the skin over his flanks, even in reluctant granite, exhibits a suppleness exactly corresponding to that in the natural animal.

The treatment of bronze does not admit so much freedom as that of wood, yet the bronze figures follow the wood with their detached limbs, which follow the style of the period, heavy features and massive limbs, with long extremities, under the fourth and fifth dynasties gradually becoming more refined and elegant till the twenty-sixth dynasty, then soft and rounded at the age of the Ptolemies, and the same for portraits under the Romans; for Greek art influenced Egyptian art, but not favourably. Technically speaking, the bronze statues were cast from a mould modelled on a clay original, sharply and well executed. It is even possible that the original figures were modelled in wax, for such originals have been found. To save the metal, cores were introduced into the mould made of fine sand, or even lead, before the molten bronze was run in; and in large bronze statues iron bars were inserted into the core to retain it in its place. No figures but of insignificant dimensions were cast solid. In some cases the core was either afterwards evicted from the figure to finish it, or else the statuette was cast in thin metal at once, and that, too, long before Rhœcus had introduced the art of casting bronze figures into Greece. As early as the eighth century B.C. the art of inlaying bronze figures with gold and silver lines and decorations appears. Later gilding on a tempera laid on the bronze was introduced. Still earlier enamelled eyes and eyebrows are found on bronze statues. Undoubtedly the use of bronze in sculpture was very ancient, yet the numerous bronzes found in museums are seldom found with royal names cast on them in the twenty-sixth dynasty, or the sixth century B.C., an age of revival rather than of invention; there are, however, a few earlier figures.

The bas-reliefs of all ages follow the style of sculpture at the earliest in a low bas-relief, and the figures and hieroglyphs massive and often detailed. Profile was preferred on account of its greater distinctness, full face except in large applied figures hardly ever used. The peculiar style of Egyptian bas-relief is the *cavo-rilievo*, cut like the intaglio of a gem or engraved stone below the surface, but the object intended not concave, as in a gem, but convex, as in the impression. This protected the sculpture from injury, when in this style, but when the bottom of the figure was flat the *cavo-rilievo*, perhaps, was filled with colour at least half-way up. This colour varied according to the period. It was blue or green at the period of the sixth dynasty, sometimes black under the eighteenth, and at the close of that line and the heretic dynasty yellow, then again blue under the nineteenth, yellow under the twentieth, and various later. The Roman period was profuse in gilding, the poverty of art being hidden under the gaudiness of decoration. Backgrounds were rarely painted, and then yellow. In bas-reliefs the area was crowded with figures of gods, men, animals, utensils, and collars, according to the subject; and in the historical and religious reliefs on the largest scale gods and monarchs were of colossal size, inferior personages only admitted to pigmaic proportions. Colossal proportion was the glamour of greatness, and Egyptian art was of stupendous proportions. These flat reliefs and *cavo-rilievos* wonderfully suited the architecture, and did not interfere with its details; they enriched it, and neither diverted nor distracted the eye. As Egyptian art knew no perspective, the vertical surface represented the horizontal plane in which the action was supposed to take place.

The mode by which statues of hard and igneous rocks were sculptured is a problem; softer materials were, without doubt, carved by bronze chisels, and even granite may have been stunned out by such massive chisels as have been found. Mr. Flinders Petrie has discovered that bronze circular drills faced, as he supposed, with emery powder or that of the hardest stones, were employed to cut down cylinders, which were afterwards removed, and that traces of these drills are found on works of the hardest material. Iron, and even steel, were known very early, and some early meteoric iron adzes are known. Engraved stones or gems show traces of the lapidary wheel and drills. Scarabæi of smaller size were sculptured out of steaschist, a comparatively soft material; those of hard stone were also carved, not drilled. The numerous porcelain figures of deities and sepulchral figures with similar objects were cast from a modelled original. M. Perrot has dissipated the idea of the supposed canon, and shows that the lines of square were used for the purpose of copying by what is called squaring.

All the sculptures were more or less coloured, but, besides sculpture, the Egyptians painted on a white ground the outlines of the figures in black, the colour monochrome, but without shading; the colours were mixed with gum or honey, and sometimes the effect was heightened by a resinous varnish. It was not till the Roman period that encaustic painting upon panel, or thin boards of cedar, was introduced. Sketches were often made in black ink only, the pen-and-ink sketches of the present day on a white ground with corrections *pentimenti* in red ink. At the time of the Romans, linen shrouds were painted, but the Egyptians had no pictures distinct from sculpture and architecture, or vignettes of papyri. After all, this nation of artists had no pictures.

Egyptian art ran through all products and manufactures, works in stone and jewelry, *cloisonné* inlaid work not strictly enamel, rather mosaic, glass, porcelain, bronze, ivory, bone, wood, and other products too long to detail.

On the whole, the work of M. Perrot is the last and best on Egyptian art, of which it gives an admirable general conception, and is a most useful manual for the student. There are no doubt some details to be filled up hereafter, and the work of Wilkinson supplies some of the missing links.*

ARCHITECTURE AMONG THE POETS.†

In the commencement of the "Epistle to Addison," by Pope, referred to and quoted from in our last, the poet begins with an expression of interest in the ruins of ancient Rome, which, commonplace as it is, strikes the first note of the modern feeling on the subject,—

> "See the wild waste of all-devouring years!
> How Rome her own sad sepulchre appears!
> With nodding arches, broken temples spread," &c.

It is not worth while to follow further a passage which is in Pope's most conventional style; but it is observable that here we have one of the first expressions in English poetry of that feeling of interest in the ruins of the buildings of past ages, and of classic antiquity especially, which is peculiarly a modern one, and which, in regard to Rome, received such fine expression by Byron a century or so later. But though Byron is now necessarily predominant in our minds when we think of the ruins of Rome, there were not wanting earlier English poets who apparently had a very strong feeling on the subject, and attempted at least to give adequate expression to this in their writings. Of these the most prominent is the gentle and unsophisticated poet, George Dyer, mostly reputed in literature as the author of a pastoral poem entitled "The Fleece," which has long ceased to be read except by literary students, but who had evidently a thoughtful appreciation of the relics of antiquity, and embodied his feelings on the subject in a poem on "The Ruins of Rome," which is not without its interest as a landmark of the progress of feeling in these matters, and as furnishing a hint of the aspect of ancient Rome before any one had thought of exploration and disinterment. He represents a scene in which architectural remains are half lost amid the growths of Nature,—

> "Globose and huge
> Grey mouldering temples swell, and wide o'ercast
> The solitary landscape, while the vine mantled brows
> The pendent goats unveil; regardless they
> Of hourly peril, though the clifted domes
> Tremble to every wind. The pilgrim oft,
> At dead of night, 'mid his oraison, hears
> Aghast the voice of Time, dispatching towers."

This latter expression carries us vividly back to a time when ruins such as those of Rome were left literally to "drop arch by arch," and the process of decay could be seen actually going on unchecked.

> "Pleased, I move along
> 'Mid vases boss'd,‡ and huge inscriptive stones,
> And intermingling vines, and figured nymphs,
> Floras and Cloes of delicious mould,
> Cheering the darkness; and deep empty tombs
> And dells, and mouldering shrines with old decay
> Rustic and green, and wide embowering shades
> Shot from the crooked clefts of nodding towers;
> A solemn wilderness."

* "A History of Art in Ancient Egypt." By Georges Perrot and Charles Chipiez. Two vols., 8vo. 1883. Chapman & Hall.

† See pp. 491, 526, *ante*.

‡ Compare this with Milton's "bossy sculptures," and the remarks thereupon (p. 492, *ante*).

Dyer comes to the architectural side of the subject as he contemplates the Pantheon, "noblest work of human skill," and suggests its usefulness as a study for the modern architect,—

"Here, curious architect,
If thou essayest, ambitious to surpass
Palladio, Angelus, or British Jones,
On these fair walls extend the certain scale
And turn th'instructive compass*, careful mark
How far, in hidden art, the noble plan
Extends, and where the lovely forms commence
Of flowering sculptures; nor neglect to note
How range the taper columns, and what weight
Their leafy brows sustain."

The ancient roads in the vicinity of Rome have this suggestiveness,—

"And see from every gate those ancient roads
With tombs high verged, the solemn paths of Fame;
Deserve they not regard? O'er whose broad flints
Such crowds have roll'd; so many storms of war,
So many pomps, so many wondering realms"

The special interest of Trajan's column is happily touched upon,—

"From whose low base the sculptures wind aloft,
And lead, through various toils, up the rough steep,
The hero to the skies."

And he remarks also on what has not always been appreciated, the enormous wealth of Rome in antiquarian remnants, in spite of the many collections which had already drawn upon her vast store,—

"And every realm and state
With Rome's august remains, heroes and gods,
Deck their long galleries and winding groves;
Yet miss we not the innumerable thefts,
Yet still profuse of graces teems the waste."

Dyer's best poem, perhaps, is "Grongar Hill," which still keeps its place as a readable descriptive poem, and here he does not fail to notice the architectural features in the landscape; looking over the landscape from an eminence,—

"Old castles on the cliffs arise,
Proudly towering in the skies;
Rushing from the woods, the spires
Seem from hence ascending fires."

The last couplet might pass for a spirited expression; but alas! a little inspection of the poetry of the period shows that it was only the cant language of the day; spires always "rush into the sky" during the reign of the school of poetry to which Dyer belonged; but his meditations on the ruins of Rome have a certain individuality, perhaps because he had in that subject got a little out of the usual groove of the English poetry of the period.

As a contrast to Dyer's glorification of the architectural relics of antiquity, may be quoted Thompson's reflections anent them in a poem in honour of Newton, in which he reflects how far above mere material monuments stands the fame of the great astronomer:—

"Ye mouldering stones
That build the towering pyramid, the proud
Triumphal arch, the monument effaced
By ruthless rum, and whate'er supports
The worshipp'd name of hoar antiquity,
Down to the dust! What grandeur can ye boast,
While Newton lifts his column to the skies
Beyond the waste of Time?"

In Thompson's "Castle of Indolence," charming poem as it is, the castle, though he professes to describe it, is really nowhere in the matter; the situation, the landscape, and the people only are described; and "The Seasons" naturally does not lead much into the land of architecture. In his poem "On Liberty," however, he pays a tribute to the greatness of Greece, in arts as well as in free politics, going into some little detail in the matter, not perhaps in a very critical spirit, but with a certain perception. The passage has an historical interest, as an instance of the absolute certainty which most cultured men of that day entertained in regard to the pre-eminence of Classic and the comparative worthlessness of Gothic architecture: he adduces Greece as supreme in the ranks of architecture,—

"That Art where most magnificent appears
The little builder, man; by thee refined,
And, smiling high, to full perfection brought.
Such thy sure rules, that Goths of every age
Who scorn their aid, have only loaded earth
With labour'd heavy monuments of shame:
Not those gay domes† that o'er thy splendid shore
Shot, all proportion, up. First, unadorn'd,
And nobly plain, the manly Doric rose;
Th'Ionic then, with decent matron grace,
Her airy pillar heaved; luxuriant last,
The rich Corinthian spread her wanton wreath.
The whole so measured true, so lessen'd off
By fine proportion, that the marble piles,
Form'd to repel the still or stormy waste
Of rolling ages, light as fabrics look
That from the magic wand aerial rise."

* Dyer seems to have had a notion of "measured etches."

† Thompson, we perceive, is as inaccurate as Milton, attributing domes to Greek architecture, as Milton attributed spires to Roman. It is only in quite recent times that accuracy of expression in such matters has seemed of any consequence to poets.

It is curious to contrast this with the protest made in favour of Gothic architecture, a very little later than Thompson, by Thomas Warton, poet and historian of poetry; as a poet, indeed, of very minor fame (though he has written some really pretty things), but a man of very wide and general culture. His protest gains additional interest from the fact that it was made *apropos* of the design by Reynolds for the new stained windows at New College, Oxford, which displeased Warton as out of keeping with the spirit of Mediæval architecture, about which he seemed to have about the same sort of feeling and appreciation that Horace Walpole boasted of. He begins by appealing to those concerned about the new window to,

"Forbear to trace
These faultless forms of elegance and grace.

Nor cheat by strokes of art, with truth combined,
The fond illusions of my wayward mind."

For he had been one of those who loved this quaint Mediæval art, who would,—

"With Gothic manners Gothic arts explore,
And muse on the magnificence of yore.
But chief enraptured have I loved to roam,
A lingering votary, the vaulted dome,
Where the tall shafts, that mount in massy pride,
Their mingling branches shoot from side to side;
Where elfin sculptors with fantastic clue
O'er the long roof their wild embroidery drew;
When superstition, with capricious hand,
In many a maze the wreathed window plann'd,
With hues romantic tinged the gorgeous pane,
To fill with holy light the wondrous fane,
To aid the builder's model, richly rude,
By no Vitruvian symmetry subdued."

Why superstition should be supposed to be specially concerned in the traceried windows does not appear. The poet, however, it is rather disappointing to add, is eventually converted on a further study of Reynolds's designs, and comes to the conclusion that Reynolds has been providentially appointed

"By arts unknown before, to reconcile
The willing graces to the Gothic pile."

How astonished Warton would have been to have been told that a century later the "richly rude" architecture would have been regarded as superior to anything done on the most approved Vitruvian models, and Reynolds's intrusion into as a kind of artistic profanity. But thus the whirligig of Time brings in his revenges. Before quitting Warton, we may notice a pretty touch in his poem to a friend who was reluctantly leaving a favourite village in Hampshire; when he has left,—

"Who now shall mark
The cot that smokes with early fire,
The low-roof'd fane's embosom'd spire?

Who, through the sunshine and the shower,
Descry the rainbow-painted tower?"

The last line is a real bit of colour, and evidently from actual observation.

Gray's one distinct reference to architecture arises, like some of those quoted in a former article, from the description of a house he had been staying at, and is noticeable for containing one passage of very wide application; it is in a rather lightly-written poem, entitled "A Long Story":—

"In Britain's isle, no matter where,
An ancient pile of building stands;
The Huntingdons and Hattons there
Employ'd the power of fairy hands.

To raise the ceiling's fretted height,
Each pannell in achievements clothing,
Rich windows that exclude the light,
And passages that lead to nothing."

The last couplet has been frequently quoted in reference to architecture, often probably by writers who had no idea of its origin: its point consists in the fact that it is not only a description of one building, but sums up neatly characteristics which belong to all architecture built for show rather than for the direct expression of practical ends; and forms a very concise and concentrated bit of architectural criticism, expressed with peculiar felicity of phrase. It is rare to meet with any architectural reference so full of meaning as this, in the English poets previously to the present century, or one might even say to the present generation, our leading living poets having displayed more of the element of true art-criticism than any of their predecessors.

We may conclude our architectural citations from the older poets by one from the imitation antique of Chatterton, in his famous concoctions which he wished to pass off as those of a recovered Mediæval poet. Chatterton was, as every one remembers, a native of Bristol, in which city he professed to have found the Rowley MSS.; so the spire of Redcliff Church, the most conspicuous architectural object in the city, naturally suggested itself to him as one incident on which "Rowley" might have had something to say,—which he says in this wise:—

"Stay, curyous traveller, and passe not bye,
Until this festive pile astounds thine eye;
Whol rocks on rocks with yron joynd surveie,
An I okes with okes entwined dispread lie,
This mighte pile, that keeps the wyndes at baie,
Fire-levyn and the mokie storm defie,
That shoots aloft into the cleare mass of daie,
Shall be the record of the lordes name for me.
* * * *
Well maist thou be astound, but view it well;
Go not from hence before thou see thy fill,
And learn the Layder's virtues and his name;
Of this tall spire in every countye telle,
And with thy tale the lazing rich men shame;
Showe how the glorious Canyage did excelle."

SIR CHRISTOPHER WREN AND "HIS MAJESTY'S WORKES."

"Adde tot egregias urbes, operum que laborem."
Virgil.

"Genius, at least what is generally so called, is the child of imitation; it is vain to endeavour to invent without materials on which the mind may work, and from which invention must originate. Nothing can come of nothing"
Sir Joshua Reynolds.

In a recent number we gave an account of Wren's labours in connexion with the survey and repair of West Minster.* It is true that little which is new remains to be told of his re-construction of St. Paul's and some seventy-five City churches. But the history of what he did, and of what he would have done elsewhere, both in and around London, is not so commonly known that a few words would be unprofitably devoted to considering this portion of his enterprise and invention. It will not be amiss to first touch upon those occupations of his industrious life which are generally neglected, whilst his merits as an architect excite our admiration. An ardent student of natural philosophy, an astronomer and consummate mathematician, he invented mezzotint engraving, he first explained the cause of the mercury's level in Torricelli's barometer, he foreshadowed Newton's theory of gravitation.† He succeeded Laurence Rooke as professor of astronomy at Gresham College before he was twenty-five years of age. He propounded problems to Pascal which the latter could not solve, and if he is a fool who never made an experiment Wren was of the wisest of mankind. Rarely, indeed, met that Royal Society he helped to establish without the communication from Wren of some fresh trial in physics, some new disquisition in mathematical science.

The only son of a contemporary of Sully, Galileo, Rubens, Vandyke, and Inigo Jones, who himself, when dean of Windsor, designed a palace for the Rose and Lily Queen,‡ Wren's own contemporaries embrace most of the luminaries of modern Europe, with the wits, authors, architects, ministers, and warriors of King Charles I. and his five successors on the throne. At the time of his birth Galileo was condemned by that Pope (Urban VIII.) for whom Bernini was erecting a baldachino beneath Michelangelo's cupola at St. Peter's. Gresham College deserted through the troubles of the times, its professors and their learned associates were meeting in private in Boyle's or Petty's rooms at Oxford, when Wren, barely fourteen, invented a pneumatic machine and dedicated an astronomical instrument with a fair set of Latin verses to his father. Entered the following year (1646) of the then newly-founded Wadham College as a gentleman commoner, he soon gained the notice, and, what is so valuable to youth, the friendship of his elders,—Dr. John Wilkins, the warden (afterwards Bishop of Chester), Dr. Seth Ward, of Wadham, Oughtred, who speaks of him in the highest terms in his "Claves Mathematicæ," and the Prince Palatine.§

In 1647, when Wren, as assistant to Scar-

* See p. 307, *ante*.

† That method of engraving was improved by Prince Rupert, who reckoned Wren amongst his especial friends and sent him yearly a present of Rhenish wine. Torricelli, to whom we must allow the actual discovery of the barometer (or baroscope), died in 1647, in Wren's second year. Wren's experiments on atmospheric pressure are of six or seven years later. Torricelli attributed the pressure to lunar influence; that Wren, in examining the hypothesis of Des Cartes, found the true solution is evident from the Royal Society's register-books for February, 1678-9.

‡ The estimates will be found in the Clarendon State papers for date May 16, 1634.

§ In the notices of his visit to Oxford somewhat later (July, 1654), Evelyn speaks of his calling at Wadham upon "that miracle of a youth," and again of "that prodigious young scholar, Mr. Christopher Wren." In his "Sculptura," too, the amiable and truth-loving John Evelyn calls him "that rare and early prodigy of universal science."

borough in his lectures at Surgeons' Hall, gave evidence of his subsequent anatomical skill, and was already a patentee for a diplographic machine. Innocent X. pronounced the completion of a church for which twenty popes in succession used the resources of opulence and of the constructive arts, and upon which, its first stone laid by Julius II. when King Henry VII. was building his chapel at West Minster, a Bramante, a Raffaelle, a Buonarotti, and a Borromini had been employed. Some few months passed, and in the person of the Royal Martyr England lost one of the most elegant-minded patrons of the arts and sciences she had ever possessed.

Despite the repeated proclamations of Queen Elizabeth and her successor, London was found to be growing too large. Adding, as was his wont, sententious remonstrance to prohibition, King James I. would ask his country gentlemen to abandon the town for their seats: "You are like ships in a sea which show like nothing, but in the country villages you are ships in a river which look like great things."* Nevertheless, few of our sovereigns had more or finer palaces than he. From his edicts of 1607 against building within the city, or one mile thereof, and for forefronts of brick or stone, more particularly from that of 1614 and the efforts of Inigo Jones, should date the reformation of architecture in the metropolis. But his predecessor's reign had already given us Theobalds, Burleigh, and Hatfield; King Henry VIII. discarding the wandering Freemasons from Rome, —*protégés* of William of Wykeham,—accorded a regal protection to Holbein, to John Thynne, to John of Padua. Before the close of the sixteenth century Oxford had been adorned with Magdalen, Merton, and New, the sister University with King's, St. John's, and Queen's, with Theodore Havens's three Italian gates at Caius, and Rodolph Simmons's work at Emmanuel, Sidney Sussex, and Trinity. Men like Bacon and Sir Henry Wotton,—a student in Palladio's Venetian school,—leaving legislation and diplomacy for a while, gave their minds to the theory and practice of an art which found its warmest patrons in the Stewarts; an art which was fostered and encouraged by Richelieu and Colbert, by Buckingham and Pembroke, by Arundel and Bedford. To him who, more of an architect by taste and education than Wren, was as assuredly our Palladio as the other was our Vitruvius, and who died in obscurity, poverty, and grief, we owe the new quadrangle of St. John's, Oxford; Coleshill and Wilton; Arch Row, and the chapel, Lincoln's-Inn, York Gate, and the Banqueting-hall in the city of Westminster. Before Cromwell's usurpation arrested the progress of every elegance of civilisation Smithson erected Welbeck and Bolsover, Bernard Jansen, of Dieterling's Flemish school, built Audley End and that noble mansion in the Strand to which Gerard Christmas added a still nobler façade.

With the Restoration the former order of things returned. Notwithstanding the taunt levelled against his race the king *did* learn something in his travels abroad. He acquired varied knowledge, and that love of stately though decorous magnificence in other things as in architecture, for whose exercise the events of his reign provided so wide a field. Scarcely had he regained his throne when, prompted by John Evelyn, he sent to Oxford for Wren, whom he had already charged to make a sphere of the moon,†—to act as assistant to Sir John Denham, "Surveighor-General of his Majesty's Workes." Amongst the numerous plans promoted by the king for advancing the national manners, learning, and philosophy was the Royal Society, to which, with Lord Brouncker for its first president, he gave a charter dated the 15th of July, 1662. Wren received his first public commission the following year. It was to survey and direct some maritime works at Tangier, which at the peace with Tripoli was declared a free port, and included in the real dowry of the Portuguese Infanta. Though offered a handsome salary, dispensation from lectures as Savilian Professor, and the reversion of Denham's office,‡ Wren begged, in view of ill-health, that his services might be commanded within the kingdom. He was thus free to take up a project the king had greatly at heart, the completing the reparation of St. Paul's, where, fitted with Jones's incongruous but in itself beautiful Corinthian portico, the Dean and Chapter had in 1662 adapted for divine service the eastern end of Richard I.'s choir. In his report upon the fabric, noble still in death, it will be noticed how Wren from the outset sets his mind on what Evelyn terms "a forme of church-building not as yet known in England." He proposed to encumber the western portico with a cupola, and to remedy the decay of the tower by "cutting off the inner corners of the cross, to reduce the middle part into a spacious dome or rotunda with a cupola or hemispherical roof, and upon the cupola for the outward ornament a lantern with a spring top, to rise proportionably, though not to that unnecessary height of the former spire of timber and lead burned by lightning."*

In 1663, the year in which the Royal Academy of Belles Lettres and Inscriptions was founded at Paris, we find Wren engaged upon schemes so diverse as experiments for hatching eggs by heat of a lamp, an instrument for throwing any natural object into perspective, a survey of the zodiacal stars for the Royal Society,† with the designing of his earliest public building,—the Sheldonian Theatre, Oxford,—and of a chapel for Pembroke, Cambridge, of which his uncle, the Bishop of Ely, had been master and a benefactor. Early in the year 1665 Wren went to Paris, writing many interesting particulars of his stay there to his friend Dr. Bateman. Had he gone further southward he would have seen the beautiful Grecian spirals and contours lined upon the higher mathematical curves wherein the geometry of Euclid was as incapable of improvement by his successors as was the architecture of Perikles by the mechanics of Markellus, Trajan, Constantine, or Diokletian. Why he did not perfect his purpose to travel in Italy and Greece cannot now be ascertained; but of this we may be sure, that could he have emancipated himself from the influence of Perrault at the Louvre then being built,‡ could he have seen the Propylæa and the Akropolis before their bombardment, with Pheidias and Mnesikles, Callikrates and Iktinus for his guides, a second age of Perikles might have dawned for Europe, and Wren have proved himself the greatest architect that modern times have ever known.

He had not been long home,§ superintending his additions to Trinity, Oxford, and the building of the Library and Neville's Court at Trinity, Cambridge,‖ when, the plague hardly abated, there burst forth in the night of Sunday, 2nd September, that vast conflagration which, well nigh reducing London to ashes, opened up for him opportunities as perhaps few architects enjoyed before. On the 27th August, Wren, with Evelyn, Sancroft the dean, and other commissioners, were surveying St. Paul's. On the 13th September, the extent of the fire barely defined, Evelyn presents to the king "a survey of the ruines and a plot for a new citty, with a discourse on it," which were eagerly examined that same evening in the queen's bed-chamber by the king, his consort, and the Duke of York. Such is the elastic temperament of our countrymen, even then busy in the scene of the plague, and carrying on war with three of the most powerful states in all Europe, that but six days later Hooke exhibited his model to the Royal Society, who, as Dr. Sprat tells us, were already planning how to rebuild the City.¶ King Charles II., devoting all along much of his time and money to the works, at once issued a proclamation for staying any attempt at reconstruction for the present, and announcing that room should be taken for a fair quay by the river-side, a project afterwards elaborated by Kiviett whose design Evelyn warmly espoused. Meanwhile Wren was not idle. Evelyn admits in a letter to Sir Samuel Tuke, dated Saye's Court, 27 Sept., 1666, that his own "idea was the second that was seen within two days after the conflagration, but Dr. Wren had got the start of me"; and Oldenburgh, secretary to the Royal Society, describes Wren's plan in a letter of date the 18th September, to the Hon. Robert Boyle. Appointed architect for building the whole City, and succeeding Denham in 1669, he was better enabled to advocate his proposals. These are too well known to our readers for recapitulation here; yet it should be remembered how they provide, with other laudable features, for removing all churchyards, noisome factories, and the like beyond the town. But apprehension and cupidity prevailed. The citizens hesitated to surrender their properties, even for a term, to a commission or public trustees, they were obstinately averse from replacing their premises except over the former ground and foundations. It were idle now to deplore the immense expenditure which a later age might have been saved, or the loss of so signal an occasion to render London the finest city in Christendom.

More agreeably with our present purpose we follow Wren rebuilding the Custom House (1668), (which, however, he outlived, for it was again burned in 1718), surveying Salisbury Cathedral for his old friend, Seth Ward, now diocesan; at the opening of his Sheldonian Theatre (9th July);* and the opening of his new Exchange as completed by his pupil, Hawksmoor, on the 28th of September of the same year (1669). His post of surveyor-general brought him labour incessant. Not the least arduous of his duties lay in the dealing with innumerable petitions respecting the erection of new premises in every quarter of the town. A MS. volume of Privy Council proceedings for the interval, 1669-1695,† contributes valuable information upon the topography of London. Here Wren's name repeatedly occurs. We find him, for example, recommending the king, the Duke of York, Prince Rupert, the Archbishop of Canterbury, &c., in council assembled, to comply subject to certain structural conditions with Sir Richard Stydolfe's memorial for leave to proceed with some buildings, begun before the Fire, in the rear of St. Giles's Church and leading thence to Piccadilly. Another council of the same illustrious personages deals with Colonel Panton's petition for going on with his gaming-house ("Shavers' Hall"),‡ and subsequently for his projects relating to the Haymarket, Windmill and Panton streets. The Council debate similar petitions for alterations in St. Clement Danes and Lincoln's Inn-fields, and of Edward Billings for an approach from King-street through Mill Ditch to the Horse-ferry (Millbank). To their favourable reception of Wren's petition to them in turn against the wretched structures that were rapidly arising in the district about the Dog, Windmill, and So-Hoe Fields in the then parish of St. Martin, the public are indebted for the healthier localities of the Haymarket and St. Anne's, Soho.§ In the year 1672 Wren laid out for Lady Wentworth the high road to Stepney; during the period 1671-1714 he built anew fifty-three parish churches in London alone, besides repairing and adding to others,—to say nothing of his concurrent works at Westminster; the Guildhall, for several of the City Companies, at Salisbury, and at Chichester where he rebuilt the spire, suspending within it his pendulum-floor, and designed two fine mansions in the East and West Streets. Temple Bar, coëval with the establishment by Colbert, of the French Royal Academy of Architects, he began in 1670. It should have opened upon his proposed piazza at St. Dunstan's in the West, with its oblique street on the right to the Temple-walk and so to the quay from Bridewell to the Tower. Shortly afterwards the site of the ancient St. Margaret's Church was chosen for the Monument. Exceeding the column of Antoninus at Rome by nearly 30 ft., this is the loftiest and finest isolated pillar in the world. According to his designs at All Souls, Wren intended to surmount it with a phœnix or a statue of King Charles II. No. 73, in vol. ii. of the drawings shows a column with sculptured flames of gilded bronze issuing from apertures in the shaft, like the rostral pier at Rome.‖ For the Crown Si[r]

* J. Elmes's "Life of Sir Christopher Wren," 4to., 1823.
† See the joint letter of Sir Rob. Moray, president of the embryo Royal Society, and Sir Paul Neile to Wren, dated from Whitehall, May 17, 1661.
‡ See letter from his cousin Matthew, secretary to the Lord Chancellor Hyde, in the "Parentalia," p. 269.

See Evelyn's Diary, *sub* 27 August, 1666. The spire is a conspicuous object in Van Der Wyngaerde's map, drawn (*circa* 1550) a few years before its destruction. This map, preserved in the Bodleian Library, has been lately reproduced by the London Topographical Society.
† Birch's "History of the Royal Society," vol. i., p. 233.
‡ Perrault's design supplanted those of Bernini,—the five little designs for which, when Wren obtained but a glimpse of them, he says he would have given his skin.
§ The general belief that he was recalled on the outbreak of the Fire is conclusively dissipated by reference to the Royal Society's books,—he attended a meeting of the 28th March, 1666. In Boyle's works, vol. v., pp. 333 and 351, he is stated to have returned in February of that year.
‖ See his three volumes, folio, of MSS. and drawings at All Souls' Library.
¶ See his "History of the Royal Society," 4to., 1667, p. 129.

* In his Memoirs, *passim*, Evelyn describes the Encœnia on this occasion.
† *Penes* J. Elmes, whose work is cited above.
‡ Occupying the whole south side, recently pulled down, of Coventry-street, between the Haymarket and Hedge-lane (now Whitcomb-street).
§ See p. 205, *ante*.
‖ In the *Times* of the 30th of March last is an accoun

Christopher Wren was engaged upon the mausoleum which the King intended to set up in the little Chapel, or Tomb House, of St. George's, Windsor, to his father's memory. Wren's drawing and estimates detailed for the smallest particulars are at All Souls, the title-page inscribed in his own hand "at (eheu conditionem temporum!) nondum constructum." The Commons' vote of 70,000*l.* for the funeral and tomb is alluded to by Dr. Sprat in his sermon at St. Margaret's Church to the members of the next day, 30th January, 1678. Charles II. also employed Wren (1683) upon the palace he devised for himself at Winchester, but which the Sovereign's death left incompleted. Wren's design embodied a huge cupola visible from the sea, and a spacious park opening into the forest. Queen Anne meant to finish this palace for her consort, who did not live to inhabit it. What remains of it forms the district barracks.* Amongst other works of Sir Christopher Wren may be instanced the bishop's palace at Winchester on the site of the ancient Wolvesley Castle, Hampton Court, Chelsea Hospital, for which he drew up the statutes and economic regulations; Flamsteed House (the Observatory) and the Seamen's Hospital, Greenwich; Marlborough House, for the great duke and his wife; the Doric colonnade, council chamber, audience-room, drawing-room, and Queen's chapel, St. James's Palace; the College of Physicians, Warwick-lane; Morden College, Blackheath; Emmanuel College Chapel, Cambridge; Berkshire (Cleveland) House, St. James's; Queen's College Chapel and the Ashmolean Museum, Oxford; Isleworth Church and that of St. James's, Piccadilly; the mansion, now divided, on the south side of Queen-square, Bloomsbury, for Lord Newcastle; and the large house, subsequently sub-divided, in Great Russell-street, once occupied by his son.

In pitiable contrast with Wren's yearly salary (equal to about 600*l.* at the present day) as architect of St. Paul's are the sums which Bird received for his statue of Queen Anne facing Ludgate-hill.† Much sadder is the story of the downfall towards the end of a career extending over forty-nine years, he being then 86 years of age, but with faculties unimpaired, of one "the length of whose life," says Walpole, "enriched the reign of several princes and disgraced the last of them." Of the many brilliant writers and eminent men who were witnesses of his fame only two could spare a line in notice of his end.‡

Viewing from the tower of St. Mary Overy's, the survivors of the spires and steeples, which aroused Sir Roger de Coverley's complacent pride as he was rowed with the Spectator from Temple-stairs to Spring-garden (Vauxhall), and, mindful of their further destruction involved by the Union of Benefices Act and the Bishop of London's measure, we recall the words written with pious care by his son over his grave and repeat, as has been well said, *Si monumentum requiris—ne circumspicias.*

A Well-deserved Honour.—A baronetcy to the scientific slayer is of oftener occurrence than one to the scientific saviour. The intimation that the Queen proposes to confer this honour upon Mr. T. Spencer Wells, the very eminent surgeon, has given unqualified satisfaction to all who are acquainted with the history of surgery or have any knowledge of Mr. Wells himself. By his discoveries and practice hundreds, not to say thousands, of lives have been saved, and surgeons are now encouraged to deal with portions of the human organism with which before they feared to meddle, leaving the patient to die. We heartily wish the new Baronet a long and happy life.

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of the recent discovery of the lower portion of the old Rostra opposite the Curia (not the later Julia Rostra). Wren's inscription for the pedestal of his monument was rejected. It was first used by the Royal Society, but its vibration interfered with the nicety requisite for their observations.

* See No. 96, vol. ii., of the All Souls collection, for Wren's abstract of land, &c., "purchased for the accommodation of the king's intended pallace at Winton," with plan of the street between the hill on which it stood and the cathedral western gate. No. 97, MS., gives a full description of "Winchester Castle."

† 250*l.* for the central figure, 880*l.* for the four lower figures, and 50*l.* for the shield and coat of arms.

‡ Steele in his apologue of Nestor at Athens, *Tatler*, No. 52; and Pope in his verses:—

"See under Ripley rise a new Whitehall,
While Jones' and Boyle's united la' ours fall,
While Wren, with sorrow to the grave descends,
Gay dies unpension'd with a hundred friends."

Pope lashes Benson, Wren's successor is Surveyor-General, in the "Dunciad."

THE INSTITUTE OF PAINTERS IN WATER-COLOURS.

We had suggested, for two or three years back, that this society would have to make a new departure if they wished to keep up a creditable name in the world of art. The old exhibitions, in the rooms in Pall-mall, were annually becoming more and more unsatisfactory, and the drawings of a really high class fewer and fewer in numerical proportion; and it must have been evident to every one that some new life was required in order to keep the Institute of Water-Colour Painters on its pedestal. The attempt to do this has been made in a spirited enough manner, and the new galleries of the Institute are a very fine, spacious, and well-lighted set of rooms, with accommodation for a very large number of pictures. The exterior design is something of a new departure in the treatment of Classic architecture, with a good deal of delicate detail, and a general arrangement which aptly expresses the interior constitution of the building. It affords a practical illustration, however, of the insight of the Greek architects in regard to optical corrections; for if the front be viewed from a central position on the opposite side of Piccadilly, it will be seen that the row of pilasters which forms the chief feature of the front appears to expand slightly outwards as it rises,—an optical defect which a Greek architect would have corrected. Exception will probably be taken, also, on quite different grounds, by the older body, to the introduction on the façade of the sculptured portraits of Girtin, David Cox, and other eminent members of the old school of English water-colour painters, who were the originators of the old Water-Colour Society, which has very naturally declined to amalgamate with the new movement of the Institute, and continues its own individual and very brilliant career. Members of the older society have a legitimate right to complain of this sculptural appropriation of their heroes.

This independent attitude of the old Water-Colour Society renders it impossible, also, for the Institute to properly substantiate their claim to assume the same position in regard to water-colour art which the Academy assumes in regard to oil-painting. The old Society includes a considerable proportion of the finest water-colour artists of the day, who are not represented at the Institute, which therefore cannot justly claim that representative position which it professes to aspire to. It occupies, certainly, quite a new position in comparison with previously existing water-colour exhibitions, in being open to all competent contributors, irrespective of membership; but it can hardly take its place as a representative exhibition when a number of the finest water-colour artists of the day, who belong to the old Society, are not represented on its walls. It promises, however, the institution of free schools of water-colour painting, in emulation of the Academy free schools, which, of course, will be an important point in its favour.

Our notice of the opening exhibition must be brief, the short time allowed by press exigencies having been further shortened by the non-arrival of the catalogues at the Gallery on the press view day (Thursday) until after mid-day. The exhibition includes nearly 900 works, many of them of a larger size than is ordinary in water-colour painting, arranged over the walls of three large rooms, with excellent light, both in regard to quantity and quality. The contents of the exhibition show considerable catholicity of sympathy—many very diverse schools being represented. The leading original members have obviously made special efforts to do honour to the opening exhibition, in some cases with notable success. It is impossible, however, to blink the fact that certain rather long-established and once honoured members have, unfortunately, displayed more prominently than ever the fact that their views of art are entirely *passés*. Cherubini said, in answer to the question, What could be worse than a flute solo? "A flute duet"; and if it be asked, What could be worse than a small drawing by Mr. ——— ? we should say "a large one," such as are to be found on the line in the present exhibition. Such works, however, though very large, are not very numerous; nor would we mention the names of the artists; they have an official claim to space, and must find their own level. Apart from this, there is a large amount of very good work, some of it with special interest. For causes aforesaid, we must be brief, and merely name some of the leading works. Mr. Linton, the finest and most powerful artist among the list of members, sends a very highly-finished work, "The Admonition" (484), a picture of Florentine life and costume, with a background of Florentine decorative art, architectural and textural, a sermon addressed to some gay young people by a dignitary of the Church, at the head of a line of inferior ecclesiastics. The picture has not the passionate and tragic interest of Mr. Linton's best works, but it is equal to his best in point of execution. Mr. Thomas Collier, who is the finest representative in the Institute of the true style of water-colour landscape painting, sends a work in his very best manner, "Two Green Roads Across a Common Wide" (491), and Mr. Mark Fisher exhibits the best qualities of his bright and free style (a style which is really much better suited to water-colour than to oil) in his "Spring" (557), a scene with budding trees, and cattle in a meadow, a good deal like a good many other things he has done, but not to be despised on that account. We are bound to give prominent notice to the admirable architectural drawings by Mr. Fulleylove, who has come out on a larger scale than before in some drawings representing parts of the buildings and ornamental fountains of Versailles; these represent the perfection of architectural painting. Mr. W. L. Wyllie has taken up a special line—that of large ships unloading in dock or at anchorage—and in several drawings has treated this class of subject with great realistic truth, as well as true artistic feeling for the picturesque qualities possessed even by steam vessels, when rightly regarded. A new member must be specially noticed, Mr. Abbey, who has been associated with Mr. Parsons by supplying the figures for a Thames-side landscape of the latter artist's, and contributes a very clever and well, executed work of his own, half-humorous-half-pathetic, "The Widower" (473). Mr. Parsons' drawing called "Washing-day" (311), is a masterpiece of fine, broad, open-air painting; an out-door scene in which clothes hang to dry from the "high-lights"; a perfectly unaffected rendering of every-day incident, with a breadth and power of style which brings it to the level of really high art. Mr. J. Knight's "The Last of the Light" (100), is a drawing of great size and powerful effect, but a little artificial; everything is sacrificed, in the way of light and colour, to the one gleam of sunset on the upper part of the cliff. Among other works in the first room is a clever painting by Mr. Charles Cattermole, "Shylock Pursued by the Boys of Venice" (30), very characteristic in regard to the figures. Mr. Cattermole makes the common mistake of representing the buildings as old, whereas at the time supposed by the play they should have been new. "The Black Coolins" (38), is a large, powerfully-conceived scene by Mr. C. E. Johnson, a gloomy spot amid desolate Highland hills. Mr. Staniland's "The Lotus Eaters" (83), is a large drawing representing some girls reclining by the side of a stream, with a very stagey effect of yellow light on their figures. A very original work by Mr. Walter Langley is "Wandering Thoughts" (105), a scene in the back passage of some cottages, where a girl is seated on some stone steps, evidently far away from the limited scene before her. Mr. Staniland's "Yea or Nay" (461) is a much better executed work than the other. Mr. Small's "Sophia Western and Tom Jones" (428) is a fine drawing, but it is not Sophia Western, of whom we have rarely seen a satisfactory embodiment. A remarkable little work in its way, in the second room, is Mr. Elson's "One of the Liris Bronzes, British Museum" (532), which is so admirably executed as to present absolutely an ocular illusion, and make one think it is a piece of a bronze relic framed.

Herr Israels is represented by one work in his best way, "Waiting" (746), an interior with a single figure, and one or two smaller drawings. One or two other contributors have also taken upon them the task of representing Israels, in somewhat too palpable imitation of the master-hand. "Graziella" (237), for instance, a peasant figure by Mr. Henkes, is absurdly "Israelitish." Mr. Hugh Carter, who began by doing the same thing, has carried the style of manipulation derived from this source into a class of subject quite out of the beat of Israels—"Music of the Past" (258), an interior with an old harpsichord and figures in style and costume to match, the whole

showing an admirable combination of realism with softness of effect. Mr. Aumonier's "Thames Lilies" (722) is one of the finest works in the gallery; the study of the exquisite and endless variety of the water-lily leaves is beautifully carried out. Mr. Parsons' "Market-day at Lechlade" (863) is a beautiful English scene, combining beautiful and delicate landscape-painting with apparently minute topographical exactness. Miss Spiers's very clever and elaborate studies of still-life, "Foolish Old Odds and Foolish Old Ends," and "The Bachelor's Breakfast" (605, 769) should be looked at.

The spacious character of the rooms seems likely to lead to a development of larger and bolder work in water-colour painting than we have hitherto been used to see in most of our water-colour exhibitions; and in this respect as well as in others the development of the new exhibition will be matter of interest.

FOREIGN NOTES.

Statue to Leibnitz.—A statue is shortly to be erected to the German philosopher, Leibnitz, in his birthplace, Leipsic. The work was designed and modelled by Professor Hähnel, and has been cast in bronze by Herr Lenz, of Nuremberg.

The Olympia Collection in Berlin.—In the collection of models of the remains of Olympia, which is being prepared in the Berlin Museum grounds, the two friezes of the great temples have now been restored, and a model has been made of the restored Niké of Paionios, with its pedestal, on the scale of one to ten. This statue is the only monument of Victory belonging to the most flourishing period of Greek art which has been preserved to the present day in a tolerably perfect condition.

A Statue to Luther.—An influential movement has been set on foot in New York for the purpose of collecting subscriptions for a monument to Martin Luther, which it is proposed to erect at Washington. The Martin Luther Society of New York, which is taking an active part in the matter, has resolved that the 10th of November, which is the four hundredth anniversary of the birth of the author of the Protestant Reformation, shall be celebrated in America with great splendour.

Mediæval Rome. Owing to the fact that the improvements of the river Tiber, which have been projected and resolved upon in the city of Rome, will cause the final disappearance of a number of interesting monuments, dating from various periods of the Middle Ages, the large collection of water-colour drawings of these structures, recently executed by M. Franz Rösler, has acquired unusual value and interest. So impressed, indeed, was the Municipality of Rome with the value of the collection that it has just purchased the drawings from the artist for the sum of 18,000 francs. They are forty in number, and are now on view in the Hall of Architecture at the Roman International Exhibition.

The Gregorian Prize.—According to the *Osservatore Romano* the Artists' Society of the Pantheon at Rome has given notice that the above-mentioned prize, a gold medal of the value of 1,000 lire, is now open to competitors of all nations. The work must be an oil painting on canvass, the subject being "The Temptation of Christ in the Wilderness." The size of the painting is to be 0·9 of a mètre in breadth and 0·7 of a mètre in height. The competing works are to be delivered at the Pantheon at Rome on the 30th of April, 1884, between the hours of ten a.m. and two p.m. Every painting is to have a motto and the name of the artist is to be enclosed in a sealed envelope bearing the same motto as his picture. The Secretary of the Society, Signor Carlo Ludovico Visconti, of Rome, is willing to give any further particulars which may be required.

Water.—Two competing schemes in Parliament this session for the supply of water to a large part of Flintshire have been before a Committee of the House of Lords last week and this. One scheme was the Flintshire Gas and Water (the engineer being Mr. Bateman, C.E.), and the other the Hawarden and District Water (the engineer being Mr. Robinson, C.E.). The Committee decided to pass the scheme of the Hawarden Company, and threw out that of the Flintshire Company.

THE "IMPRESSIONISTS" IN LONDON.

We have now an opportunity of judging for ourselves of the merits and aims of some of the works of the "Société des Impressionistes," who, in this age of receipts for making art, have struck out one of the last and perhaps cleverest of such receipts. Fifty or sixty pictures of this school are on view at the gallery of Messrs. Dowdeswell, in Bond-street, a firm of art-purveyors who have associated themselves rather specially, and no doubt with practical insight into the demands and fashions of the day, with the classes of artists who provide what is supposed to be *caviare* to the general, and on that plea to be regarded with special interest and respect.

The Impressionists, as our readers are mostly aware, are a clique of artists who have made it their object to give in their pictures the broad general impression of a scene, just as it might convey itself to the mind from a single glance of the eye, without time to take in details. The artists who have "affixed" this theory are aware of the value of a catchword, and under their chosen title of "Impressionists" they have gained an importance and a solidarity in the eyes of the public which they would never have gained without that fortunate bit of nomenclature. "Mobled queen is good," and this word "impression" is good too, in the hearing of Poloniuses and other prigs, who will see something remarkable in a painting which is called an impression, but which unsophisticated persons would call at the best a sketch and at the worst a smear. If a set of clever artists exhibited their sketches and studies, we might go to see them, and find a good deal of interest in them as sketches and studies, no doubt, but we are invited to feel special interest in the collection of works at Messrs. Dowdeswell's because they are the work of artists who have determined to do nothing but sketches and studies, and never to finish anything. That is the whole truth about the matter. There is no new principle in it, and no new achievement except that of a name. The exhibition is an exhibition of sketches, some very good, some poor, some detestable both in colour and execution, and which their authors must be possessed of very great assurance to exhibit at all, or very great faith in the folly of the public.

The supposed justification of placing this sort of work before us as of special interest, seems to arise out of a piece of bad logic in regard to the relations of art and nature. We can derive much enjoyment and suggestion from the mere glance at a landscape and a reminiscence of its effect on the mind, without taking in details; and the Impressionists say, why not therefore form the same effect in a picture? Granted so far; but it must be remembered that in nature we know the detail is all there if we can stay to examine it, and that in the case of a finished picture we can, if we please, obtain the pleasure of a glance, or an impression, and pass on, just as we can with a natural scene. For the painter to tell us that he has provided a special enjoyment for us by stopping short in his imitation of nature and leaving out all the details, is merely to boast of having done only half his work, in the hope that a careless spectator will not miss the other half. For it is the object of painting not merely to reflect the suggestions of nature, but to help the illustration of nature, and our comprehension of and interest in her details, to teach us more about their infinite beauty and variety. All this requires hard study and hard work, which the Impressionist prefers to shirk; and not only so, but actually makes a special claim on our admiration because he has so shirked it. We are to attach a special value to his painting because it is all superficial, because it will not bear looking into; because study of it in detail only reveals the fact that there is no detail and nothing for study in it, nothing beyond what we see at the first glance. That is the absurdity of the position taken up by this clique of painters. If they were to tell us that they had thought it well to sketch a number of evanescent effects for the sake of recording them, and as references for future development, we could understand it; but even then we should place a limit on our sympathies, and expect that the things sketched should be of value in themselves, and that the sketches should be on such a moderate scale as not to occupy a space entirely disproportionate to their value or interest. But both these conditions are flagrantly violated by some, at least, of the exhibitors. Here is one man, and a clever painter, too, Degas, who can do much better things, exhibiting a large coarse pastel sketch (61), under the title "Femme en Loge," a gilded box front with sprawling ornaments, and the head of a woman with no more expression than a block, just seen over the box front; a work which one would suppose was exhibited purely to prove that a clever man may be so misguided as to choose a subject of no interest except what finish of execution might give, and omit the slightest attempt at finish, leaving nothing but a rough scrawl. Then we have by Manet a big coarse sketch, nearly life-size, of two commonplace figures, woman and girl, looking through a railing, "Le Pont de l'Europe" (46); the flesh, where seen, painted a raw monochrome tint, with no attempt at modelling, or at representing the texture and infinitely varied colour of flesh. To do this on a small scale as a memorandum might be useful, but even then it would hardly be worth exhibiting: to hang such a thing for public view as a picture, and invite attention to it, is something little short of impudent. The same may be said of Degas's "Femmes appuyées sur une Rampe" (59), three loosely-painted blotches of figures, with their backs to the spectator, looking over a railing. Mr. Marks did something like this once, in his clever little picture called "What is it?" But Mr. Marks finished his figures so that each was a separate study both of drawing and character, and the whole had a permanent value. But what is the permanent value of this daub by M. Degas? Even if we laugh at its humour for the moment, we never care to see it again. It is matter of regret to see M. Degas "*dans cette galère*," because he has shown in previous works great powers, especially in his treatment of ballet-dancers' life; and his reception of the faith of "impressionism" seems, if we may judge by comparing the works here with those of his with which we have been previously familiar, to have led him steadily down hill. He may be cited as an "awful warning" to young men tempted to become Impressionists. His "Courses de Gentlemen" (6), a sketch at an amateur race meeting, seems to be intended as ferocious satire upon the "gentlemen," who are represented as of the most forbidding physiognomies. If it is intended that way, it is certainly not devoid of force, though very disagreeable; but the horses are disgraceful. A member of the "Société," who can and does draw horses very well, is Mr. J. L. Brown. His "Maquignons" (12), a high-road scene, shows admirable foreshortening of one animal and great spirit of action. This may deserve to be called a "finished sketch" (which some do not), and his treatment of light illustrates one view in which impressionism may be defensible, the seizing of a moment of sun-glare, when the eye sees nothing clearly but the prominent foreground objects, on account of the light shining full in the spectator's face. The painting conveys this effect, and gives a vivid impression of light, and what objects are shown clearly are well drawn. As an illustration of the same thing at its worst may be cited Pissaro's "Paysan et Enfant revenant des Champs" (9), where everything is false in colour and effect, and the woman's face (the figure being quite in the foreground) is an irregular space with some pink dabs on it. A thing like this, hung up as a picture forsooth, would hardly be wrongly served by running one's fist through it, did the present imperfect condition of the law admit of that practical form of criticism. Among the works which exhibit the best qualities which sketches and studies on a large scale can exhibit, are some by Renoir; "Vue de Venise" (7) is a brilliant and joyous bit of light and colour; "La Lecture" (8), a clever but too large study of a woman reading; the same may be said of "Femme au Piano" (13), both very good in colour, both very clever sketches, but not presenting detailed interest in any proportion to the space they occupy, or realising any excellence which might not have been as well and more fittingly expressed on a smaller scale. M. Monet is a painter of perceptions; his "Petit Bras à Argenteuil" (16), a back-water of a river with brilliant spring foliage reflected in its waters, is full of light and air; his studies of pheasants (40) are admirable, and we hope he will work them into a real picture. Pissaro's "Canillette des petits Pois" (28), landscape with figures, is very much superior to the other one of his, mentioned above; the colour is fine, and there is a speciality of ton and texture about it, reminding one of th

peculiarities of execution in some of Blake's paintings. There are other things, mainly landscapes, which are worth seeing as brilliant sketches, with some individuality of style and feeling about them. Most of the paintings in which figures are the predominant interest are poor even as sketches, and some of them irredeemably vulgar.

In another room is to be seen an odd contrast to the works of the Impressionists, Mr. Forbes Robertson's painting of the chapel scene in "Much Ado" at the Lyceum. This is a very hard, very carefully finished, and very accurate painting, containing the merits of finish which the Impressionist paintings have not, and entirely devoid of the merits of suggestiveness which some of them have. If intended, as we may suppose, to be an accurate record of the effect, the personages, and the costumes of the scene represented, it fulfils its end entirely; the likenesses, even down to attitude and manner, are admirable, and the whole thing almost as exact as a coloured photograph of the scene could be. Higher artistic merit than this realism it has not, and possibly fulfils its actual object the better; but it is a fearfully hard painting, and the artificial light under which it is shown increases the stagy impression of the whole. Still, it shows a power of truthful representation in a very elaborate scene crowded with figures, which proves the artist to have a very considerable technical power at his command, which he may in future be able to apply in a less realistic sense. The picture was painted especially for Mr. Irving.

"FIRST PRINCIPLES."

Nothing is more common than to meet, both in the public press and on the public platform, —some reference or allusion to the "*principles* of architectural design." It appears to be a generally-received opinion that there exists, somewhere, in an available form, a code of rules or prescriptions, by the observance of which a satisfactory design may be readily and surely produced; and that of this convenient code architects are, as a body, either strangely unaware, or most unaccountably and perversely negligent.

It is not very long since a public man of real ability,—who happened, however, to be out of harmony with the manner of the late Mr. Street, and the style in which he habitually worked,—alleged in public, and the allegation was duly spread abroad by the Press, that the design for the New Courts of Justice outraged the first principles of artistic composition, and was in open defiance of all the known laws of architectural design.

It was asked at the time,—What are the principles adverted to? Where are they formulated? And is the world agreed as to their authority, and the universality of their application? The appeal elicited no reply, which is the more annoying, because, in the words of the Ingoldsby legend:—

> "We really *are* curious
> To see this recipe for a Prince of Asturias."

The rejoinder is, of course, obvious. If architecture could be produced by any such process as that alluded to above, architecture would cease to be a fine art. Is it, then, independent of all principle? A thing of mere caprice? By no means. There is, at least, one broad principle underlying all art, and its application to the art of architecture may be thus in a measure explained. In the attempt, however, something must, as a starting point, be taken for granted. It is, therefore, assumed as admitted that the true function of art is to appeal to the mind through the medium of the senses. That its proper commerce is with the emotional and spiritual side of our nature, and that the satisfaction of the eye or ear is only desirable as a means to an end. The highest authority may be adduced in support of this assumption. Ruskin says, "The greatest art is that which furnishes the mind with the greatest number of the greatest ideas," and the whole teaching of Sir Joshua Reynolds centres in the formula, so often repeated with but little variation in its terms, "the *value* of art is in proportion to the *mental* pleasure produced by it." "The great end of all art is to impress the imagination."

The power of art may be sanctified to its service of morality and religion, or degraded by ministering to vice; but in either case its source of power lies in its influence over the mind of man.

By what avenues, then, can the mind be most successfully approached, and the imaginative faculties be stimulated and nourished? In other words, by what means can the architect invest his work with the essential characteristic of all great art?

Of all the means by which the imaginative faculty may be quickened there is none so powerful and so sure as the skilful use of language,—at a word, a touch by a master-hand, the liberated fancy cleaves its way through its prison-house of clay, and expatiates in the "vast illimitable air." And no other form of artistic expression can compete with this incomparable attribute of language. The *lines* of the painter have been called *his language*, and so they are, and poor and commonplace indeed beside the poet's verse. Their inferiority is a subject of old remark. Thus Spenser says of his ideal Princess:—

> "But living art may not least part express,
> Nor life-resembling pencil can paint,
> Nor poets' wit, *that passeth painter far*
> In picturing the parts of beauty daint."

Dante, himself a painter and the friend of Giotto, tried first to fix upon the canvas in rainbow tints the lineaments of his divine Beatrice, but laid aside the unequal pencil to sing her praises in immortal verse.

Wherein, then, does this unique power of language lie? It will be found to reside in a great measure in the possibility of hinting at what is not clearly defined. Its strength is in the use of suggestive imagery which defies the shackles of exact limitation, leaving the mind a fringe or margin for its pleasurable exercise. And, conversely, the relative weakness of the other arts lies in the degree of precise definition inseparable from the conditions under which they are exercised.

This point may be elucidated by a little amplification of a hint borrowed from Macaulay as to the treatment of a supernatural theme by Milton and Dante respectively. The pictures which the latter gives us are clear and crisp in outline, and "made out" to the least particular in every detail,—counterparts in method of the pictures of his day. He sets out the parts of a celestial hall or an infernal stronghold with the systematic minuteness of a "bill of quantities." He exaggerates, it is true, the dimensions of familiar things, and surrounds them with circumstances of appalling horror or ineffable delight. But although all is on a stupendous scale it is mapped out with severe exactitude, and its dimensions are accurately realisable.

This is not Milton's method. He is for certain purposes studiously vague. More is meant than meets the ear. The subject at his will melts away into infinitude, and escapes the realisation of the wondering fancy; by the ordering of aptly-chosen words of familiar use and import the imagination is indeed "lifted to the height of Godlike Power." The effect is obtained by the use of words as the symbols of things to which no mental image exactly corresponds, and a gorgeous train of visions, indeterminate and shadowy in their magnificence, defies reduction within formal limits. So that we have evidence in poetry,—which is language in its highest form,—of the strange fascination and power which attach to a certain vagueness and mystery; a skilful use of words of indeterminate value.

The same rule holds in painting, and to this fact we must ascribe the common experience of the greater value a sketch sometimes possesses over that of a finished picture,—the superior charm which often accompanies a picture in its earlier stage, and which evaporates as the work progresses. In the former the imagination has freer play, and the nimble fancy outruns the painter's skill.

The architect has neither the unique power of language, nor the sensuous charms of colour at his bidding. It is his business to translate the more or less prosaic wants of man into brick and stone, and evolve from them what poetry he may. But he has his resources,—too often neglected,—and amongst them he enjoys with the other arts the power of only partially disclosing his design, and keeping speculation alive as to the unseen portions of it.

There is a modern building, the name of which,—Cervantes like,—"we do not choose to remember," which is both costly and in a degree handsome. It is a parallelogram on plan, and has a lofty pavilion at each angle. It is approached on one side from a high level, and you see obliquely two nearly similar façades, and the upper portions of the four pavilions; and what is it they convey instantly to the mind? Clearly this. "You need not trouble to examine further. When you have seen one façade and one pavilion you have seen all. We are alike all round." This acts as a gratuitous rebuff to the imagination,—an exact antithesis to the studied vagueness and mystery of the poet,—an unnecessary aggravation of one of the architect's principal disabilities. The wings of the mind are clipped, and a great opportunity rashly abandoned.

This consideration leads us naturally and at once to an examination of that quality miscalled symmetry, which has proved a stumbling-block to so many architects, and marred so many of their works. The dictionaries agree in defining symmetry as "a harmonious adjustment of parts," the "harmonious relation of parts to a whole," and the etymology of the term supports this definition. We have, however, misapplied the word to indicate a mechanical duplication or balance of parts,—equal halves disposed with mathematical regularity on either side of a dividing line. Such an arrangement may, in rare cases, be forced by circumstances upon the architect, in which a purposely irregular disposition of the main portion of a building would be an affectation. In such cases other expedients must be resorted to, in order to give play, variety, and interest to his work.

But in the vast majority of instances no such necessity is imposed upon the architect, and to adopt this objectionable form of plan is nothing less than artistic suicide. It is, moreover, to depart altogether from the teaching and example of Nature. Nature in her general aspect,—seen in fact, as a building is seen,—has no such thing as this vigorous balance of equal features.

In the animal kingdom the equal, or nearly equal,—for they are never perfect counterparts,—disposition of members on either side of an axial line is always subservient to the faculty of volition, which is unceasingly arranging them for us in a true symmetry. In the inanimate world the same condition rules. A leaf is a regular figure, but a shrub is not; and we see the shrub, and not the individual leaf. A blossom may be geometrically perfect in the star-like arrangement of its petals, but the plant which bears it is a thing of wayward lines of shifting beauty and endlessly varied grouping. If one were to hide one-half of a tree, or a mountain, or any natural feature in the landscape, the only thing certainly predicable of the other half is that it would *not* repeat the visible portion.

Nor do we find that the examples left us by the masters of the best periods of art adhere to the merely formal balance of equal parts above adverted to. In Greek art the Erechtheum is as irregular a group as one could desire. The description of the villa of the younger Pliny shows how widely the same must have differed from the "Classical" mansions which adorn the pages of the "Vitruvius Britannicus." An almost audacious departure from the trammels of a forced regularity is the note of the whole course of Mediæval art, witnessed by the cathedral chapter-houses,—the unequal western towers of Chartres and Lincoln, the Lady-chapel at Ely, and a host of other examples.

The true symmetry of any structure may, in short, be likened to the pose of an Apollo or a Theseus, whereas the false, or modern, symmetry is like nothing but a soldier at "attention,"—not a favourite attitude with either sculptor or painter, but hitherto,—the more's the pity,—too often patronised by architects.

The subject is too important to be discussed at this stage, and too great for adequate treatment in a single essay. We shall, therefore, return to it, and endeavour to show the bearing of the principle, shadowed forth above, on the whole field of architectural art.

Nottingham.—A new Congregational Church, at Park Hill, Nottingham, was opened on the 11th inst. It is in the fourteenth-century Gothic style, and consists of a nave and side aisles divided by stone octagon columns, with carved caps carrying arches and a clearstory. The material for the walling is red pressed brick, with Mansfield stone freely used for dressings. The joinery is in pitch pine unvarnished, and the ceilings are arched and boarded. The architect is Mr. Tait, of Leicester; and the builders Messrs. Bell & Son, of Nottingham.

MARKETS IN LONDON AND PARIS.

It cannot, we think, be denied that London, in spite of its boast of being the most populous and richest city in the world, is but very imperfectly supplied with markets. In spite of the fact that probably no city,—that is, on this side of the Atlantic,—has of late years spread with such rapidity as our metropolis, no adequate market accommodation seems ever to be considered necessary for the increasing population which is yearly being scattered over larger and larger areas of ground which, by a grim irony of fate, only a short time since served, in the form of fertile market-gardens, to supply the capital with no small portion of its garden produce. It was only very recently revealed at a meeting of the South London Municipal Association that although the city had now relinquished its right of control on the action of the municipal affairs of over two millions who occupy "the Surrey side of the Thames," no effort had been made to accommodate this vast neighbourhood with even a single market, and that the want was one keenly felt. It is true, on the other hand, we learn that the Chelsea Vestry has at length authorised the erection of a market,—long sorely needed,—to supply the important district of South Kensington.

It would be curious to hear the opinion of an active member of the Paris Municipal Council on his having such a state of affairs explained to him. For in Paris each neighbourhood, even the most distant from the centre, is liberally supplied with ample market accommodation. As for the great central market the Halles Centrales, it justly ranks as one of the most admirably organised institutions of modern days; and each district market is but a diminutive of the parent establishment.

No one who has visited Paris can have failed to see, if not have inspected, the Halles Centrales, one of those successful creations of that singular style of iron and glass architecture to which some critics refuse even the position of style at all. Be this as it may, the Halles Centrales probably fulfil the aim for which they were built in a far more satisfactory manner than many a more pretentious erection "invested with artistic merit." Indeed, they may be said to eminently carry out that very admirable quality,—so highly praised by the great Italian architect of the sixteenth century, Leo Battista Alberti,—of attaining "economic magnificence." It is not, however, of the artistic style of the Halles that we would wish to speak, largely placed beyond criticism as it should be from the admirable suitability of the building to the purpose for which it was erected. It is rather of its general character, and that of the fifty-eight other dependent markets in Paris built on the same plan, that we would wish to speak, as bearing in no small measure upon a crying want in our metropolis (and, indeed, in most of our great towns), of adequate market accommodation.

It will be found, we think, that there is a large degree of shrewd good sense in the generous manner in which well-supplied markets are scattered over the French metropolis; the interests, so important in the present day, of the real estate-owners are in no small measure aided by this inducement given to new settlers in new neighbourhoods, for with a house and well-supplied market within a short distance existence becomes possible for the poorest. In matters of this nature we are, we think it will be admitted, somewhat short-sighted men of business. Of late years, Londoners have had the opportunity of seeing built upon and occupied, mile after mile of once pleasant suburban fields, and yet all these thickly-populated districts are dependent on but a most imperfect supply of market produce. Why should not each district, as in Paris, have its market supplied with all those numerous, yet after all most simple, wants which are at present only obtained through very defective means? The whole southern portion of London possesses no market, yet its population is equal to that of the whole of Paris, which, in addition to its magnificent Halles Centrales, with its ten superb *pavillons*, possesses fifty-eight other local markets to supply the outlying districts of the metropolis.*

Admirably organised as is generally the whole municipal system of the French capital, the organisation of its markets is perhaps the most complete, the most fully considered, and the least defective. Till within a generation, Paris like ourselves, was dependent on a market not unlike in management our own Covent Garden and Billingsgate thrown into one. Many are the historical recollections connected with the Halles which are woven in with the story of Paris in its past, but among the numerous other modern improvements of modern Paris the new Halles was among the first commenced. A Commission was formed some forty or so years since to inquire into the great markets of the world, and though we are at present so deficient in the number of our Metropolitan markets, it is gratifying to find that the Commission had many handsome things to say of the management and organisation of some of our great markets. When, after considerable delay, the old Halles was at length demolished, M. Baltard's superb new Halles soon commenced to rise. M. Baltard was a practical architect; he was not tormented, as too many of his brethren are in similar positions, by the burning desire to rival the great artistic creations of the past, and erect a monument which should, if not surpass, at least rank with the greatest achievements of the architect's art. M. Baltard contented himself with simply considering primarily the objects of the new market he was called upon to plan and carry out, and he unhesitatingly decided on what has been contemptuously termed the railway station style. By the aid of iron and of glass,—which, with the exception of a brick foundation, constitute all the materials employed,—M. Baltard planned and erected the existing Halles Centrales. As originally planned, there are to be fourteen separate pavilions; of these, ten have been completed. As the Halles now stand, it is divided into two distinct *corps* or buildings,—that on the east measuring over 20,000 square yards, and that on the west very nearly of the same size. Each pavilion is devoted to the sale of some special product, and is supplied in addition with every possible accommodation for the reception and auction in the morning of the incoming produce, with a vast number of stalls for the retail trade during the day time. In the case of the district markets there is, of course, no provision made for the auction, as they are intended solely to supply domestic customers.

The Halles Centralles, as its name implies, is the central market of the French capital, and thither are sent from every portion of France the produce which is either intended for consumption in the capital itself, or is purchased for our London market, which takes no unimportant place in the calculations of our thrifty neighbours. In general results the French system, of course, largely resembles that pursued in London. The market is abundantly supplied, and the produce diligently redistributed; but in organisation we think it will indisputably be found that the French are far ahead of us. Not only is the Central Market a model of skilful organisation,—a model of hygienic order and sanitary cleanliness,—but the district markets, which supply the outlying neighbourhoods, are no less well supplied and well organised than the parent establishment. A very strict and admirably-considered set of rules have been laid down by the authorities, and these being severely and rigorously enforced render the markets of Paris very different places to the markets of London.

In Paris, as all who know the French capital are aware, it is one of the most agreeable of the domestic duties of the thrifty *ménagère* to do each morning her own marketing, and, attended on by her white-capped *bonne*, basket on arm, to pass a happy hour or two in bargaining over the details of the day's dinner. Whatever is best is inspected, and priced, and determined on in due consultation with the cook, and with a fund of that unfailing chatter to which the French language seems so singularly to lend itself. The well-swept market with its numerous stalls, filled with their fresh produce arranged with all that artistic skill for which the French have long and not unjustly been famed, affords a large field for the choice of the customer, and when the basket is full and the necessary purchases have been made, an obligatory duty of the household has been fulfilled in a most agreeable manner. As every neighbourhood supplies a similar market, the prices at which are almost exactly the same as those at the Central Market, the facilities for existence are equally distributed over the metropolis.

Severe police and municipal measures regulate the general management of all these markets; the absolute cleanliness of every stall is severely enforced, all refuse is removed daily, a plentiful supply of water is at hand, while the quality of everything sold is ensured by a rigorous system of inspection. As a characteristic sight, we would warmly recommend any one about to visit the French capital not to miss a morning in one of the many district markets of Paris. He will there see, what London and every great city should have numerous examples of, an admirably-organised building in which can be purchased at a fair price all the daily necessaries of life, while an operation which at home constituted no small horror of newly-married life, especially when spent in some of our outlying districts, will be found to assume a positively agreeable aspect. The domestic economy attendant on this admirable provision of markets to the French capital is beyond calculation. Experience is gained in the household management, and the head of the family finds his temper thus rarely tried, while, as a natural consequence, that crowd of hucksters who, in our streets, so noisily bawl forth their wares is at once reduced to a minimum.

Even in Paris, however, with its numerous markets, the huckster and his barrow are necessary, but here the police exercise a wise discretion in their control. The costermongers are allowed only to ply in certain thoroughfares and certain neighbourhoods, and as they are alone permitted to act as a makeshift for a market, they are obliged to pass over certain rounds and thus benefit all portions of the capital alike, a measure dictated some years since on the discovery that the hucksters not unnaturally were found to frequent certain neighbourhoods more remunerative for their traffic than those the needs of which they really were intended to supply.

Our Parisian neighbours have reason to be proud of the organisation of their markets; but with the magnificent supply of food daily poured into our huge metropolis from literally every portion of the globe, is it not a little shameful that we in London should not possess also an admirably-organised system by which all this produce can be adequately and fairly distributed to every portion of the metropolis? We are fully aware that "vested interests" stand largely in the way, but may we not look forward shortly to the abolition of many of these? In this anticipation might not some earnest and practical spirit take up the question of planning out the number of markets necessary to supply our daily increasing population.

The question is one of immense hygienic importance, and will sooner or later have to be grappled with. As a field of speculation we do not see why the supply of these markets should not interest the capitalists; the Halles Centrales of Paris net yearly over 30,000*l.* from the mere rental of their stalls, and when the whole plan is complete the yearly profit has been reckoned at some 40,000*l.* The cost of the existing portion has, it is true, been over half a million sterling, but the return is certainly remunerative enough to offer many inducements. With our admirable network of metropolitan railways—such as Paris does not possess,—the problem of supplying the many district markets with which London should be provided, would be singularly simplified. A great capital like ours has no just cause for pride at its vastness, if it does not supply its inhabitants with every possible facility for existence, that is, which the expenditure of capital can insure, and foremost among the facilities for existence in a great capital stands the adequate supply of markets.

* The whole of London possesses barely a dozen markets, and however magnificent some of these may be, their number ill suffices to supply comfortably an area of population as vast as that of the metropolis.

Vacant Lands in the City.—The *City Press* hears that the question of how best to utilise the vacant lands belonging to the Corporation, that have remained utterly useless for so many years, is likely to receive the attention that its importance demands. The Corporation possess these several plots of vacant land, some of which have remained utterly useless for nearly thirty years—and why? Simply because, under the advice of their officers, they have put such prices upon them as no one was willing to give. Forgetful of the truth of the old adage, that "the intrinsic value of a thing is just as much as it will bring," they obstinately adhere to their original valuation, until the annual interest of the money with which these lands were purchased has consumed the whole value of the fee-simple of the property.

RAFFAELLE AS AN ARCHITECT.

On the occasion of the celebration of the four hundredth anniversary of Raffaelle's birthday, a paper was read at the Frankfort Architects' and Engineers' Society by Herr Oscar Sommer, who mentioned several little-known facts in the biography of the great artist which are of interest in architectural circles. Through the revival of classical antiquity, he pointed out, education had, about the year 1500 A.D., received a great stimulus in Italy, and more particularly in Rome, and there was in the life of that period a kind of renewal of the grandeur of ancient times. Precisely at the period when people had once more begun most thoroughly to appreciate the glory and beauty of ancient art, Raffaelle appeared upon the stage. His activity was put forth exactly at the most flourishing period of the Renaissance. His work was in no way affected by the later reaction, which subsequently reduced Classical antiquity again to the position of heathendom, and therefore an enemy of the Christian Church. One of the conditions which, apart from his genius, contributed materially to Raffaelle's greatness was the fact that he lived in a congenial age, penetrated with the spirit of Classical art. In him that age found its highest expression. His works, his figures, characterised as they are by the deepest feeling and the greatest beauty, are ever true to human nature. There were, fortunately, art-loving Popes, who took care that his genius should have abundant scope for exercise in every department. The grand old Julius II., the Pope who, by his firmness of character, rescued the Papacy from the dangers to which it had been exposed by his odious predecessor, Alexander VI., has the credit of having called Raffaelle to Rome. The successor to Julius II., the noble Medicean, Leo X., brought forth Raffaelle's powers in their highest splendour. Raffaelle had, in addition, numerous other friends and patrons who esteemed themselves fortunate if they could induce the artist, or if he could find time, to execute works for them.

With regard, now, to architecture, Raffaelle was unavoidably led to its study and practice by the very circumstances in which he worked as a painter. The arts at that period worked harmoniously together, and Raffaelle's principal productions were such as formed part and parcel of an *ensemble* with the architecture surrounding them. We speak of his *al fresco* wall and ceiling paintings, his altar-pieces, and so forth. His other paintings, his Madonnas and portraits, though by no means few in number, stand second to the before-mentioned class. In Italy, at the time of the Renaissance, men did not confine themselves narrowly to one particular branch of art. Their culture was many-sided, and there was hardly one artist of that day who limited himself strictly to painting. So Raffaelle found architecture indispensable, and he, at all periods of his life, devoted himself, with the greatest industry and zeal, to the study of the monuments of ancient architecture.

Raffaelle received his first training in architecture from his teacher, Pietro Perugino, whom, when he was little more than a child, he had helped in his graceful ceiling and wall paintings in the Cambio at Perugia. It was shortly after his apprentice days that, in the well-known picture in the Brera at Milan, "The Marriage of Mary," he painted, quite in Perugino's style, a charming round temple, of his original composition. In perspective he had attained such proficiency that he was able to instruct in it his second teacher and friend, Fra Bartolomeo, at Florence. At Rome he saw many ancient edifices which no longer exist, or of which only portions are still left, such as the Basilica of Constantine, the Thermæ of Diocletian, Constantine, and Titus, the Circus Flaminius, and the entire Colosseum, and he soon felt it needful to extend his knowledge of architecture by studying the ancient authors. Accordingly he sent for the old scholar and stoic, Fabio Calvi, a patriarch of eighty years, from Ravenna, and lodging him in his own house, got him to translate Vitruvius from Latin into Italian. The manuscript of this version, with marginal notes in Raffaelle's own hand-writing, is now in the Munich Library.

In consequence of Raffaelle's thorough study and researches in architecture, Leo X., in A.D. 1515, made him chief inspector of the ancient monuments of Rome. In the brief appointing him the Pope says: "We know that the monuments of Rome afford marble and stone in superabundance, and almost every one in and around Rome makes use of these materials for building purposes. Hence we nominate you as chief inspector of all marbles and stones which from this time forward may be dug up in Rome and the vicinity for a distance of ten miles radius, so that you should buy them if they are suitable for use in the building of St. Peter's. Nor may any masons henceforward saw in two any stones bearing inscriptions, without your permission."

The greatest interest attaches to a report which, in consequence of this appointment, Raffaelle, probably acting with Count Castiglione, subsequently presented to Leo X. on the subject of the remains of ancient Rome. He appeals to the Pope to protect the relics of the grandeur and power of those "divine souls" of antiquity. For he had seen destroyed before his own eyes the portico of Diocletian's Thermæ, the Temple of Ceres, part of the Forum of Nerva, the Basilica Julia, and numerous columns. Raffaelle proceeds to describe the way in which drawings should be made of the ancient works of architecture, because he was charged to prepare a detailed plan of ancient Rome, and he accordingly proposes to have everything represented in ground-plan, section, and elevation. Of this scheme only the first region was ever completed. Winckelmann saw some of the drawings. Raffaelle goes on, in conclusion, to give a complete survey of the history of art. According to his view, there was no retrogression in architecture down to the close of the period of the Roman Emperors. There was, he considers, unbroken progress and constant improvement; but sculpture and painting, on the other hand, had already fallen into decay. The first retrograde step in architecture was, according to his view, not taken till the time of the barbarian invaders. Raffaelle distinguishes the architecture of this Gothic period from the architecture of the Germans, meaning by the German style what we now call the Gothic. Of this German Gothic he expresses a very unfavourable opinion, and regrets that in many places people still persisted in building in that style.

Raffaelle's enthusiasm for architecture was such that he sent draughtsmen to various parts of Italy, especially Puzzuoli and Baiæ, and also even to Greece, to get drawings of ancient buildings made for his own use. What Raffaelle himself did in architecture may be grouped under three heads. In the first place, there are representations of architecture in his pictures. Burkhardt regards the hall in his School of Athens and the interior of the Temple of Heliodorus as superior to all Raffaelle's other achievements in this department. Another most important branch of this architectural work is that of internal decoration. The rooms of Borgia, the so-called Stanze, come first. So far as Raffaelle himself makes the divisions, he belongs to the stone-ribbed architecture of the Perugian School, although the ribs consist of panels and ornaments. Not before we come to the loggia does the influence of the grotesque make itself powerfully felt. Giovanni da Udine added hereto the ancient stucco work. The ribs break up into divisions of fields and branched ornamentation, and thus there is produced a manifold variety, which, without ever prejudicing the harmony of the work, surpasses the antique. A new addition is found in the ascending pilaster ornamentation. Raffaelle is not satisfied with monsters such as Benvenuto Cellini understood under the name of grotesques,—that is, forms composed of portions of heterogeneous organic things, belonging to the animal and vegetable kingdoms,—he employed real creatures of eminent beauty, or figures, which, as in the Parcæ, often have an intimate mutual connexion, and it is this sort of ornament which makes the Loggia the richest and most beautiful hall in the world. The cycle of pictures, often called Raffaelle's picture Bible, imparts to the work its higher consecration.

In the later Farnesina we then find a mythological scene, that of Amor and Psyche, in the spandrels brought into connexion with the great central picture of Olympus, whereby the ornamentation attains a dramatic significance. In place of the ribs of the vault we have festoons, which form a homogeneous and appropriate framing.

With regard to his work on actual buildings, Raffaelle was appointed, after Bramante's death, as architect of St. Peter's. He produced a model which was well received, and of which Serlio has left us a clear and harmonious plan, but all that Raffaelle actually carried out in the edifice was limited to some unimportant portions of the walls and to strengthening the foundations of the pillars of the dome. His plans, contrary to Bramante's central portion of the edifice, shows a long nave, but it was never carried out. It was reserved for the divine Michelangelo to realise in a simplified and nobler form the fundamental idea of Bramante. It was not Michelangelo's fault that Carlo Maderna's nave was, after all, to injure the effect of the central structure. Raffaelle's work on the closed palace façade was of more importance. He surpassed the very simple but harmonious pilaster façade of Bramante by giving individuality to the separate parts. Here, too, he shows the greatest variety in the motives without ever destroying the unity of the general effect. He is fond of the solid rustic style in the lower stories, and of double columns above, or of window-frame work with side columns and alternate pointed and round hood moulding. His palaces of Vidoni or Caffarelli in Rome, and Uguggioni in Florence, present along with important innovations a delicate gradation of the individual parts, while in the Paredolfini Palace, we see the greatest splendour of simplicity and beauty combined. Raffaelle's own palace, otherwise that of Branconio d'Aquila, in the Borgo at Rome, which unfortunately had to be removed in 1661 in favour of the Bernini Colonnade before St. Peter's, presented an abundance of motives and very rich decorations in the upper story. Raffaelle never went to excess. He always limited himself to the simple forms borrowed from the antique. He has exerted a decided influence on architecture, and he is not responsible for the extravagances which were so frequent in later times.

THE AMSTERDAM EXHIBITION.

The International Colonial and Export Exhibition which the King of the Netherlands will open at Amsterdam on the 1st of May will be a far more extensive affair than its promoters had anticipated. The area it covers is not less than 280,000 square mètres. The ground is situated in the rear of the new National Museum, which itself is now nearly finished, and which is destined permanently to hold a most valuable collection of treasures of art of the Netherlands. This museum will serve as the entrance to the Colonial Exhibition. The chief building of the latter covers a surface of 60,000 square mètres. It is built in the most singular style. The portal is in imitation of a Hindoo or Java temple, the walls being apparently supported by figures of colossal elephants. All the decorations are in keeping. The displays of Holland, Belgium, Germany, and France, as well as of England and India, cannot fail to astonish the visitors. The space covered by the German collections is 8,000 square mètres in the chief building, and 1,600 square mètres in the machinery department. France occupies still more space, namely, 12,000 square mètres in the chief building and 4,000 square mètres in the machine-room. The other principal countries occupy in the chief building and machine-room the following areas respectively: Belgium, 9,000 and 2,000; Holland, 6,000 and 1,000; England, 3,500 and 1,500; British colonies, 2,000; Spain, 1,800; Austria, 1,500; China and Japan each, 1,400; and Russia, 1,000 square mètres. In addition to this, there are many special pavilions in the grounds. That of the Dutch colonies, for instance, covers a space of 4,000 square mètres, and lies in the midst of an Indian park. Behind is the Pavilion of the City of Paris, also surrounded by a charming garden. Other pavilions are those of the royal family, the Amsterdam diamond-cutters, the Press, and the Tunis Government. Further, there are the kiosk of the orchestra, four large restaurants, and the pavilion of the Exhibition of Fine Arts, the latter covering a space of 4,000 square mètres.

The Institution of Civil Engineers, which was founded in 1818 for promoting Mechanical Philosophy, and was incorporated in 1828 for the general advancement of Mechanical Science, has now on its lists 21 Honorary Members, 1,347 Members, 1,671 Associate Members, 524 Associates, and 774 Students, or, in all, 4,337. The gross number at the same date last year was 4,117.

MINES AND METALS OF THE GREEKS AND ROMANS.

Professor C. T. Newton, C.B., delivered the first of a course of eight lectures on the useful and decorative arts of the Greeks and Romans on Friday, the 20th inst., in the Botanical Theatre of University College, Gower-street. The lecturer took as the subject of this lecture, "Mines and Metals." He observed that the course of lectures which he began that day related to the decorative arts of the Greeks and Romans. At first sight, perhaps, there was no apparent connexion between this course and the courses which he had previously delivered, but upon a little consideration it would be seen that the subjects of the course now entered upon had a very near connexion with the history of art and civilisation generally. He need hardly say that unless the ancients, from a very early time in their history, had had a passion for seeking for gold and silver, those metals would have not been available to them at that very early period for artistic purposes. Again, if the commerce of those early days had not brought to Athens ivory tusks from Africa and India, there could have been no chryselephantine statue of Athene. In the case of other materials, such as the marbles largely used in architecture and sculpture, if there had been no useful arts, no quarrymen, no masons, the sculptor and architect would have had no material to work upon. In looking at what were called the merely decorative arts, there would be found to be a still closer connexion between them and the useful arts than between them and what were known as the fine arts. Again, if it had not been for extraordinary metallurgical skill, evinced in obtaining gold in the form of fine wire and in very thin plates, we should have had none of those beautiful specimens of Greek and Etruscan goldsmiths' work which had come down to us. With regard to moot points of ancient history and civilisation, the study of the useful arts suggested many inquiries. Firstly, where did the raw materials required for those arts come from? What was their geographical distribution? Again, what were the lines of commerce by which the raw materials passed from one country to another? Who and what were the "hands" who wrought the materials? Were they "working men," as we understand that term, and did they ever "strike"? Were they gathered together in great towns, and did they ever become unmanageable? Were they protected by the severe laws of guilds of art, or was there universal competition and free trade? He did not think he should be able to answer all these questions in the present lecture. One great difference between ancient and modern society was that whereas we gathered together the working-men in great towns, so as to produce in those centres very rapidly and in immense quantities certain articles of commerce, a great deal of the work done for the ancients was performed by slave labour. The slaves, although they occasionally organised very formidable revolts, seem never to have had sufficient power of organisation to strike *en masse*. As the composition of ancient society was examined, it would be seen that the tendency of handicraftsmen was to form guilds of hereditary succession. To proceed to the immediate purpose of his lecture, it was a very old observation that it was the human hand which distinguished man pre-eminently from the beasts, and that man alone was able to use tools in the true sense of the word. It was true that some animals were able to use stones and branches of trees as weapons, and it was, therefore, with peculiar appropriateness that the ancients represented the Centaurs as a semi-bestial race of beings, giving them only such weapons as beasts were known to use, whereas the men who contended with them were armed with swords and other weapons made of metal. He would, therefore, start with the assumption that no animal but man had ever made anything for use, either for defence or otherwise, out of a piece of metal. It was somewhere in the prehistoric ages that man began to use the metals which he found scattered over the face of the earth. The metals which he (the lecturer) proposed to deal with in that lecture were iron, copper, tin, gold, silver, and lead. He took them in this order because he thought the order in which tools must have been made would be found most convenient. It had been argued that gold should be considered first, because there was no doubt that it was a metal that had been constantly found on the surface of the earth and used from the very earliest times, as it was capable of being hammered out and melted with less labour than other metals. He took iron first, because, of all the metals he had named, it was one of the most difficult to use by hammering or smelting. When we examined the poems of Homer, we found that both iron and the metal which he called *kalkos* (by which term the lecturer believed a kind of bronze was meant) were frequently mentioned, and though it had been argued that the use of bronze preceded the use of iron, there was no proof of that in the Homeric poems. Neither did he think that the remains of previous civilisations, such as those of Egypt and Assyria, supported that argument. The fact was that iron was a metal which could hardly be preserved for long periods unless buried in very favourable soils, and there could be no doubt that large quantities of it had disappeared from the sites of ancient cities by the process of natural decay by rust. Hence the fact that iron tools and other articles were not found in abundance on ancient sites was no proof that they never existed. On the other hand, copper, except under very adverse circumstances, was capable of enduring for thousands of years. Iron was mentioned by Homer as a metal very difficult to work. No doubt it was a metal of value, as the Greeks used it for barter. The distribution of iron in the ancient world was not very clearly made out. The Romans found very profitable iron mines in Spain, and Cæsar spoke of iron existing in Britain in small quantities. The same metal was also found in Nubia, Ethiopia, and Gaul, Strabo speaking of some valuable iron mines in Gaul, of the iron-miners of which country Cæsar also spoke. Iron was also found in Asia Minor. Apparently there was no word for steel, in any writer later than Homer, as a thing distinct from iron, and there it was spoken of as very fine-tempered iron. There was a word in Homer, *kuanos*, the meaning of which was very much disputed. Mr. Gladstone and several of the German authorities seemed to think that it meant steel, but there appeared to have been a natural *kuanos* and an artificial *kuanos*. Lepsius, in writing on the metals used in Egypt, came to the conclusion that natural *kuanos* was lapis lazuli. Theophrastus spoke of an artificial *kuanos*. Passing from iron to copper, the lecturer referred to the line in the "Odyssey" which had often been quoted, in which a captain of a ship was asked what his cargo consisted of, and he replied, "I am going to Temesa for copper, and carry a cargo of green iron." This sentence opened up several questions. First of all, Where was Temesa? This was a point upon which ancient writers were not agreed. There was a Temesa celebrated for its copper mines in Cyprus. On the other hand, Strabo said that the Temesa referred to was in the south of Italy, in the Abruzzi. The lecturer was inclined to think that Strabo was right. Another question was, Was the *kalkos* which the ship-captain was going in quest of pure copper, or was it the mixed metal which we termed bronze? Mr. Gladstone had maintained that when Homer spoke of *kalkos* he meant pure copper, not bronze. On the other hand, it was generally argued that pure copper was not hard enough to produce spear-heads, arrow-heads, knives, and cutting instruments such as were unquestionably made by the Greeks. With the desire of clearing up this question, if possible, he had written to Dr. Percy, the eminent metallurgist, asking him whether it was possible to so harden copper as to make that metal available for the blades of cutting instruments. Dr. Percy, in reply, said that copper became a little harder by being hammered or rolled, but he knew of no method of materially hardening it except by alloying it with some other substance, such as tin or sulphur. Mr. Gladstone, in talking over the matter with Dr. Percy, asked, "How could it be asserted that we knew all that the ancients knew about copper?" Dr. Percy said he thought it very probable that we knew a great deal more about the metal than the ancients did. At any rate, the *onus probandi* rested with Mr. Gladstone and with those who thought with him. For the purpose of the present lecture it might be assumed that with very few exceptions the bronze articles which were found in large quantities on ancient sites,—whether in the form of swords, shields, celts, tripods, candelabra, or the numerous other articles which were to be seen among the contents of our museums,—were, with the exception of the later Roman articles, made of copper and tin mixed in certain proportions, varying from 10 to 14 per cent. of tin. In later times, zinc was mixed with copper, forming the metal which we called brass, but it was not the "brass" spoken of so often in the Scriptures. In every case where the word "brass" was used in the Authorised Version, bronze (*i.e.*, an alloy of copper and tin) was meant, and not an alloy of copper and zinc. The distribution of copper in the ancient world was very wide, extending along the coasts from one end of the Mediterranean to the other. It existed in Britain, Spain, Portugal, France, Italy, Cyprus, Nubia, and other countries. The copper-mines of Spain were very productive in Roman times. There was a very curious story in Diodorus, who says that the Pyrenees were so called from the following circumstance:—The mountains were originally covered with forests; the forests taking fire burned with such heat as to smelt the veins of copper on the surface of the mountains, which were called Pyrenees from *pyr*, which meant fire. There was a curious memorandum about Portuguese copper preserved in a bronze tablet found in Portugal close to an old Roman copper-mine. It contained an inscription in the form of an edict from the Roman Governor regulating the working of the mine and the government of the adjacent town. Professor Hubner, in his work on Roman inscriptions, noticed this tablet. Going back to the line from Homer already referred to, the lecturer said that if, as he believed, *kalkos* was a mixture of copper and tin, where did the tin come from? Well, up to a recent period, the archæologist who might be asked that question would answer, "From Cornwall." He was sorry to say that that statement rested upon a very slight basis. There was not the slightest evidence that the Phœnicians ever came to Cornwall. It did not follow that the Cassiterides mentioned by Herodotus were the Scilly Islands. Strabo and Diodorus both seemed to show that they were not British territory. Two works might be consulted for further information on this subject. The one was the late Sir Cornewall Lewis's work on "Early Astronomy," the other was Mr. Ellerton's "Origins of the English People." Both Strabo and Diodorus came to the conclusion that the Cassiterides were islands somewhere off the coast of Spain. Not that Cornwall did not export great quantities of tin in very early times, for Diodorus mentioned that tin was largely exported to Gaul. The word Cassiterides was, the lecturer said, generally admitted to be derived from a Sanscrit word, and that pointed to the possibility that a great deal of the tin used by the ancients may have come from the Straits of Malacca, by way of the Red Sea. But several other sources of tin had been only recently discovered. At the Congrès Pré-historique, held in 1874, it was suggested that tin was obtained in very early times in the south-east of Europe, south of the ancient Pannonia, described by Matthew Paris, near the country now known as Transylvania, whence it was brought down southwards through Italy. Spanish tin was undoubtedly mentioned by Homer. At the Congrès Pré-historique of 1876 it was shown that extensive ancient mines of tin ore had been discovered in Tuscany. It was the natural inference that from these and other sources of mineral wealth the Etrurians drew their supplies of material for the abundance of bronzes which they had left. Passing on to refer to gold, the lecturer said that that metal was very widely distributed in countries bordering upon the Mediterranean, and it was found in great abundance in the Caucasus. Thrace was another celebrated auriferous region. Herodotus says that the mines there were worked by Phœnicians. It was for the sake of these mines that Cymon, the Athenian general, sought to take possession of the country. Philip of Macedon, who succeeded in taking it, founded the town of Philippi, and it was said of him that it was his gold which opened the gates of the Greek cities more than his military prowess. There was a tradition that he refused to pay tribute to the gods, and that to punish him the god Poseidon or Neptune sent the sea into the mines and destroyed them. In Mr. King's book on "The Precious Metals," there was a translation from a very interesting passage from Pliny, who spoke of the extraordinary scale on which gold and silver mining operations were conducted, and of the great abundance of the

precious metals in ancient times. Having referred to the celebrated silver mines of Laurium in Attica, the lecturer said that these mines, and those in Egypt described by Diodorus, were worked by slaves, whose sufferings were very great. In fact, the system which prevailed was that of factory life in its worst form, without the mitigating influence of Lord Shaftesbury. In conclusion, the lecturer said a few words with regard to lead, its distribution in ancient geography and its use by the ancients.

The following is a syllabus of the subsequent lectures of this course, viz.:—(2) April 27, "Metallurgy." (3) May 4, "Writing and Writing Materials." (4) May 11, "Masonry, Carpentry, Materials used in Building." (5) May 18, "Fictile Art, Glass; Ivory as applied to Decoration." (6) May 25, "Materials of Clothing; Weaving, Spinning, Embroidery, Dyeing." (7) June 1, "Agriculture." (8) June 8, "Wine-making: Cultivation of the Olive." The lectures will be given at four p.m., in the Botanical Theatre.

THE NEW WAR OFFICE AND ADMIRALTY.

If report speak truly we are within a measurable distance of another great Government competition, for it is said that a general invitation is about to be addressed to the architectural profession at large to submit designs for the intended new War Office and Admiralty. With the experience of previous enterprises of the same description before us, and remembering the comparative failure attending their sequel, it behoves the nation's advisers to set about the new venture circumspectly, and to avoid as far as may be the errors of earlier experiments.

The fashion at the present day is tending strongly in the direction of double competitions, and there are recent instances in which the system has worked not unsuccessfully, sketches on a small scale being first submitted and designs of a more complete and elaborate character being subsequently furnished by the authors of a selection and the most promising sketches. It appears probable that working upon this hint a still better scheme may be devised. For nothing is so well attested as that the faculty of planning and arrangement in architectural matters is not always,—is, in fact, very rarely,—combined in the same person with the highest skill in artistic design. The one is prose, the other poetry. In one the patient methodical precision and foresight of the mathematician comes into play, reducing a medley of conflicting conditions to order, and effecting, by means of a due consideration of endless possible combinations, the best attainable compromise. The gift of artistic design presupposes and demands an altogether different temperament,—imaginative, impatient of material conditions and restrictions, and apt to overlook or tend to its special ends the sterner necessities of the problem in hand. The exercise of each of the above faculties in their highest development requires a specially constituted mind, and as we seldom find a mathematician of the first order who is also a poet of equal excellence, so it is difficult, if not impossible, to find an architect who is supreme in both divisions of his calling,—the practical and the imaginative. Hence in adjudicating upon the rival claims of competitive designs the arbitrator is not unfrequently perplexed between the merits of, on the one side, a perfect plan clothed with commonplace, or worse, elevation, and on the other hand, an artistic *ensemble* of conspicuous merit based upon a weak and unworkable plan. Cases of the sort are within the memory of us all. In order, then, "to make the best of both worlds," and lay under contribution the highest intellect and skill in both sections of the profession, it may be worth trying some such experiment as the following.

Let plans be invited, in the first place, embracing under that title all questions of arrangement, both horizontal and vertical; and, as those who are best skilled in planning are, as a rule, men with a "practical" bent, let questions of sanitation, drainage, ventilation, and such like, come under this head,—everything, in short, but the exterior aspect of the building and its interior design and finishings. The selected plans should then be lithographed, and a fresh appeal be made for designs adapted to the chosen plans, keeping substantially to the approved dispositions, but allowing all reasonable latitude in the treatment of minor features and accessories. The authors of the best plan and the best design should, in the absence of any special disqualifying reason, be jointly entrusted with the work, harmonising and adjusting the points of divergence between their respective ideals.

By this means we should enlist the services of experts in both branches of the art, and each should be well content with his share of honour. If, against all probability, it should turn out that some individual more gifted than his fellows proved himself the victor in both contests, and supreme both in the region of plan and of design, no one would surely be found to grudge him well-earned distinction.

A.

CRYSTAL PALACE SCHOOL OF ENGINEERING.

The Easter term closed on Saturday last, when the certificates awarded to the students by the examiners were presented at an assembly of the usual character, by Mr. J. F. Bateman, F.R.SS. L. & E., Past President and Hon. Councillor of the Institution of Civil Engineers. The past has been, as regards attendance, the most successful since the school opened, ten years ago, with nine students. During the term just ended, sixty-six students have been in attendance.

Mr. Bateman, in addressing the students, referred in terms of commendation to the advantages they enjoyed in attending such a school. It would not impart all the knowledge that was necessary for pursuit of the engineering profession, but it imparted a large amount of what was necessary and valuable. It was difficult for youths of about sixteen years of age, or their parents or guardians, to select the profession for which they might be best adapted, but whatever their ultimate course in life might be, the knowledge and training given in this school would be found valuable. Youths who entered engineers' offices without special preliminary training were, for the first year or two, practically worth nothing, but a course in this school would make them useful at once, and greatly aid them in the acquisition of higher attainments. In former times engineers became famous, and accomplished great things by their genius alone, without much help from education; such men, for instance, as Brindley, Stephenson, Telford, and many others; but competition was now so keen that special training and education for particular professions was indispensable to success. It was desirable for youths with their career before them to aim high, whatever their choice might be of a profession,—if it was to be the Law, let them aim to be Lord Chancellor; the Church, to be Archbishop; or in Engineering, to be President of the Institution of Civil Engineers. He would urge his young friends to aspire also after possession and exercise of the highest moral qualities. Some men were very clever, but not sufficiently honest to inspire confidence; others were honest enough, but not clever enough, to be trusted with anything,—professional skill and ability, with honour and honesty, were the best qualifications for success.

Mr. Shenton then read the report of the examiners, Messrs. Wm. Ridley and Ewing Matheson, Members I.C.E. The lectures for the term were on "Steam"; 34 students had attended the lectures; 25 were eligible for examination, and 20 received certificates. The highest number of marks attainable was 273: D. Allport was first with 213 marks, and T. A. Guyatt second with 207 marks. In the drawing office, nine certificates were awarded, A. C. Carew-Gibson first in order of merit, W. W. French, second; for work in the pattern and smith's shops, B. H. Hewett and T. B. F. Sam were equal firsts, nine other students had also certificates; in the fitting-shop eight certificates were awarded, F. E. Ross first, E. Clarke second. In the civil engineering section six certificates were awarded to students in the first term for surveying, levelling, and the preparation of plans and estimates for Parliament, F. J. Pigott first, C. T. Spencer second; four certificates were awarded to students in the second term for working sections and plans, specifications, estimates, and details for a railway and dock, J. A. W. Brunton first, G. R. Evans second; five students of the third term were awarded certificates for original designing of lattice, warren, plate girder, and other bridges, G. B. Partridge, of whom, as a student, Mr. Willson, principal of the school, made special honourable mention first; J. R. Crook, second. In the Colonial section, four certificates, were awarded of the second and third grades, to H. H. Noel and H. M. Noel, S. G. Riadore, and F. J. Watson.

As on former occasions, we noticed several foreign students have attended the school; amongst others, a Spaniard and two young Africans.

Mr. Kimber, recently returned from a journey of 30,000 miles in the colonies, delivered an interesting address, warmly commending the Colonial section as admirably adapted for fitting young men for colonial life, and for investing them with capabilities that would enable them to command high wages, if they chose to work for wages, in new countries.

PARIS MUNICIPAL BUDGET.

The extent to which the Municipal budget of the French capital has grown within the present century is really marvellous. At the beginning of the century, when the population of Paris was 531,000, the annual revenue and expenditure amounted to seven and a half million francs, or 300,000*l.*, being at the rate of 14½ francs, or 11s. 7½d. per head. In 1813 the budget had increased to 23 million francs, or 920,000*l.* sterling, while the population had only gone up to 622,000, the proportion therefore being 37 francs, or 29s. 7d. per head. At the time of the Second Republic, in the year 1849, when the inhabitants numbered 946,000, the budget was only 41 million francs, or 1,640,000*l.* sterling, being about 43¾ francs, or 34s. 8d. per head. In 1860, after the enlargement of the city, when the population was 1,800,000, the city budget rose to 104 million francs, or 4,160,000*l.* sterling, being at the rate of 91½ francs, or 73s. 2d. per head. For the present year 1883 the total expenditure of the city is estimated at 260 million francs, or 10,400,000*l.* sterling, being at the rate of 144 francs, or 91s. 2d. per head of the population, which is now 2¼ million souls. Since the First Republic, while the population has increased fourfold the city budget has multiplied twenty-fold.

GIGANTIC BRIDGE IN NEW YORK.

THE EAST RIVER BRIDGE.

The gigantic suspension-bridge which is to connect New York with Brooklyn will be completed in a few weeks. The bridge will have five roads. The central one, which is intended for foot-passengers only, will be elevated, its planking being 13 ft. above the level of the other roads. Below, on the right and left, will be the two tramway roads, and these will be constructed of such strength that even the Pullman cars, weighing thirty-two tons each, could travel upon them without danger. The two outermost roads will be for the ordinary vehicular traffic. The entire bridge is 3,460 ft. long, and the clear width of the central opening is 1,538 ft. It has been found possible to reduce the extent of the flexion or vibrations here to within 10 in. The total weight of the bridge is 17,500 tons, the portion forming the central opening alone being nearly 8,000 tons. Each of the four great cables weighs 850 tons, and is capable of bearing a weight of over 12,000 tons.

A DANISH BUILDING SOCIETY.

The Working Men's Building Society of Copenhagen is one of the largest associations of this kind on the Continent. The number of its members in 1882 was no less than 11,626, who each pay a subscription of thirty-five öre, or about 1½d. weekly. The Society has already built 478 houses, mostly of large size. The number of their inmates is 12,132, which gives a fraction over twenty-five persons to each house. Including the building plots not yet built on, the total value of the house property of the Society is 3,338,910 kronen, or about 185,495*l.* sterling. In addition to this the Society possesses a capital of 1,339,560 kronen, or about 74,420*l.* sterling. In the year 1882 alone there were 1,598 new members added to the Society. In order to encourage the inmates dwelling in the houses already built to lay out their gardens artistically and keep them in good order, the Society offers a series of eight annual prizes derived from the interest of the reserve fund for those whose gardens are found in the best order.

THE NEW ART GALLERIES IN PICCADILLY.

THE Institute of Painters in Water-Colours are at length housed in a Temple of Water-colour Art, which was opened on Friday evening by their Royal Highnesses the Prince and Princess of Wales. The new building in Piccadilly, created primarily for the use of the Institute, has been established also to provide under their *ægis* a fitting place for the annual exhibition of the works of all water-colour painters, just as the galleries of the Royal Academy are open to all for the reception of oil-paintings, under the management of the Academicians. Indeed, the aim and object of the Institute are to accomplish, it is said, for water-colour art what the Royal Academy does for oil-painting and for sculpture, as well as (in a minor manner) for water-colour art and for architecture.

The art of water-colour painting being essentially of English origin, and standing here unrivalled in its kind in the world, it has long been felt that such a home should be founded worthy of its position in the artistic world. At the Paris Exhibition of 1878 English water-colour artists such as J. D. Linton, Orrock, Gow, Syer, Collier, and a host of others, exhibited to astonished foreigners a number of their productions. And to the influence exercised by H.R.H. the Prince of Wales on that occasion, must be attached the formation of many water-colour societies abroad, and the establishment of water-colour painting on its proper basis, as a distinct art, in many parts of Europe.

The new building (of which we published elevation and plans on June 24, 1882), although intended chiefly for picture-galleries, had naturally to be utilised for other purposes. Therefore, on the lower stories, in order to secure an adequate return for a large outlay, there are six shops fronting towards Piccadilly, each possessing a well-lighted basement, and a handsome room above. At the rear, extending along the whole length of the building, is a finely-proportioned hall, called the Princes' Hall, and intended to be used in the same manner as are Willis's Rooms, for music, public meetings, public dinners, balls, &c.

Whether we consider the proportions of this hall, its modelled pilasters, and ceiling, or other features, we notice an intention to avoid vulgar effects often apparent in public halls. The decoration of the hall, when ultimately completed, is intended to be mainly in white and gold, probably with a darker and more sombre ceiling.

We now turn to the galleries themselves, lighted from the top, in the usual manner of picture-galleries. These consist of a large square central hall, measuring 44 ft. by 45 ft. 10 in., and two small oblong galleries, 70 ft. in length, and respectively 33 ft. 10 in. and 28 ft. 6 in. in width. They are approached from the grand central entrance by a handsome and easy staircase, constructed of Craigleith stone, with richly-modelled and solid balustrades and wall-linings of Rouge Griotte, Dove, St. Anne's, and Joinville marble.

The lighting has been carefully studied in reference to the exhibition of water-colour painting (a class of picture much more difficult to light than those executed in oil). The ventilation has been secured by ample inlets for fresh air throughout the rooms; other inlets, capable of use when required, and copious extraction by a double ridge, having an air-space between, while the external covering, being exposed to the wind, insures an exhaust from the crowded rooms below. The windows are also enriched with stained glass, by James Bell, of Great Russell-street, one panel containing a medallion portrait of her Majesty the Queen. Other subjects represent Music, &c.

The external architectural design presents us with a building constructed of Portland stone, from the best Whitbed quarries, and having a pronounced Greek character, indicating in every feature its use as a home of art. The style is treated freely in the doorways (with their curved broken lines) in the mezzanine story (with its baluster mullions), and in some of its main lines, as by its connected festoons, extending from end to end of the building. Above the mezzanine story there are eight portrait busts, by Mr. Onslow Ford, the sculptor, placed in circular sunk niches, representing Sandby, Cozens, Girtin, Turner, D. Cox, De Wint, Barrett, and W. Hunt.

The great central door, by which the picture-galleries are approached, is surmounted by two sculptured figures, representing Water-colour Painting, from the chisel of Mr. Verheyden, of Chelsea, whose name not long ago was brought prominently before the public.

The richness of the architectural carving, by Mr. McCullock, in the lower part of the building, as well as the sculpture already alluded to, is relieved by the plain wall set back from the rest of the front, and extending along the whole façade where the picture-galleries occur internally, and where windows are therefore not required.

The whole treatment is calculated to give the greatest possible effect of length and size to the building, and has been steadily kept in view by the architect, even in the main feature which terminates the building at each end, and where the intentionally narrow spaces between the large columns bring up quickly the eye of the spectator to a halt.

The work has been carried out from the designs and under the superintendence of Mr. E. R. Robson, architect, by the following:—Messrs. Holland & Hannen, foundations; Peto Bros., superstructure; James Softly, clerk of works; W. G. Cannon, gasfittings; D. O. Boyd, heating; T. Elsley, window-gearing and ironmongery; Shoolbred, furniture; Janes & Son, blinds; Burke & Co., mosaic pavements; J. Houghton, marble wall-lining; T. W. Helliwell & Co., glazing of roofs.

We give an illustration of the Princes' Hall.

DESIGN FOR AN ACADEMY OF MUSIC.

THE subject being opportune, we are glad to be enabled to give publicity to the drawings which obtained for Mr. Robt. A. Briggs the Soane Medallion for 1883. On looking into the plans, their strong point is seen to be the manner in which the several departments are isolated, but at the same time made easy of access from any part of the building. The general features of the planning are as follow:—The principal entrance, which is through a covered portico placed in the centre of the principal front, gives access to a spacious and well-lighted vestibule. Between this and the inner hall to the theatre and concert-hall runs the principal corridor, off which are the library and reception-room, together with its waiting-room, and at one end the private staircase to the professors' suite, and at the other end the staircase to the green-rooms to the concert-hall. This corridor is continued round two sides of the building, light being obtained from spacious areas between it and the theatre, which also prevents all chance of sound being transmitted from one department to the other. These corridors give access to professors' rooms, matron, luncheon-rooms, &c., placed on each flank of the building, each side being provided with separate entrances and staircases for male and female students. Passing the principal corridor, the hall to the theatre is reached, with staircases to the dress-circle of the theatre and to the concert-hall, ranged on each side; and in the centre the entrance to the grand promenade to the theatre, which has been made a special feature. The theatre has been planned on the lines of the old Classic theatres, the acoustic necessities being well studied.

On the first floor, directly over the entrance vestibule, is placed the grand concert-hall, carried up two stories and planned to accommodate 300 people, with provision for organ and orchestra. In immediate connexion with this are the green-room, room for instrumentalists, and on the second floor, chorus and solo singers' rooms. On the other side of the concert-hall is situated a residence for the head professor, arranged on the "flat" system, with necessary offices, bedrooms being on the second floor. The class-rooms are ranged on this floor on each flank for male and female students. On the second floor are the practising-rooms, dressing-rooms for theatre, and caretakers' rooms. On this floor are the entrances to the students' gallery of the theatre. The elevations are treated in a free Classic spirit, with a *soupçon* of French feeling running through. The groups of sculpture, which break the sky-line on the principal front, appropriately represent the four phases of Music, they being Melody, Harmony, Symphony, and Phantasy. Over the central block are placed four Italian composers, Allegri, Buononcini, Rossini, and Verdi; the sculpture above the concert-hall windows being supposed to represent groups of Arcadian musicians. Over the portico are figures representing "Music of the Past" and "Music of the Future," with their exponents, St. Gregory and Herr Wagner. On side pavilions on the second floor are four German composers—Gluck, Bach, Handel, Beethoven; underneath which are four modern English composers,—Bennet, Sullivan, Leslie, and Macfarren.

We may add sections of the building in our next.

CLOISTERS OF THE MONASTERY OF ST. JEROME, BELEM.

WHEN the site upon which now stands the magnificent Church and Monastery of Belem was still called the Bairro de Restello, the Infante Dom Henrique (the great promoter of maritime discovery) erected, in the middle of the fifteenth century, a small ermida, or chapel, to provide for the spiritual wants of mariners who anchored their vessels in the waters which then laved its walls. In this chapel, it is stated, that Vasco da Gama and his companions, as we have before mentioned, passed the night previously to their embarkation in prayer. It was given by its founder to the Order of Christ. The church and monastery subsequently erected by Dom Manoel were intended as an expression of gratitude for the successful result of Vasco da Gama's expedition, the site being selected as the spot where he embarked on July 8, 1497, on his adventurous voyage to India, and to which he returned on July 29, 1499. The buildings were continued and completed by Dom Manoel's successors. They were transferred by their founder to the Order of the Monks of St. Jerome, and the name of the locality was changed to its present one of Belem (Bethlehem). The church and its monastery have been described already in the pages of the *Builder*, and, in presenting our readers with a view of the cloisters of the monastery, we need therefore only say that they are of a more modern date than, and differ completely from, the rest of the edifice. A principal feature in our illustration is the font which adorns the cloisters as a work of art, and which attracts the eye and the admiration of every visitor.

THE KAHLENBERG MONUMENT.

THE BICENTENARY OF THE RELIEF OF VIENNA IN 1683.

IT is the intention of marking the recurrence of the second centenary of the relief of Vienna in 1683, which will be on the 12th of September next, by laying the foundation-stone of a suitable monument in commemoration of the event. Herr Streit, architect, and member of the Vienna town council, who is the originator of the plan, submitted two alternatives, either 'to erect an obelisk or a monument, which should be seen far and wide. It is doubtful, however, whether the town council will undertake either, for the cost of the obelisk would be between 25,000 and 40,000 florins, that of the monumental column between 40,000 and 70,000 florins, and they do not feel justified to go to such an expense. Monumental tablets in the church on the Kahlenberg are all that is intended. But enthusiasts are still sanguine that a monument as designed by Herr Streit, and of which we give a view, will be erected.

The design of Herr Streit includes a column about 125 ft. high, in imitation of a Roman triumphal column, which would have a spiral stairs in the interior, leading up to the platform of the capital, whence a splendid view would be obtained over the surrounding country. The column, 13 ft. in diameter, would rise upon a base resting upon a stylobate of three steps. The platform of the column would support a chapel-like elevation, on the top of which would be placed a Victory, holding high in the right hand the uplifted sword, in the left the Cross, inclined towards Vienna, indicating that the liberators were Christians. The base is to be adorned on its four sides by large tablets, upon which would be inscribed the historical events, and which would be surmounted by the busts of Emperor Leopold I., King John Sobieski, Duke Charles of Lothringen, and Pope Innocent XIII. The column is to be covered with laurel branches running spirally upwards, and the arms of all princes and countries which took part in the relief of the city.



DESIGN FOR AN ACADEMY OF MUSIC.—MR. ROBERT A. BRIGGS, ARCHITECT.



THE PRINCES' HALL, PICCADILLY A



IES — Mr. E. R. Robson, Architect



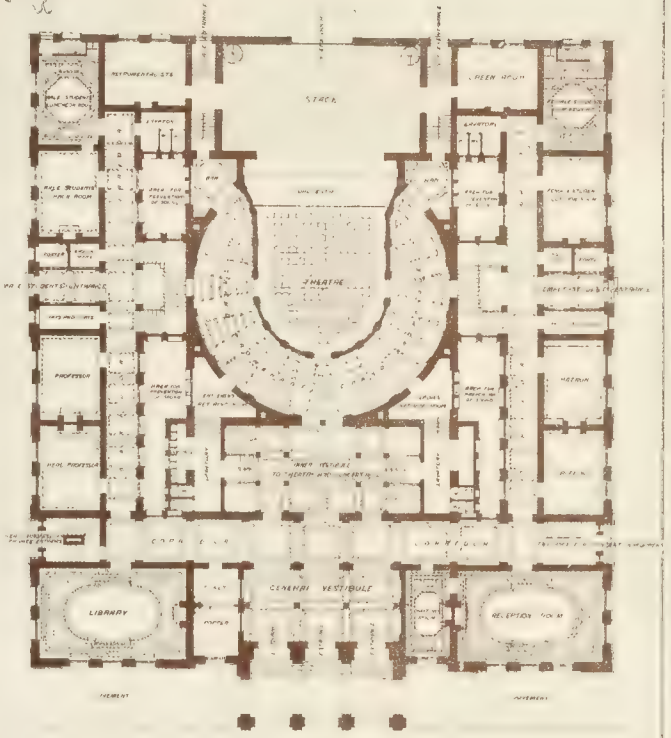
CLOISTERS OF THE MONASTERY OF ST. JEROME, BELEM.



THE PROPOSED KAHLENBERG MONUMENT.—Herr A. Streit, Architect.

RIBA SOANE MEDALLION

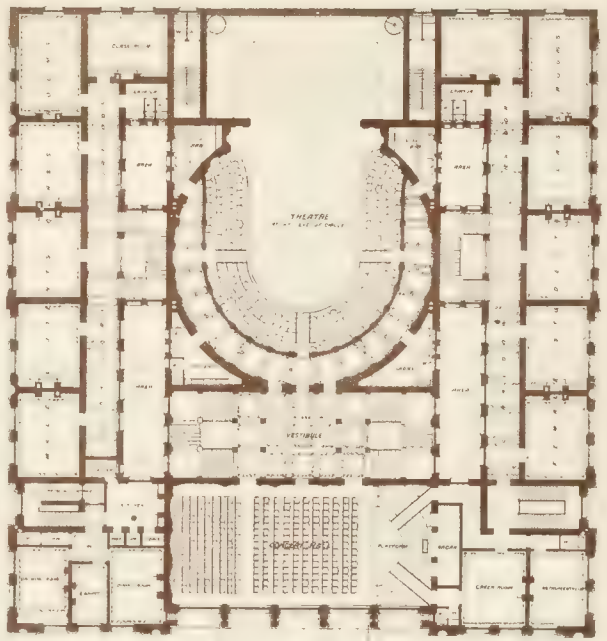
DESIGN FOR ACADEMY OF MUSIC



GROUND PLAN

RIBA SOANE MEDALLION

DESIGN FOR ACADEMY OF MUSIC



FIRST FLOOR PLAN

ART-UNION OF LONDON DISTRIBUTION.

THE (forty-seventh) annual meeting and prize distribution of the Art-Union of London was held on Tuesday, at noon, in the Adelphi Theatre, kindly lent for the occasion by Messrs. A. & S. Gatti.

In the absence of the president, Lord Houghton, the chair was taken by Mr. George Godwin, vice-president.

Mr. J. A. Hallett, member of Council, read the annual report, as follows:—

The subscription for the year just closed amounts to 10,693*l.* 4*s.*

The accounts of the year have been audited by Messrs. G. J. Fearis, and H. C. Thomas, to whom thanks will be presently proposed.

The following is a brief summary of the receipts and expenditure; a detailed account will, as usual, be printed in the report.

Amount of subscriptions			£10,693	4 0
Allotted for prizes	£2,698	0 0		
Set apart towards providing works of art for accumulated payments	657	6 0		
For print of the year, almanack, exhibition, report, and reserve	4,677	6 5		
			7,342	12 5
Agents' commission and charges, advertisements, printing, postage, rent, &c.			3,350	11 7
			£10,693	4 0

To the Local Honorary Secretaries and Agents in all parts of the world the thanks of this meeting are due, and amongst them must be especially noted the returns made by Mr. Hill, Worcester, U.S.A.; Mr. Christian, Monte Video; and Mr. Hodgetts, Toronto.

The amount to be expended on prizes will be thus allotted.—

1	work at	£100
1	,,	75
1	,,	60
2	works at	50 each
3	,,	45 ,,
3	,,	40 ,,
4	,,	35 ,,
5	,,	30 ,,
4	,,	25 ,,
6	,,	20 ,,
10	,,	15 ,,
15	,,	10 ,,

50 Framed proofs, "Countess of Bedford."
100 Sets of Designs from English History.
80 Wattington Statuettes.
10 Enamel Tazzas.

Making, with the prizes given to unsuccessful members, 494 prizes.

If it be a true saying that the condition of that people is most to be envied which makes no history, but calmly pursues the even tenour of its way, it may, by analogy, be affirmed that an institution is in the most satisfactory state which has no violent fluctuations to report, "no leaps and bounds," but, with little variation, returns, from year to year, a sufficient income. Under these circumstances, in the Annual Report of the Council, it is difficult to avoid repetition, and easy to incur the risk of becoming wearisome. Nevertheless it seems to be a wholesome custom, on the annually recurring occasion of meeting the subscribers, to make a statement of our proceedings during the past year, and, in passing, to give a glance at such matters as are interesting to those who watch the progress of art in this country.

One point which we have always chronicled is the occurrence, through death, of vacancies in the ranks of those either immediately connected with the association, or with the world of art in general. Foremost amongst such cases at the present time, in the interest of the Art-Union, is the loss of Mr. Lewis Pocock, who died, after a very short illness, on the 17th October last, at the age of seventy-five. In the early days of the Art-Union, in conjunction with his colleague as hon. secretary, Mr. Godwin, Mr. Pocock brought out an edition of Bunyan's "Pilgrim's Progress," with a series of twenty designs in outline, uniform with the series of twenty-two produced by the Art-Union. He also engaged the late Dean Alford to write a poem on the Lord's Prayer, and secured the services of Mr. F. R. Pickersgill, R.A., to illustrate it. He was for many years Treasurer of the Graphic Society, and an active member of the Society for Prevention of Cruelty to Animals. He took great interest in making a collection of prints, extracts and various matters illustrating the life and works of Dr. Johnson, which grew to be a work of great interest and importance. Of the debt which the Art-Union owes to him as one of its original promoters, and for constant unremitting care and supervision, it would be impossible to speak too highly. From the establishment of the society forty-five years ago, his attention to its interests was unceasing. His absence from the council meetings was a rare occurrence, and he was in the habit of looking in, almost every day of the year, to see how things were going on. There could scarcely be found a parallel to this unpaid and devoted attention. For his unselfish and genial character, he was deservedly beloved by his colleagues. It may be noted that, as many as thirty years ago, he devoted much time and money to the elaboration of a scheme for electric lighting, combined with the production of colour and power.

In February last, Mr. Robert Hudson died; he was a very old member of the council, and a frequent attendant at its meetings.

On the 17th December last we lost Mr. C. J. Dimond, after a rather prolonged illness. Mr. Dimond's father was one of the earliest promoters of the Art-Union, and for several years its treasurer; he was also hon. secretary to the Artists' Benevolent Fund. His son succeeded him in that post, and also as a member of your council, and, as one of the finance committee, he rendered valuable assistance.

In June, 1882, died Cecil Lawson, too soon cut off in a career which promised great results. Neglect marked the first few years of his public work, but he met before long with due recognition at the Grosvenor Gallery, when "The Minister's Garden," "The Voice of the Cuckoo," and other works, worthily placed, were fully appreciated, and the critics and picture-buyers speedily responded to the call to acclaim the new painter. What may be called heroic landscape was his chief aim. Unhappily he was too soon lost.

Mr. Hablot Knight Browne, better known as "Phiz," an illustrator of Dickens's novels, died at Hove, on the 8th of July, aged 67. Every one knows the above cited works, but besides these he produced much wood-engraving, and worked steadily in water-colours.

The very sudden and unexpected death of Mr. Gustave Doré, at the early age of 51, made a deep impression in Parisian art circles, where he had many friends. His was a many-sided genius, having practised sculpture as well as painting, and as a designer for book illustrations he was of extraordinary fertility. His works were, perhaps, more extensively known and appreciated in London than in Paris, where his brother artists somewhat undervalued him, as not having enjoyed the advantage of a thoroughly classical art-education.

On the 22nd of March died Mr. Alfred Clint, late President of the Society of British Artists, at the age of 76, after having ceased for some years to follow his profession, owing to failure of sight. He acquired his technical knowledge of painting from his father, George Clint, A.R.A., and, after trying portraits and landscape, he settled steadily to marine painting. He was one of the founders of the Society of British Artists.

In our last two reports we alluded to two courses of lectures on Greek sculpture delivered by Mr. C. T. Newton, of the British Museum. During the past twelve months Mr. Newton has given a course of five lectures on ancient Greek painting. He observed that we could not get a clear idea of the history of ancient sculpture without investigating, so far as our imperfect knowledge permits, the characteristic and successive stages of ancient painting. Tracing the progress of Greek art through its earliest stages, Mr. Newton noted the names of the great painter, Polygnotus of Thasos; Apollodorus, who first painted objects as they appeared to the eye, discarding the conventionalities of earlier styles; Zeuxis, who excelled in chiaroscuro; Parrhasius, who, in painting the Sacrifice of Iphigenia, introduced, by way of climax, Agamemnon veiling his head, as if a father's grief should be left to the imagination; and Apelles, who alone was permitted to paint the portrait of Alexander the Great. By the common consent of antiquity, his picture of "Venus rising from the Sea" was judged to be his greatest work.

In painting on vases in the best period of Greek art, the line of demarcation between painting and the subordinate art of keramography became strongly marked. The vases then produced do not attempt to imitate the effect of light on a body, which was accomplished by the great masters their contemporaries. The vase-painter never lost sight of technical conditions, and produced designs which for decorative fitness and beauty have never been surpassed.

The mural paintings discovered in the cities of Pompeii, Herculaneum, and Stabiæ, served, for the most part, for the decoration of private houses, and their number, beauty, and variety give us an idea of the beauty and wealth of the Italian towns of the Augustan age. In a catalogue of these paintings published in 1868, there were nearly 2,000 known, and several hundreds have since been discovered. They were generally set in compartments bounded by rich arabesque borders. The subjects of the paintings were nearly all mythological, or scenes from real life; their general character was idyllic, not dramatic. There was more of voluptuous serenity than of heroic earnestness in the motive of pictures,—Cupid and Venus, Apollo and Bacchus, were depicted rather than Homeric or Euripidean subjects.

In a general review of matters connected with art during the year, we cannot pass over so important an event as the opening of the New Law Courts. Their creation will remove the site of the Temple of Themis from the time-honoured precincts of the Palace of Westminster to the more convenient neighbourhood, for members of the Bar, of the Temple and Lincoln's Inn.

Not a year goes by without affording an example of some addition, of more or less importance, to that wonderful exhibition of specimens of almost every variety of the decorative arts of every country in the world, the South Kensington Museum. The latest acquisition is the remarkable collection of objects of art made by the late Mr. John Jones, which is an exceptional instance of untiring research. In noticing this bequest, a recent number of the *Builder* remarked that "There is nothing in it which does not represent the best class of work of its school, whatever our opinion as to that school generally may be. We make this qualifying remark, because we feel that we must distinguish between what is good of its class, what is well designed according to its style, and admirable in its workmanship, and what is artistically the best type *per se*. It is natural that the South Kensington authorities should be exceedingly gratified at being able to present to their visitors and students so complete a collection of artistic furniture, which was before so imperfectly represented in the Museum, and which, owing to the exceptional costliness of most of the articles, they could not have hoped to be enabled to secure from public funds. But there is another side to the matter, splendid workmanship, which spares no trouble or expense in attaining perfect execution is a quality to be enthusiastic over for its own sake, no doubt, but it would be wrong for any who are aiming at guiding public taste in any degree to overlook the fact that this beautiful workmanship represents a period of somewhat corrupt taste, and that the collection includes a great deal which, however original and costly in workmanship, illustrates a somewhat vitiated artistic style, and is not to be held up as an example of what ornament and artistic design ought to be. The works of the Louis Quinze and Louis Seize periods exemplify some of the richest, most gorgeous, and most painstaking, as well as most successful work that the world has ever seen; but they represent also, in some instances, a frivolous and false kind of design which results from the application of thought to the treatment of natural forms. It is not imitation of Nature; it is Nature taken as a basis on which to build a new creation, and a design of human invention. But there are not to be found many examples of French work of the eighteenth century which come under this definition of ornament. Ornament may be very good and very interesting, so long as it is treated in such a manner as to emphasise the construction and expression of the furniture to which it is applied; but the ornament in much eighteenth-century French work seems put together without any intellectual connexion with the articles to which it is attached, and appears to be placed there because the artist did not know what else to adopt. There is no doubt about the exquisite workmanship, and the richness of the material adds not a little to the effect; but there is felt to be an absence of mind,—of relevancy of the ornament to the body of the work. Still there are things in the collection which rise above such as we have alluded to. There are astonishing pieces of work in regard to execution and in fine and pure taste. It must be conceded that this collection includes many specimens which represent the best qualities of eighteenth century art. Many of the delicate and feminine-looking bits of furniture have been in the possession of princesses and ladies of the period to which they belong. Several were the property of Marie Antoinette. They seem to bring us into a closer familiarity with the life and the tastes of the people who lived amongst them. The exhibition is unquestionably a most remarkable one, and a great gain to the nation, and it is to be hoped that the gift may set an example to others who have such treasures, and no relations with a more direct claim to them. The interest which it has for all educated people as the representative of a school is very great, and let artisans study it diligently and observantly, and while profiting by the examples which it offers of patient and refined workmanship, let it also be a warning against taking some of the examples as models of artistic taste."

In our report for the year 1880 we took occasion to state that, by the liberality of Mr. Edward Harris, a citizen of Preston, the city would be shortly provided with an art-gallery and museum, at the estimated cost of some 70,000*l.*, for which the Corporation undertook to provide a site, the value of which was stated at 2,000*l.* The design of the building was entrusted to Mr. Jas. Hibbert, who was commissioned by the Harris trustees, to visit several edifices of a cognate character, in this country and on the Continent, with a view to combining their several excellencies in this result. The building will be of the Greek Ionic order, having four distinct frontages, and will be completely isolated from houses around it. A sum of 10,000*l.* further is placed with the Corporation, on interest, to be expended annually on additions to the reference library, museum, and art-galleries, and the result may be looked for as somewhat unique in the case of a provincial town. Preston may well be proud of this contribution to the art-culture of the country.

At Leek there has been inaugurated a new building, called the Nicholson Institute,—combining picture-gallery, art-schools, and news-room. The estimated cost of the whole is 8,685*l.*

A passing word of praise must be given to an exhibition of pictures opened in April last, in the schoolroom connected with an East-end church, that of St. Jude, Whitechapel. The collection in question was started by the vicar, the Rev. S. A. Barnett, and consisted of pictures, lent by various owners and artists, and the style of the exhibits was such as to come home to the sympathies of hard-worked and little-educated people. The gathering comprised several of Israels' pictures, a considerable number of Mr. Brett's small oil studies for his greater works, lent by Mr. Devitt, Briton Riviere's "Roman Holiday," and several good works by Long, Collier, Frith, Burgess, and others. The value of the display was greatly enhanced by the production of a catalogue, sold at the low price of 1*d.*, in which the principal pictures received some appreciative explanation or comment calculated to direct attention to the main point in the work, and to suggest a moral to be derived from it. The originators have done very much to bring many people within reach of a new form of enjoyment, higher than any they have generally had access to, and the effort, which cannot be without permanent results for good, is worthy of all praise. It would be absurd to expect too much from the mere glimpse which the exhibition can afford. It is something, however, that these workmen should have an opportunity of seeing what a good picture is, and generally there is some kindly educated person present who explains the works to willing groups of listeners, and we know not to what extent the seed thus sown may germinate. Few of us allow ourselves to dwell on the life of the countless multitudes who fill the East End of London: if we did, we should almost despair at the thought of the iron necessity which hems it in. It alternates, for the most part, between the workshop and the narrow tenement, perhaps between the dock-yard and the single squalid room. To amend and alter this state of things an attempt is doubtless being made, but not a tenth part as widely as it ought to be,—still it would cause some astonishment were a list published of those men and women,—barristers and men of letters,—and women delicately nurtured, who, not in the East End only, but in many districts of London, go regularly night after night to hold classes and do social work, with a view to civilising those who, as a rule, are surrounded only by debasing associations. It is stated that the exhibition just mentioned was visited by 35,614 persons, that 10,000 copies of the 1*d.* catalogue were sold, and, though it was open free, upwards of 40*l.* was collected in the boxes for voluntary contributions.

The presentation work for the current year is a fine plate engraved by Mr. C. W. Sharpe, from the picture by Mr. Alfred Elmore, R.A., exhibited in the Academy in 1860, showing the Queen Marie Antoinette insulted by the crowd of *sans-culottes* in the Tuileries on the 20th June, 1792. To appreciate the situation shown in the picture, it is necessary to give a brief sketch of the state of matters at the time. On the 20th June, 1791, the position of the king, Louis XVI., in the face of his revolted subjects, became daily more intolerable; 600,000 of the principal families of France had gone to join, in foreign parts, the friends and relations of the queen, and at length the king resolved to evade his jailors and join the fugitives. At midnight on the 20th the king and queen, his sister Madame Elizabeth, the dauphin, and the young princess succeeded in quitting the Tuileries, one by one, and in reaching a spot where a travelling-carriage was in waiting for them. They passed the barrier safely, and got as far as St. Menehould, where they were recognised by the son of the postmaster, and compelled to pass the night in a small chamber over a grocer's shop in the town. That night the fair hair of the queen turned white with grief. The next day they were brought back to Paris amidst the hootings of the mob, and again lodged in the Tuileries. From that day the proceedings of the insurgents became more and more insulting, till on the 20th June, 1792, the day marked by the incidents in our picture, the movement culminated in the storming of the Tuileries by the mob. Some 80,000 people had gathered together, and, armed with pikes and other improper weapons under the guidance of one Santerre, a brewer, they broke open the palace doors, and swarmed all over the place; and overpowering and hacking to pieces the Swiss Guard, they penetrated to the wine-cellars, and the whole palace was soon filled by a swarm of intoxicated wretches, yelling, howling, and rioting in the madness of their triumph. Then some of the queen's attendants brought her children to her, in order that their presence, by softening the mob,

might serve as a buckler to their mother. They placed them in the depth of a window. They wheeled in front of this the council-table. Preserving a noble demeanour in this dreadful situation, the queen held the dauphin before her seated on the table, her arm was round her daughter's waist, and Madame Elizabeth stood near. A young girl, of pleasing appearance and respectably attired, came forward and bitterly reviled in the coarsest terms l'Autrichienne. The queen, struck by the contrast between the rage of this young girl and the gentleness of her face, said to her, in a kind tone, "Why do you hate me? Have I done you any injury?" "No, not to me," replied the pretty patriot; "but it is you who cause the misery of the nation." "Poor child," replied the queen, "some one has told you so, and deceived you. What interest can I have in making the people miserable? The wife of a king, mother of the dauphin, I am a Frenchwoman in all the feelings of my heart, as a wife and a mother. I shall never again see my own country. I can only be happy or unhappy in France. I was happy when you loved me." This gentle reproach touched the heart of the young girl, and her anger was allayed. She asked the queen's pardon, saying, "I did not know you, but I see that you are good." In the picture before us Mr Elmore has vigorously epitomised the whole French revolution. The leading figures of the mob are finely distinguished. Foremost, leaning over the table, is an old ophthalmic hag, with a horrible grin, and skinny brown arms, who snaps her fingers at the group. Then the thoughtful, pitying girl of a better class already noted. Then there is the horrid old man, whose mocking violence a demagogue restrains. Far behind, amongst scythe blades, tricoloured flags, and weapons, figures of the mob are finely distinguished. Foremost, leaning over the table, is an old ophthalmic hag, with a horrible grin, and skinny brown arms, who snaps her fingers at the group. Then the thoughtful, pitying girl of a better class already noted. Then there is the horrid old man, whose mocking violence a demagogue restrains. Far behind, amongst scythe blades, tricoloured flags, and weapons, we observe an admirable Hogarthian touch, the great vault of a shouting, stupid mouth, the only part of the face, except the tip of the nose, that is visible. But the crown of the whole is what it should be, the face of Marie Antoinette, which, without being theatrical, is instinct with noble dignity and the pride of centuries of crowned ancestors,—not defiant, or Boadicean, or proud, but tranquilly immovable and queenly. It would be difficult to quote any picture in which the several characteristics of a scene are more distinctly individualised and strongly marked than in this composition. The translation into black and white, by Mr. Sharpe, is worthy of the powerful treatment of the original by Mr. Elmore.

In concluding our report we could not do better than cull a few remarks from an address delivered on the opening of the Dundee Fine Art Exhibition, by Sir Wm. Fettes Douglas, President of the Royal Scottish Academy. He said "the attention now given to art in this country is one of the most curious of the innumerable reasonable, unreasonable and fantastic fashions of the day. Fifty years ago art was recognised only by the few, and then only as a trifling although somewhat pleasant accomplishment, and never dreamed it would become, as it is becoming, a great power in the world,—indeed, it seems not unlikely to usurp a larger share of the world's attention than it ought legitimately to win. . . . Books of to-day very often consist of pictures with a regard to type of letter-press,—not, as in a proper division of labour, of letterpress with accompanying pictorial illustrations. . . . Unless in the gloomy regions of abstract science, every department of human activity calls in the assistance of art. Natural philosophy claims its help,—history claims its illustration,—romance seeks to add art's poignancy to its own,—and I need not speak of its activity as an advertising medium. Much of all this, as I said before, is the result of fashion, and it is to be hoped that before the fashion can change, art will have become incorporated, so to speak, in the very nature of the next succeeding generation, and will then hold its position permanently as a necessary of life. Form morals constant contact with pure and upright conduct is the best, indeed the only true, education, so in art, familiarity with beautiful, not necessarily expensive, objects will inform better than a thousand schools. They speak a language which does not need to be learned, and is more eloquent than the thousand conventions and rules of a thousand teachers. . . . In this country, and in the vast majority of the very best of us, a love of art is an artificial accomplishment, and not a spontaneous feeling. Probably the spontaneity will supervene with culture; for habits of mind are as certainly transmissible as habits of body, aptitude for culture not less so than tendency to crime, and with our mind's eye we may look forward to our successors possessing intuitively the sense of the beautiful and the truthful, which may make life itself, and its surroundings, one long enjoyment."

Let us add that, looking to the persistent endeavours of the Art-Union for forty-five years to spread abroad a love of art amongst the people, we may hope to have contributed a little stone to the cairn of art-culture of which Sir W. F. Douglas speaks in hopeful terms.

The Chairman.—Ladies and Gentlemen: It is my duty and pleasure to move the adoption of the report which has just now been read to you. I shall occupy but a very few minutes in doing so, if only in consequence of the coldness of the day, and which will make you all very anxious, I should think, to get to the business of the morning. I am sure you would think that I was much wanting in feeling if the first words I addressed to you by way of comment on the report were not directed to the late Mr. Lewis Pocock, with whom I worked in a labour of love for half a life, and at a time when the duties of the officers of this society were very much more onerous, though still honorary, than they are now, the staff being small,—when sitting up all night for the benefit of others seemed only a good joke; when no labour was too great in the endeavour to insure the success of the institution which he and others had established. No one can speak more warmly than I can of his undeviating kindness and goodness of heart, and of his evenness of temper. He was never put out, never unwilling to undertake the fullest share of the labour which we had to perform. Fortunately in this country,—where more men than in any other country that I have ever heard of are to be found willing to do work for nothing,—the torch is still handed on: there is still some one to take it up, and on this occasion I am very glad to find that, by an omission in the report, I am the first to mention that we have, in Mr. Zouch Troughton,—one of the earliest and most eminent of our members, and who has produced one of the few poetical plays which will mark this nineteenth century,—a gentleman who has been found willing to take Mr. Pocock's place as one of our honorary secretaries. One word, too, as to Mr. C. J. Dimond. I have grieved greatly at his death. He was an old friend of this institution; indeed, he was an hereditary councillor, for his father was on the Council. Mr. Dimond was a great friend of the Art-Union, and not only of the Art-Union, but of every artist needing aid and counsel. You will have noticed that the amount subscribed this year is not quite so large as we have been in the habit of receiving. The matter scarcely needs comment, because subscriptions of this kind must alter, they must vary, one year must show better results than another; but the circumstance needs observation because of the fact that the whole of the statements which have accompanied the reports of the local honorary secretaries affirm that it is simply the badness of trade which has led to the comparative smallness of their returns; and this is not merely the case in England, but from Australia and from other of the colonies the same statement comes. Under the circumstances, however, 10,600*l.* is a very large amount, after all, to be collected in a year, and from year to year, as we succeed in doing, to say nothing of the large excesses which we have had in previous years. The print which every member has received in return for his subscription is a very charming work most charmingly engraved. For the next year we shall also have a very fine print. I may just glance very briefly at one or two other points in the report. And first with regard to the mural decorations which have been catalogued as having been found at Pompeii, some two thousand in number. It has occurred to me to urge most strongly for years the desirability of the study and practice of mural decoration in England. It seems to me most extraordinary that this branch of art is not pursued in this country. Thousands and tens of thousands of pounds have been spent in London and country towns of late years in the erection of town-halls and parish-halls, of which sums not one sixpence, as far as I know (except in the case of Manchester Town-hall, which is a special exception), has been devoted to anything that may be called mural decoration of high artistic character, and I am firmly convinced that until we do attempt mural decoration of a high class, until we lead young artists by premiums, by payments indeed, to turn their attention to the subject, and until we can induce the elder and leading artists to lead their younger brethren by working at mural decorations themselves, we can scarcely expect to have an English school of art. At present, Government does little in the matter, and it is difficult to get local bodies to do anything. If there were any boards who could see their way to devoting sums annually to the production of such works the public would be the gainers no less than the artists and the buildings which they adorned. I would wish to emphasise for a moment the exhibition that was held at Whitechapel, as mentioned in the report, and which served to show in what a simple way ladies and gentlemen who possess pictures and other works of art, and who will give a little time to the management of such exhibitions, may greatly minister to affording delight and elevating pleasure to their less well-to-do neighbours. If the good which such exhibitions conferred were more often thought of than it is, I think they would be more frequently held. The two or three exhibitions which have been held in Whitechapel have been highly appreciated by those for whom they were intended, and have been productive of a large amount of good. An event which concerns us, and which will be memorable in the history of art exhibitions, will take place this week, that is, the opening of the new Art Galleries in Piccadilly. The Prince of Wales, with that kindness and wonderful energy which enable His Royal Highness to do so much, is to open the galleries on Friday evening next. As many of you may have noticed, the building externally has claims on attention. The "Prince's Hall," as it is called, and which will be used for various public purposes, is a very fine apartment. There is this one new point to note in connexion with the exhibitions to be held there, and that is that the exhibition is no longer to be confined to the works of the members of the Institute, but will be open to all painters in water-colours. Therefore the opening of the new building will mark a new departure for water-colour painters, and this year's exhibition of water-colours (in which we are known to excel) will, it is to be hoped, be a memorable one. I may, in this connexion, draw attention to the proposal made on the part of the Council of the Royal Albert Hall, who, as you know, have an exhibition of art-works from year to year coincident with that at the Royal Academy. The Council of the Albert Hall have made this exhibition a little later these last two years, and they have announced that any painter who may have sought to have his picture exhibited at the Royal Academy, and who may have received from the Academy a note saying that his picture is returned merely for want of room, may have his picture hung in the exhibition of the Albert Hall without having to pass any further tribunal or examination, so as to give it the benefit of such publicity as the Albert Hall can offer. I need say little more. You all know how much good the Art-Union of London has done and is doing for the advancement and popularisation of art, although there are those who affect not to be cognisant of what is justly due to its efforts. It would be exasperating, were it not amusing, to hear of discussions on the best means of spreading works of art among the masses of the people, in which not one word is said as to the efforts,—efforts which have been successful in no small degree, and which are within the cognisance of large masses of people,—of the Art-Union of London in that direction. It seems to me preposterous. What other society has ever succeeded in introducing art to the homes of the people as the Art-Union of London has done? We have sent the best engravings of the best pictures of the age far and wide, into the shanties and log huts of the Backwoods, as well as into the dining-rooms and garrets of London. People who affect to ignore the great work done by the Art-Union of London forget that but for the action of that body the art of medal die-engraving would have died out. With regard to bronzes, again, where would English bronze-founding (particularly with regard to the smaller castings) have been but for the impetus that was given to it by the Art-Union of London? I will not say any more, but beg to move the adoption of the report.

Mr. Birch seconded the motion, which was unanimously agreed to.

Mr Hallett said he had the privilege of proposing the next resolution, and he considered it a great privilege, because he had a very good opportunity of judging of the work done by the gentlemen to whom it referred. The resolution was as follows:—

"That this meeting offers its best thanks to Mr. E. E. Antrobus and Mr. R. Z. S. Troughton for their unfailing efforts to promote, as honorary secretaries, the interests of this society."

As a tolerably regular attendant at the council meetings he was enabled to see how those gentlemen devoted their time and attention to the interests of the Art-Union of London, and the least the meeting could do was to express its hearty thanks to them for their assiduity in the performance of their duties.

Mr. James Hopgood, in seconding the motion, said he could bear similar testimony to that which had been borne by Mr. Hallett.

Mr. Antrobus, in replying, expressed the very deep regret which he felt at the loss he and the society had sustained by the death of his late colleague, Mr. Lewis Pocock, with whom he had worked for a great number of years with the greatest cordiality.

Mr. Troughton also replied, observing that the resolution, so far as it applied to himself, must have more reference to the services which he hoped to render in the future than to those which he had been able to render in the past, as he had been but recently appointed. He had been asked to move the following resolution:—

"That the best thanks of the meeting be given to Messrs. A. & S. Gatti for their kindness in permitting the meeting to be held in their theatre, and to Mr. Jecks and to Mr. Charker for the arrangements they have made."

The motion was duly carried, the Chairman adding a few words with reference to the kindness with which Messrs. Gatti and the other gentlemen named had met the wishes of the Art-Union.

Miss Bros and Miss A. A. Cowell having been appointed to preside at the wheels, the drawing for prizes commenced, after the thanks of the meeting had been given to the Chairman for his

services. Later in the day the chair was taken by Mr. Hopgood. In accordance with our custom, we append a list of the prize-gainers:—

Entitled to select a work of art of the value of 100*l.*—J. J. Daw, Tavistock.

75*l.*—Dr. A. Lavery, Ryde, I.W.

60*l.*—T. C. Lynn, King Edward street.

50*l.*—W. H. F. Baily, Port Adelaide; J. Fairweather, Adelaide.

45*l.*—Miss Dugern, Peterborough; F. W. Evans, 306, City-road; H. Fisher, Christchurch, N.Z.

40*l.*—E. J. Bonfellow, Yarmouth; C. E. Pooley, Victoria, B.C.; W. Russell, Knightrider-street.

35*l.*—S. P. Acton, Bromley; — Atkinson, Carlisle; C. H. Overall, Guildhall; J. W. G. Settle, Horncastle.

30*l.*—D. Desbois, High Holborn; R. Jones, Flint; M. Milliane, Limerick; R. T. Walkern, Kingston, Ont.

25*l.*—R. Beales, M.D., Congleton; Mrs. Dickeson, Finsbury-park; W. Downe, Lower Tulse-hill; J. F. Roberts, Montevideo.

20*l.*—S. Carlisle, Port Elizabeth; W. C. Gibbs, Oaklands, U.S.A.; G. Harrison, Grove End-road; R. Johnson, Walthamstow; John Perry, Battle; W. Sanderson, Canterbury.

15*l.*—J. O. Banks, Ash; T. Bogle, Buenos Ayres; W. J. Bridgland, Seven Sisters'-road; C. Burley, Sittingbourne; W. Clarke, Stockton; G. Goddard, Carthusian-street; A. A. Henley, Woodbridge; R. Hull, Ambleside; Jn. Hunt, Maidstone; J. Morris, Christ's Hospital.

10*l.*—C. Barnard, Epsom; R. Brett, 12, Lancaster-street, W.; W. H. Crossley, Maltby; T. A. Currie, Dumfries; G. S. Davies, Melbourne; G. T. Davis, Quebec; Wm. Farr, Stockport; C. Harte, Barnet; R. A. Kerr, Braddock; W. Lunn, Sandhurst, Vic.; C. Mansell, Birmingham; Jno. Needham, Melbourne; C. Nott, New Southgate; J. Perkins, Harborough; Wm. Whinneral, Liverpool.

Framed Proof of the Countess of Bedford.—B. Anderson, Greenhill, Ireland; W. Apporton, Acomb; F. Ashby, Birkenhead; Alf. Bailiff, Raymond-buildings; W. H. Barber, Buckingham-road; A. Brodie, Stratford; J. W. Carrington, Barbadoes; Geo. Carter, Greenwich; G. J. Chadwin, Kew; G. A. Chapman, Lewisham; Colnaghi & Co., Pall-mall; De la Fernanda, Grenada; J. F. Garrick, Christchurch, N.Z.; H. W. Gurney, Thornton Heath; Alfred Harrison, Upper Westbourne-terrace; Miss Hamilton, 21, Conduit-street; E. Hand, Amersham-road; D. Hay, Shanghai; W. L. Heath, Bride-lane; Rev. J. Henley, Ranscombe; J. T. Herbert, Ash; J. Holby, St. John's, N.B.; Capt. Jex, 61, Pall-mall; Dan. Kirlew, Beckenham; G. G. Lansing, Knowle-road; W. Lane, Kingston; Mr. W. G. Lees, New Barford; C. M'Bean, Bartholomew-lane; Miss H. McDonald, Southampton; H. V. Michele, Moorgate-street; A. L. McLaren, Ontario; W. Morgan, Swansea; D. B. Morries, Liverpool; J. H. Murchison, Junior Carlton Club; J. Ollivant, Stainton; R. B. Otley, Ladbrooke-square; Jas. Paine, Toronto; F. Russell (Pringle), Adelaide; W. Richardson, Arundel; T. Ritchie, Longford, Tasmania; F. C. Sharland, Hammersmith; S. Shedlick, Martin's-lane; T. Smartt, Horncastle; C. B. Toale, Darley; C. A. Stany, Stock Exchange; E. Stamford, Honiton; H. J. Sturt, 89, Wood-street; L. C. Weir, Cirencester; A. White, Great George-street; Wm. William, Windsor, Victoria.

A Terra-Cotta Statuette of Whittington.—W. Abbott, Holbeach; J. D. Atchison, Battle; R. Baker, Green Farm; W. H. Barber, Buckingham-street; M. Bartholomew, Birmingham; A. C. Bell, Queenstown, C.G.H.; W. F. Bird, Walmer; W. J. Bishop, Wellington, N.Z.; A. Booth, Camden-road; Robt. Botting, Carshalton; John Bowler, Wanstead; — Browning, Colchester; J. C. Bull, Warwick; Miss Burgess, 15, Maida Vale; M. J. Butler, Lothbury; H. W. Callan, Sydney; W. Canning, Burton; H. V. Chapman, Rye; A. C. Christopher, Cincinnati; Emma Churches, Mallala; J. Clegg, Bolton; Jno. H. Coes, Worcester, Mar.; W. H. S. Cutler, Putney; D. Davies, Merthyr; T. Davis, Wallasey; W. B. Dean, Launceston; H. W. Dee, Sherwood-street; S. A. Dela Roces, Lambeth Walk; J. Elliott, Rotherham; Ed. Flats, Sheffield; G. Foden, Huddersfield; W. L. Gordon, Barnhill; Hy. Grant, Fenchurch-street; Hy. Grissell, Montagu-square; Jno. Guinane, Limerick; Mrs. J. G. Hall, Canterbury; Mrs. Horspool, Northampton; J. A. Hirst, Ripley; Dr. A. J. Johnson, Toronto; Thos. Kennedy, Old Jewry Chambers; Alf. Kimber, Lombard-street; J. R. Kinninmont, Hendon; A. C. Knowles, Stockton; A. C. Lamb, Dundee; I. Latimer, Plymouth; Geo. Lawford, Sherbrook Lodge; Harriet Mann, Hastings; Dr. F. N. Manning, Sydney; Edward Marsh, Dudley; J. J. Marsh, Leeds; J. H. Matheos, Halifax; S. Mayer, Malvence; J. Miller, Staleybridge; A. Mitchell, Leytonstone; A. McCombe, Armagh; D. McKenzie, Dunfermline; Miss M. E. Moore, Tunbridge Wells; R. L. Monk, Manchester; J. Phillips, South Hackney; Rev. Dr. Oliver, Gordon-square; S. Parkinson, Skipton; Chas. Pearce, Sydney; Miss Phillips, Glenelg; J. P. Pool, Merthyr; S. Puckering, Islington; Mrs. G. Reid, Broadwater Town Bars; Capt. W. R. Russell; Mrs. Simpson, Bolton; A. M. Smith, Greenlanes; Geo. Smith, St. John's Wood; Mrs. C. Somerton, Clifton; W. H. Stott, Stockport; — Ward, Camden-square; E. W. Way, Adelaide; J. C. Wills, Bowen; J. N. Williams, Frimley, N.Z.; W. C. Wills, Sydney; W. Wilson, D.D., Edinburgh; E. W. Whitney, 31, Finland-street; E. P. Youell, Dilston.

Enamelled Tazza.—Robt. B. Cussens; J. P. Dennis, New Bond-street; J. Drewett, Kingston; C. Lilburn, Sunderland; J. Macbeth, London, Ontario; Mrs. Mills, Oxford-street; E. L. Moulton, Bedford; F. T. Stockwell, Quebec; Wm. Turner, Spennymoor; And. Volum, Geeling.

A Volume of Nine Scenes from English History.—H. W. Ackrill, Tunstall; H. E. Alberti, Smyrna; S. S. Alcock, 70, Bethune-road, Stoke Newington; Dr. J. T. Arlidge, High Grove, Stoke-on-Trent; W. G. Ashburner, Ellscales House, Dalton-in-Furness; G. Bartlett, 25, Campbell-street, Hall Park, W.; Chas. S. Barton, Worcester, U.S.A.; N. E. Beamish, Okawa, Hawkes Bay, N.Z.; S. J. Becher, 109, Leadenhall-street, S.E.; Dr. F. M. Beckett, High-street, Ely; M. S. Bell, Napier, N.Z.; W. B. Billinghurst, West View, Caterham; H. L. J. Biscoe, 66, Great Percy-street, W.C.; B. Bonnor, Barnwood, Gloucestershire; S. B. Bowles, 1, Anglesea-street, Cork; F. C. Brown, 41, Lothbury, E.C.; F. C. Buck, 76, Wigmore-street, W.; J. M. Cambridge, Ashburton, N.Z.; Jabez Cave, Manor-road, Stoke Nowington; W. R. Church, High-street, Sutton, Surrey; H. M. Cobb-Higham, Rochester; E. C. Cook, 476, Oxford-street, W.; F. A. Creed, 95, Prince of Wales's-road, N.W.; Alex. Crossman, 42, Camden-square, N.W.; J. W. Drury, Huddersfield; F. W. Essex, 9, Bowness-square, Catford; W. J. Fisher, Christchurch, N.Z.; Miss Fitch, Southwold; Wm. Foster, Harrowden's House, Bradford; W. H. Frith, Stafford; Rev. C. Gape, Rushall, Scole, Norfolk; M. Gentry, Langthorne Works, Stratford, E.; W. S. Goode, care of C. Mason, 182, St. John's-street-road, E.C.; Edwin Gordon, Upper Richmond-road, Putney; Jas. Gregory, 19, Church-gate, Loughborough; Jas. Grover, Wilton Works, New North-road, N.; Mrs. A. Groves, Handel House, Newport, Mon.; Geo. Hague, Geelong, Victoria; H. H. Hayward, 38, Harley-street, W.; Abner Hendee, Hartford, U.S.A.; Dr. Jno. Hillier, Sandwich; Frederick Horton, 13, Tremlett-grove, Upper Holloway; A. Howcroft, 14, Tavistock-row, Covent-garden; H. P. Hughes, 77, Holland-park, W.; M. Irving, 16, Acomb-street, Manchester; J. A. Jameson, Hull; Dr. H. J. Johnstone, High View, Ramsgate; H. Jones, 116, Grange-road, Middlesbro'; Thos. King, New Plymouth, N.Z.; F. J. Kingsbury, 65, Paulet-road, Camberwell; S. Knaggs, Huddersfield; F. N. Lamb, 5, Bow Church-yard, E.C.; Mrs. L. Lea, Robe, S.A.; Olindo Leitao (J. P.), Oporto; R. G. Lloyd, 6, West Kensington-gardens; W. Luscombe (J.P.), Clarham, Plymouth; Robert Mathieson, High-street, Falkirk; Robert McNamee, Cheadle, Staff.; Charles J. Morris, Larkhall-lane, Clapham; F. A. Morris, American Nurseries, Leytonstone; J. E. Munn, P.O., Ashford, Kent; Geo. Munnings, 82, Albert-street, N.W.; R. Murphy, Christchurch, N.Z.; G. T. Nicholson, Nicholson House, Sunderland; R. Osborne, 20, Palmerston-road, Southsea; J. Osmond, 79, Clifton-street, Finsbury, E.C.; A. Passmann, Buenos Ayres; H. J. Pattison, 13, Avenue Elmers, Surbiton; T. J. Pearce, Cefn, Merthyr; C. Rake, Adelaide, S.A.; Miss S. A. Randall, 393, Mare-street, Hackney; Rev. T. M. Raven, Crakehall, Vic., Bedale; Rev. T. Redfern, Trefonen, Oswestry; W. Riley, St. Martin's-at-Palace, Norwich; G. O. Risdon, M.D., Wells, Somerset; Wm. Rogers, Adelaide, S.A.; W. H. Rowe, Great Gaddesden, Hemel Hempsted; R. A. St. Ledger, 13, South-square, Gray's Inn, W.C.; R. Sargeant, 73, Treherne-road, Brixton; Capt. J. C. R. Scott, Queenstown, Ireland; G. Sheriff, Stansbury, S.A.; H. J. Sherwin, King-street, Newcastle, Staff.; R. Silvers, Middlegate-street, Yarmouth; J. Simmonds, Stroud; J. W. N. Smith, Emu Bay, Tasmania; S. H. Soper, North-street, Brighton; D. Southcott, South-wood-lane, Highgate, N.; J. B. Stone, 3, Victoria-street, S.W.; T. H. Thompson, Ballaarat, Vic.; A. C. Turner, The Priory, St. Neots; W. W. H. Turpin, the Globe, Borough Market, S.E.; G. Wallis, 4, The Residence, South Kensington; Capt. Watson, Maryborough, Queensland; Geo. West, Harmood-street, Kentish-town, N.W.; Jno. Wiggins, Camperdown, Victoria; T. H. Willett, West Brighton; F. B. Wilson, Ballaarat, Victoria; C. H. L. Woodd, 34, New Bond-street, W.

DOMESTIC DWELLINGS IN SOUTHERN SWEDEN.

ROYAL INSTITUTE OF BRITISH ARCHITECTS.

At the tenth ordinary meeting of this Institute for Session 1882-83, held on Monday evening last, Mr. David Brandon, Vice-President, in the chair,

Mr. Alexander Beazeley, M.Inst. C.E., read an interesting paper, entitled "Notes on Domestic Dwellings in Southern Sweden."

Few persons, the author said, could travel in those provinces, especially in remote country districts, without seeing some cottage or farm-house whose long and low middle part was flanked at each end by a block of considerable height. Built of logs or slabs, its thatched or turf roof now and then pasturing goats or sheep, it could not easily be forgotten. This strange type of building dated back from the time when the Gothic immigrant settled down after his weary wanderings, becoming a yeoman or villager, a *bonde* or tiller of the soil. This "lag-stofva," as it was called, which presented a likeness to the old Grecian homestead, with its open portico and detached columns, was then more particularly described. It was a type of house which, unaltered in its principal features, still survived, although in Southern Sweden it was no longer used as a dwelling, but for other purposes, as for smoking meat, malting barley, and drying flax. So short a time ago as the last generation it was mainly used as a bath-house; but this "bad-stofva" was only the Mediæval "lag-stofva," which was itself a growth of centuries out of the primæval Gothic house. On the southern slope of the roof was a square hole by way of a window. This could be closed by a trap-door, but from of old it was also furnished with a frame covered with the midriff of a slaughtered beast, or with lattice-work. Down to a comparatively late period the only other openings were loopholes secured by shutters, and it was not until the beginning of the seventeenth century that glass windows appeared in the walls of the better class of houses. Besides the main dwelling the ancient homestead or hamlet consisted of other buildings, large and small, which usually formed an *enceinte* in the shape of an irregular quadrangle. In the midst rose a tall structure corresponding to the keep of Mediæval strongholds. This was known as the block-house. The lower story was used for stores; it was built of logs and had no outer door. An upper story projected at one side over the wall below. The entry was by a steep ladder, capable of being drawn up. The projecting portion was divided lengthwise into two parts; the outer was a covered balcony, approached by the ladder; the inner was an entry gallery, lighted by a long horizontal aperture under the roof. From the gallery opened the doors giving access to the interior, which contained two or more bedrooms, lighted by loopholes in the walls. Romances of the thirteenth and fourteenth centuries described lordly mansions exactly resembling many a yeoman's homestead of the seventeenth and eighteenth centuries and even of our own time. Of course, however, changes took place, one of the most material being made towards the close of the Middle Ages, when the blockhouse was shifted from the middle of the homestead to the east end of the dwelling. Strategical motives, as was explained, led to many alterations of the kind. At length windows replaced loopholes, and it became safe to open an external doorway. Nor was change confined to external form and internal arrangement. Owing probably to the gradual clearance of the primæval forest and the growing difficulty of getting timber of large girth, the construction of the walls began to be modified. Upon the ground-sills posts were erected at each corner and at the junction of cross-walls. These posts were grooved vertically to receive the ends of the horizontal timbers forming the walls, consisting of slabs or split logs rudely squared, their ends thinned down to fit into the grooves. Probably the practice of trimming the upper sides of each course to a convex shape in cross-section and the under side to a concave dated from the period when increasing scarcity of material necessitated the use of thinner timbers for the walls and greater care in forming their horizontal joints. Other changes in the style of building were shown to be in all likelihood traceable to the same cause. Mr. Beazeley had dwelt at some length upon the "lag-stofva" because it afforded a remarkable example of a development whose successive steps we were able with tolerable certainty to follow. In its primitive as well as in some of its intermediate forms it was found, with various modifications, throughout the Scandinavian peninsula, from Ystad to Haparanda; but the long low building terminating at each end in a high block was, so far as observation and research enabled him to judge, wholly peculiar to Southern Sweden. Turning from rural to urban dwellings, it was observed that those of the Middle Ages, while worth study, contrast less widely with those of other lands. It was on coming down to more modern times that one was most struck by peculiarities of design and detail, and of these Mr. Beazeley proceeded to give some account, premising that although some of these characteristic features were not exclusively confined to Sweden they nearly all differed from the English pattern. He added that where they did so the contrast was not invariably in our favour. In Stockholm, Gothenburg, and other large towns self-contained dwellings were to be met with, and in the suburbs detached or semi-detached villas, closely resembling our own, had become of late years not uncommon; but the great bulk of the people still dwelt in flats, and of the plans of eight such in Halmstad, a southern provincial capital, he exhibited diagrams prepared by himself. One was inhabited by a judge, one by a lawyer in good practice, one by the Inspector of Customs, two by civil engineers, and the others by merchants and well-to-do tradesmen, so that they might be taken as fair types of good middle-class dwellings. These plans, it would be seen, while differing from each other in the number and arrangement of the rooms, preserved a general resemblance in the absence of any means of separate access to the several apartments, which were for the most part *en suite*, with wide internal doorways. The building of timber houses was prohibited in most of the southern towns. Concrete was beginning to come into use, stone and brick being the materials chiefly employed. Where good building stone abounded the manner of dressing and setting was practically the same as ours; but in the South hardly anything was at hand save gneiss or granite, which, costing too much to square and dress, was generally used unhewn. Great care and ingenuity were displayed in the placing of such blocks so as to fit their inequalities into one another. Since a wall built of such stones consumes a prodigious quantity of mortar, the use of dry stonework was very general, especially where lime was scarce. Of course this would not do for the walls of dwellings, but it was used for

foundations, and those of the Railway Terminus at Halmstad, a large brick building three stories high, were so laid. Throughout Sweden, in fact, unhewn gneiss or granite was used not only for foundations, but also for piers and abutments of railway and other bridges. Mr. Beazeley said he had put up at least a score of such, some upwards of 20 ft. high. For even greater heights dry stonework was not deemed unsuitable, as in the instance of the bridges, fifteen in number, proposed for one of the Southern lines. The piers and aburments of ten of these, averaging 14 ft. 6 in. high, were wholly dry. Of the other five, three were 32 ft., one 37 ft., and one 42 ft. high, of which a height of 4 ft. was in mortar, and the rest dry. Coming to bricks, it was remarked that their general size was $11\frac{1}{2}$ in. by $5\frac{1}{2}$ in. by 3 in. He had found the better sorts as good as our own, and the cheaper kinds less carelessly made and burned. Nowhere in Sweden had he met with such bad bricks as too many of ours. A porous brick, very suitable for many kinds of interior work, was made by mixing the clay with sawdust, bark, or chaff, which in firing burned away. Bond, as far as he knew, did not differ from our own, and the only brickwork calling for special notice was that used for stoves, and called "kakelugn," from being cased on the outside with "kakel" or tiles. These bricks were then described, as well as the stoves themselves, which were especially adapted for mineral fuel. The rest of the paper entered into details as to the flooring of Swedish houses, their doors and their windows, with observations on their weather-tightness, &c.

In the discussion which followed,

Mr. E. I'Anson, in moving a vote of thanks to Mr. Beazeley for the interesting practical paper which he had read, said that the ancient buildings which Mr. Beazeley had described existed not only in Sweden, but to the furthest inhabitable regions north of Sweden, through Norway and as far as the North Cape. They were totally different, as the drawings showed, to any of the buildings of Western Europe, such as those of Southern Germany and France. The roofs did not present the same steep pitch which prevailed in Germany and France, notwithstanding the high Northern latitude in which they were situated: the pitch was very much more moderate. The old buildings were erected with wooden walls, and to any one who had seen the vast forests which extended throughout Norway and a great part of Sweden it would be understood that timber was at once the cheapest and most available material for the purpose. These buildings had no Mediæval character about them, and even the pitch of their roofs, in spite of the Northern climate, was much less steep than was usual during the Middle Ages in France, Germany, and England. Nor in his opinion was their architectural ornament derived from Western Europe; it seemed to have come from the East, and the great rivers of Russia had probably carried Byzantine civilisation to those North-western regions. Mr. I'Anson, in conclusion, referred to the Swedish stoves.

Mr. Charles Fowler seconded the motion, and expressed the pleasure with which he had heard the interesting practical details described by Mr. Beazeley, with whom he agreed in praising the excellent construction of Swedish floors as shown in the diagrams before them. He had seen some of the same kind in Germany, where he had known floors, of large scantlings and securely pugged, resist fire to such good purpose as to permit the inmates of one flat to be but slightly alarmed at the outbreak of fire in another flat in the same house. But such timber floors were not composed of sticks like those in this country; they were double not single floors, and ordinary joists that he had seen at Hamburg were about 10 in. by 6 in., worked with the adze and not sawn. He preferred the true French casements to the Swedish ones, as shown in the diagrams; the former, generally made of oak, had rounded and hollowed joints both at their meeting and their hingeing parts, and the two casements, closed simultaneously, were forced together, so to speak.

Mr. Wyatt Papworth said that where, as in Sweden, the floorboards were 2 in. thick, it was obvious that the joists, much thicker than those used in England, could be laid further apart than is customary in this country. As regarded the raised threshold, described by Mr. Beazeley, he had seen it at Ipswich, where it was called a "saddle," and he had himself used it recently in the City. By placing a thin piece of oak, made to the width of the partition wall, over the door-sill—one side to be raised as thick as the carpet, and just enough to allow the door to open easily over the carpet, the other side to be bevelled off—draughts were avoided, and the obstruction, if it might be so called, was scarcely perceptible.

Mr. John Honeyman observed that there was considerable analogy between the work described and that now common in Scotland. The Swedish system of floor construction seemed to him to be almost identical with the Scottish one, and, indeed, the chief of the Fire Brigade in Glasgow had assured him that such floors well-pugged were the best check to the spread of fire that could be got. In the Glasgow houses-in-flats the great safeguards against fire spreading were the plaster ceilings and the "deadenings," as they were called, placed between the joists.

Mr. W. D. Caröe and Mr. A. H. Edmonds having made a few remarks,

Mr. Alexander Payne said that in Cumberland it was usual to build stone walls with mortar laid on the outer face of the wall only, for whenever mortar was used through the entire thickness of the wall, damp was sucked through to the interior.

The Chairman agreed with the last speaker, and, adding that his experience of walls built of stone, dipped downwards and faced with mortar, had been satisfactory in a damp district like that of South Wales, put the vote of thanks, which was carried by acclamation.

Mr. Beazeley having replied, the proceedings terminated, and the meeting adjourned.

THE BIRKBECK INSTITUTION.

ON Monday afternoon H.R.H. the Duke of Albany laid the foundation-stone of the new building for the Birkbeck Institution, which, after sixty years of useful existence in Southampton-buildings, Chancery-lane, is now about to commence a new era of, it is to be hoped, still greater public utility, in Bream's-buildings, a new thoroughfare just opened between Chancery-lane and Fetter-lane, just to the north of the New Record Office. The new building will be situated on a plot of land having frontages both to Bream's-buildings and Rolls-buildings, of 70 ft. and 100 ft. respectively. It is to be divided into two portions, the front and main half facing Bream's-buildings, which has the advantage of a north light, and will be 80 ft. high from pavement to ridge. Here, in the centre of the front, will be the main entrance, with staircases 18 ft. wide. Ascending the double-staircase, on the first floor will be the reading-room, magazine-room, lending library, and coffee-room; on the second, third, and fourth floors are the class-rooms. In the back half of the premises, and facing Rolls-buildings, will be situated the large lecture-hall of the institution, 66 ft. by 50 ft., with circular galleries, capable of comfortably seating 1,200 persons. This lecture-hall, although accessible by the main entrance and staircase before mentioned, will also have its distinct and separate entrances and staircase from the street in the rear. Care has been taken in planning the lecture-hall, that all shall see and hear with comfort. The approaches and exits have, we are told, been arranged of ample size and number, so that those assembled shall feel the assurance that they can quit the building in a few moments. Over the lecture-hall are two large class-rooms, with front and top lights, and which will be arranged for the accommodation of art classes. There will be a laboratory on the top floor, for practical instruction, which will be a special feature in the new institution. The whole of the staircases and passages will be constructed on fireproof principles, and of such size that the many hundreds of students daily at work in the different class-rooms will have free circulation. Special regard has been paid to the ventilation of the reading-rooms and class-rooms; fresh air will be brought in through the external walls, and flues are provided from each room for the extraction of the vitiated air and the products of combustion. To render the class-rooms as light and cheerful as possible, large windows are provided in the elevations, and Captain Galton's grates will be used for warming purposes. The basement is very extensive, and will prove useful for lavatories and other purposes of the institution. In style the two fronts will be a modern adaptation of the Elizabethan style. The bays of windows are divided up by stone mullions, affording the maximum amount of light to the rooms behind, and at the same time give a characteristic appearance to a building intended for the purposes of education. Fareham red bricks and Portland stone are the materials which will be used for both fronts. The contractor for the erection of the building is Mr. B. E. Nightingale, Albert Embankment, Lambeth, who is carrying out the designs of Messrs. Fowler & Hill, the architects of the institution. The new institution will accommodate over 5,000 students.

ARCHITECTURAL ASSOCIATION SOIRÉE.

THE Members' *Soirée* of the Architectural Association was held on the 20th inst. in St. Andrew's Hall, Newman-street, Oxford-street, and was, as usual, very largely attended. The Entertainments Sub-Committee succeeded in presenting a good programme of amusements for the evening, and this programme was very well carried out by members of the Association. The cloak-room arrangements exhibited a marked improvement upon those of which we had to complain last year. The first part of the programme consisted of music by the orchestra, songs, and recitations. Mr. W. P. Appleton effectively recited a sketch entitled "Yachting," by Mr. Burnand, and Mr. Mechelen Rogers very ably impersonated Dickens's *Dr. Marigold*. Special mention should also be made of the flute-playing by Mr. A. Collard. The second part of the programme comprised the representation of the "tragic" opera, "Bombastes Furioso," the music being composed and arranged by Mr. C. Killmister. The following was the cast:—*Artaxominous*, King of Utopia, Mr. A. C. Bulmer-Booth; *Fusbos*, Minister of State, Mr. A. Young; *General Bombastes*, Mr. H. D. Appleton; *Distaffina*, Mr. C. Killmister; First Attendant, Mr. E. H. Selby; Second Attendant, Mr. H. O. Cresswell; Drummer, Mr. St. Aubyn. The piece went very well, from the opening of Scene I. ("Council Chamber in the Royal Palace of Utopia") to the "extraordinary, incredible, and astounding denouement" at the end of Scene III. The concluding item on the programme was a lecture on "The Architecture of the Nineteenth Century" by "Professor Eloc à Smada," under which guise many of our readers will recognise a well-known member of the Association. The lecture was illustrated by drawings, which, although not "beautiful," as described on the programme, were successful in humorously hitting off and accentuating some of the eccentricities of modern buildings. The members of the Architectural Association were invited by the programme to imagine that they had fallen into "a Rip Van Winkle sleep" previously to the delivery of the lecture, and that, waking up some centuries afterwards, they found themselves listening to the discourse of the "learned Professor." The lecturer gravely treated of nineteenth-century architecture in its archæological aspect, lamented the fewness of its remains which had survived to his time, and entered into a dissertation in which he owned to feeling perplexed at the variety of styles which seemed to have been practised in the nineteenth century. This amusing travesty of a professorial lecture of the future concluded by referring to the Architectural Association as being more vigorous than ever, it having at a period remote in the past entirely absorbed into itself an older and more venerable guild.

Discovery of Roman Coins.—An important discovery of Roman coins has just been made on the estate of the Earl of Darnley, at Cobham Hall, near Rochester, where, in digging up the roots of a tree a short distance from the hall, the workmen came upon a large earthenware jar, which was found to contain a number of Roman coins in bronze. The coins, which number between 800 and 900, mostly bear the date of the fourth century, or about 100 years before the Romans left Britain, and are chiefly of the reigns of the Emperors Constantine, Constans, and Constantius. It is worthy of note that many of the coins bear the *labarum*, the famous standard of the Emperor Constantine, which was the first emblem of Christianity adopted by the Emperors. The spot where the coins were discovered was near to the old Roman Watling-street, which ran through Cobham Wood towards London.

AMATEUR HOUSE DECORATION.

EDINBURGH ARCHITECTURAL ASSOCIATION.

At the usual fortnightly meeting of this association, the president, Mr. MacGibbon, introduced Mr. John Marshall, M.A. Edin. and Oxon., Rector of the Royal High School, who proceeded to read a paper entitled "Amateur House Decoration," with some notes of personal experience. The speaker explained that the purport of this lecture was to enforce the value of the lay element in the decoration of our houses. Two tendencies, both bad generally, have the field between them in this matter. The one, prejudice and tradition among the public; the other, theory and routine among professional decorators. Salvation from the first comes through teachableness, humility, readiness to believe that there may be good outside what is merely usual. Salvation from the second comes through willingness to recognise the claims of individual character and individual necessities, not merely as justifying certain deviations from the theoretically best, but as themselves containing higher artistic possibilities, when wisely used, than can be got out of any merely theoretical rules of art. A beautiful house, like a beautiful painting, or other work of art, must express not merely general law, but also individual character, and the special note of its excellence depends chiefly on the latter; and in a house whose function, to begin with, is to be lived in, the character expressed in its decoration must be largely that of its inhabitants if it is to be really interesting. The function of the professional decorator is not to impose something entirely alien upon his public, but rather through sympathy to elicit the latent individuality in them, to get at their true wills, often very inadequately expressible in words, and so to fashion a new work of art which shall be his in the best sense, because it is the expression of himself through continually fresh suggestion. Only in this way can the decorator escape staleness and hackneyed mannerisms.

So far, therefore, as any so-called æsthetic movement implies merely the substitution of a new fashion or a new rule for an obsolete fashion or rule so far is it inartistic and worthless. The only value of such a movement consists in the amount of stimulus which it may give either decorators or laymen to study, and think, and feel for themselves. Any great innovator usually does give such an impulse to the sensitive few; for the many he only adds another fashion with no vitality in it,—a mere mannerism,—the more to fill our museums with curios, and our houses with eccentricity. A house "furnished throughout," on it matters not what system, or at what cost, is bound to be a failure, for it cannot but lack the vital spark which comes from relation to real human feeling and individual human lives.

GLASGOW INSTITUTE OF ARCHITECTS.

At the last meeting of the Glasgow Institute the Council brought forward the following letter advising the removal from the new Police Bill which they proposed should be addressed to the Lord Advocate:—

"The Glasgow Institute of Architects recommend that all clauses of the draft Police Bill relating to (1) the jurisdiction of, and procedure before, the Dean of Guild; (2) the Master of Works, his powers and duties; (3) the formation of new streets; and (4) the erection and of alteration of buildings should be omitted from the Bill, and that such clauses, amended and amplified, should form the subject of a separate Act. The resolution of the Town Council to delay proceeding with the Bill in the ensuing session of Parliament makes it possible for them not merely to consider deliberately the advisability of the course recommended by the Institute, but also to draft such a measure as has been above indicated; and in view of the action taken by the Lord-Advocate, the Institute think it of the greatest possible importance that this work should be undertaken by the Town Council, so that their advice on this, as well as on matters of police, may be brought before his Lordship. Without expressing any opinion on the advantages or otherwise of a Police Act being made general, we would venture to say that the advantages of making a Building Act general are manifest and undeniable, and we are most anxious that the present favourable opportunity of obtaining for Scotland a suitable measure of the kind should not be lost.—In name of the committee,

(Signed) William MacLean, Secretary."

On the motion of Mr. H. K. Bromhead, seconded by Mr. Alex. Skirving, the above proposed communication to the Lord Advocate was unanimously approved of, and the secretary was instructed to forward the same.

THE PRESERVATION OF HEIDELBERG CASTLE.

All who take an interest in this jewel of the Neckar valley,—and admirers of these beautiful ruins are probably all who have once seen them,—will be glad to learn that the Baden Government have resolved to order an exact survey of the castle, and a careful examination of its remains, including the foundations. Those surveys and examinations are to serve as a basis for the solution of the question what measures are to be taken to protect the ruins against utter decay, and thus preserve for future generations this monument, so important for the history of architecture. A commission has been appointed, with its seat at Karlsruhe, and including the architects Oberbaurath Helbling, Oberbaurath Professor Lang, and Baurath Professor Durm, as well as the engineers Oberbaurath Sulzer and Bauinspector Schäfer, and Dr. Adolf Schmidt, Professor of Geology, Heidelberg. The Commission are to direct the operations, and to order all necessary works required. An Office of Works has been established in the castle itself, consisting of the architects Koch and Seitz, with the requisite staff. Herr Grabendörfer will be consulted as engineer for laying bare and examining the foundations. The Office of Works has to report once a month to the Karlsruhe Commission, and the latter once in three months to the Grand-ducal Ministry of Finance. The works undertaken by the Commission are merely of a preliminary nature, and are by no means to prejudge the question how and by what means the castle is to be preserved.

EMPLOYERS' LIABILITY ASSURANCE CORPORATION.

The second annual general meeting of this Corporation was held on Thursday last, at the Cannon-street Hotel, the Chairman of the Board of Directors, Lord Claud J. Hamilton, M.P., in the chair.

The report of the directors for the year ending March 31st last contains the following passages:

During the year 464 agents have been appointed, raising the total number to 1,244, and the directors have every reason to be satisfied with the excellent position of those who have accepted appointments.

The investments, loans, cash on deposit and in hand, amounting together to 119,800*l.*, amply represent the paid-up capital and the necessary reserve for unearned premiums.

The premiums of the year have reached the satisfactory sum of 63,598*l.* The General Accident and Guarantee Departments have contributed their full proportion to the increase over the previous year.

The fact that 5,344 accidents have been dealt with during the year proves the undoubted value of the advantages offered by the Corporation both to employers and employed.

After reserving 19,920*l.* unearned premiums, providing for all charges, and writing off the balance of the preliminary expenses, there will remain 7,194*l.*, and from this the board recommend a dividend of 2s. 6d. per share, free of income tax.

Several profitable classes of assurance having been pressed upon the attention of the board, the directors have promoted a private Bill in Parliament to extend the powers of the corporation. This will be submitted for consideration at the extraordinary general meeting of shareholders summoned to follow the ordinary meeting.

The Chairman, in moving the adoption of the report, said they had now arrived at the close of their second years' work, and he thought that the report would be deemed a satisfactory one. The work of the corporation during the past year had, in the main, quite come up to the expectations of the directors, though they had met with very great and incessant competition. The result of that competition had been to compel them to reduce their rates to the lowest possible remunerative figure, but, thanks to the ability of their general manager (Mr. Stanley Brown), aided as he was in his efforts by the staff and the agents, they were able, notwithstanding the lowness of the rates, to show results on the year's working which were exceedingly satisfactory. But to do this they had had to increase the number of their agents all over the country, taking care always to appoint gentlemen of known position and influence. At the last annual meeting the amount of premiums was reported to be 35,760*l.*, covering a period of nine months. For the past year the premiums amounted to 63,598*l.*, a very satisfactory increase, bearing in mind the reduction of rates already referred to. The number of policies issued during the year was about 10,000, and it might be interesting to state that under these 10,000 policies, covering the operations of a large number of employers and workmen, 5,344 accidents had occurred. A great number of these accidents, however, would not become claims. With regard to the sum of 19,920*l.* reserved for unearned premiums, being premiums on policies which had not yet run out, that sum was calculated to be amply sufficient to meet all possible claims in respect of those policies. Last year 11,000*l.* was set apart under that head, the actual claims amounting to 10,000*l.* After providing for all charges, they now found themselves with a balance of 12,194*l.* But the Board, having in view not only the present but the future interests of shareholders, instead of absorbing the whole of this balance by declaring a high dividend, had deemed it prudent to wipe off a sum of 5,000*l.*, being the balance of their liability for preliminary expenses, leaving a net or divisible balance of 7,194*l.* Thus, besides being able to present a clean balance-sheet, they were in a position to recommend a dividend at the rate of 6¼ per cent., or 2s. 6d. per share. Although the expenses of management had necessarily increased with the increase of business, the ratio of expenses to income in the year had decreased from 47 to 39 per cent. It had been said that insurance companies dealing with the liabilities imposed by the Employers' Liability Act upon masters were interfering with one of the main objects of the Act,—that of making employers more careful about plant, machinery, and supervision in the interests of their *employés*. He was in a position to assert that no such interference with the proper working of the Act was likely to be caused by the operations of that corporation, inasmuch as by their policies they specially provided against carelessness or neglect on the part of employers, and they had declined to renew their policies or to pay claims made under them where that provision was not faithfully and carefully observed. The conditions imposed by the corporation were, in fact, operating not only in favour of the shareholders, but were benefiting both employers and employed, so that the corporation was not a mere money-making concern carried on at the expense of the workmen. The Bill which the corporation was now promoting in Parliament would, if passed, give them power to transact sick-benefit business, so that workmen might insure with them not only against accidents, but against sickness. Powers were also sought for other purposes, but it might not be necessary to avail themselves just yet of all the powers which they hoped would be conferred by the Bill. In conclusion, the noble chairman summed up the general position of the corporation by saying that at the end of two years' working the shareholders had got their capital perfectly intact, and by paying off all their preliminary expenses they had a perfectly clean balance-sheet. They had a general manager and a staff who understood completely the management of the whole of the details of the business, and they had now 1,244 agents distributed over the country. In addition to that they had been able, during the past two years, to pay the shareholders 11¼ per cent. on their capital (including the dividend of 6¼ per cent. now recommended by the directors). The directors had worked hard in the interests of the corporation, but it was only right to say that their efforts had been ably seconded by Mr. Stanley Brown, the general manager and secretary, by Mr. Searle, the assistant manager, and by Mr. Davis and other members of the staff.

Mr. Henry Chapman, C.E., of Westminster, seconded the motion for the adoption of the report, which was unanimously agreed to, after a few questions had been asked and answered.

On the motion of the Chairman, seconded by Mr. Ronald Johnstone, C.E., of Glasgow, a dividend of 2s. 6d. per share, free of income-tax, being at the rate of 6¼ per cent., was agreed to.

Mr. Charles Thomas moved, and Mr. Leopold Salomons seconded, the re-election of the retiring directors, viz., Lord Claud Hamilton, Mr. A. B. Forwood (Liverpool), Mr. R. Johnstone (Glasgow), Mr. W. H. Maudslay (Maudslay, Sons, & Field, Lambeth), and Mr. H. W. Maynard. This was agreed to, as was likewise a motion made by Mr. Quilter, that the directors' remuneration be 2,500*l.* per annum.

Messrs. Quilter, Ball, & Co. were, on the motion of Mr. Maynard, re-elected as auditors. This concluded the business of the ordinary meeting.

An extraordinary general meeting was then held, for the consideration of the Bill introduced into Parliament in the present session, entitled "A Bill for removing Doubts as to, and for extending the Powers of, the Employers' Liability Assurance Corporation, Limited."

Mr. Room (of the firm of Watson, Sons, & Room, Bouverie-street, Fleet-street, solicitors for the Bill) having explained the provisions of the measure, a resolution, authorising the directors to carry the same through Parliament, subject to such amendments as they may deem expedient or Parliament may require, was carried with but two dissentients, and the proceedings terminated.

KIDDERMINSTER PARISH CHURCH.

Another step has been taken in the restoration of this fine parish church which, in 1847, had the interior of the chancel restored under the direction of Mr. Egington and a new south aisle added. The galleries were removed, and an organ-chamber built in 1872, and the present new pulpit and lectern were placed in the church, this work being carried out under the direction of Mr. J. Hopkins, diocesan architect.

In March last year, a terrible gale blew down a portion of the stone parapet of the tower, and fears were expressed that the tower itself was in a very unsafe condition, when Mr. Meredith, architect, was instructed to make an inspection of the tower, and it was found that although the surface of the walls is much decayed, and the walls themselves have several very bad fractures in them, and had been most ruthlessly cut away to make room for the bells when they were last re-hung, yet the main body of the tower is so strongly built and well buttressed that no further harm would be likely to accrue to it by the ringing of the bells if the interior stonework were restored, but on an examination of the parapet and pinnacles it was found absolutely necessary to rebuild the whole of these parts. The extent of the cutting away of the interior may be imagined when it is known that 280 cubic feet of stone were required to replace that removed, and this has been done with a careful regard to the old work, and only to an extent necessary for the strengthening of the tower. The rich traceried battlement and the bases of the pinnacles as low as the point at which they start from the buttresses have been carefully rebuilt on the lines of the old work, such of the old stonework as was found to be sound being re-used, the rebuilding being commenced on very large bonding stones, to enable the future restoration of the face of the tower being carried on safely below this point. The question having arisen as to whether the pinnacles, which are of a modern and debased style of architecture, should be refixed or a better restoration made, Mr. Hopkins, diocesan architect, was consulted on the point, and he advised that until a complete restoration of the tower be undertaken, it would be better to reinstate the present pinnacles, and this advice has been followed.

The builders' work has been carried out by Messrs. Binnian & Son, builders, of Kidderminster. The old peal of eight bells has been rehung in a strong oak frame, with entirely new fixings, and three new bells have been added for the chimes, the whole of this work being carried out by Messrs. John Taylor & Son, bellfounders, of Loughborough, and the clock has been repaired by Mr. Boese, of Kidderminster. A set of carrillon chimes has been presented by the Freemasons of the town, which will play at every third hour, and are set upon the eleven bells, having a change of three barrels, two of which contain fourteen secular tunes, and the third seven sacred tunes. The old ting-tang quarters have been replaced by the Westminster chimes, and there is also a barrel for chiming 182 changes and rounds on the eight old bells. The whole of this work has been carried out by Messrs. Lund & Blockley, of Pall Mall, London. The cost of repairs to the tower and re-hanging the bells and the work to the clock is about 960*l.*, and that of the chimes about 250*l.*

The tunes played by the carrillon machine are:—

No. 1 Barrel.—Hanover, Innocents, Sicilian Mariners, Hollingside, Trinity Hymn, Old Hundredth, Bedford.

No. 2 Barrel.—Blue Bells of Scotland, My Lodging is on the Cold Ground, March of the Men of Harlech, Home, sweet Home, God save the Queen, The Harp that once, Ye Banks and Brae.

No. 3 Barrel.—Rose of Allandale, Kelvin Grove, God Bless the Prince of Wales, Maid of Llangollen, Vicar of Bray, Life let us Cherish, Robin Adair.

No. 4 Barrel.—182 Changes and Rounds on eight bells.

The whole of the work has been carried out under the superintendence of Mr. Meredith.

BUILDING PATENT RECORD.*

APPLICATIONS FOR LETTERS PATENT.

1,757. F. Ramsay, London. Wall papers. April 7, 1883.

1,762. R. H. Reeves and S. Reeves, London. Construction of flues, chimneys, and grates for smoke-consuming and sanitary purposes. April 7, 1883.

1,773. C. E. Osborn, London. Glass roofing for greenhouses, &c. April 9, 1883.

1,782. H. A. Walker, London. Window-blind rollers. April 9, 1883.

1,821. T. J. Baker, Newark. Chimney tops and ventilators. April 10, 1883.

1,843. R. Oakley, London. The better ventilation of buildings, &c. April 12, 1883.

1,845. R. Oakley, London. Warming fresh air in buildings, &c. April 12, 1883.

1,846. R. Oakley, London. The better ventilating of churches, schools, &c. April 12, 1883.

1,891. A. M. Clark, London. Preventing the passage of flames from one story to another of a building through the lift-shaft. (Com. by J. McCarroll, New York, U.S.A.) April 13, 1883.

1,894. W. Berry and P. Stuart, Edinburgh. Pavement. April 14, 1883.

1,897. H. J. Haddan, London. Manufacture of mortar concrete and artificial stones. (Com. by T. F. Leupolt, Zittan, Saxony.) April 14, 1883.

1,906. J. A. Hanna and T. F. Shillington, Belfast. Stoves. April 14, 1883.

1,926. A. M. Clark, London. Construction of walls, ceilings, &c., for preventing the spread of fire, &c. (Com. by J. McCarroll, New York, U.S.A.) April 16, 1883.

1,930. J. D. Sprague, London. Hinges. April 17, 1883.

1,955. E. V. Bailey, Birmingham. Door furniture. April 18, 1883.

1,966. E. Thornton, Bradford. Warming buildings, &c., by gas. April 18, 1883.

NOTICES TO PROCEED

have been given by the following applicants on the dates named:—

April 10, 1883.

6,027. J. Woodward, Wolverhampton. Latching bolts of locks and latches. Dec. 18, 1882.

April 13, 1883.

5,879. J. E. Walsh, Halifax. Joints, bearers, and coverings for roofing, pillars, &c. (Com. by M. G. Mitter and L. A. Hoffman, Berlin.) Dec. 9, 1882.

5,971. H. Hawgood, Richmond. Covering stairs with carpets. Dec. 14, 1882.

6,068. E. R. Hollands, London. Open stoves or fire-grates. Dec. 19, 1882.

1,271. C. V. Lawton, Newton Heath. Receptacles used in "sanitary closets," &c. Mar. 9, 1883.

1,363. J. Imray, London. Compound applicable as cement or mortar, or material of bricks, tiles, &c. (Com. by E. Pick, Paris.) Mar. 14, 1883.

April 17, 1883.

5,920. J. C. Baker, Liverpool. Ventilating buildings, &c. Dec. 12, 1882.

6,156. J. E. Cope, Birmingham. Sash-fasteners. Dec. 23, 1882.

427. C. Weygang, London. Manufacturer of fibrous material applicable for floor-cloth, roofing felt, &c. Jan. 26, 1883.

544. F. J. Austin, Hounslow. Automatic sanitary flushing apparatus. Feb. 1, 1883.

1,239. S. Low, London. Downcast water-tight ventilator. March 7, 1883.

* Compiled by Hart & Co., Patent Agents, 186, Fleet-street.

April 20, 1883.

5,982. T. Smith, Brockley, and J. Drewitt, London. Brackets for curtain-rolls, &c. Dec. 14, 1882.

5,992. H. Hoyles, Sheffield. Stove-grates. Dec. 15, 1882.

6,049. R. H. Leask, Dublin. Water-closets. Dec. 19, 1882.

6,126. E. Hopgood, Ryde, and E. Jenner, London. Apparatus for warming rooms and buildings. Dec. 22, 1882.

290. J. D. Sprague, London. Fastenings for blind-cords, &c. Jan. 18, 1883.

1,505. F. L. Jeyes, London. Fan for ventilating buildings, &c. March 22, 1883.

1,535. J. Booth, Bolton. Construction of window-frames, skylights, &c. March 24, 1883.

ABRIDGMENTS OF SPECIFICATIONS.

Published during the Week ending April 14, 1883.

3,900. W. G. Henrey, London. Smoke-consuming grates, &c. Aug. 15, 1882. Price 6d.

When the fire is well burned up, the register is closed, and the products of combustion pass through a chamber behind the back of the grate filled with iron turnings. The vitiated air is drawn from the room by a pipe leading to the "cornice" of the grate, which is governed by a baffle-plate.

3,921. S. Fisher, London. Manufacture of fabrics for covering walls, &c. Aug. 16, 1882. Price 2d.

These are made of oil and cork dust on a backing of linen.

3,923. T. Fletcher, Warrington. Smoke-consuming furnaces. Aug. 16, 1882. Price 2d.

An open screen-work of fire-brick is erected between the fire-place and the chimney. (*Prv. Prs.*)

3,930. G. Henderson and D. McNeil, London. Water-waste preventer for closets, &c. Aug. 16, 1882. Price 2d.

The syphonic action is effected without noise, and at an equable rate. (*Prv. Prs.*)

3,956. J. H. Johnson, London. Artificial stone or marble. (Com. by the Certaldo Marble Company, Paris.) Aug. 18, 1882. Price 6d.

Natural sulphates of lime are impregnated thoroughly with certain described solutions to harden and colour the material.

5,235. P. A. Bayle, Paris. Increasing the draught in chimneys. Nov. 2, 1882. Price 6d.

A number of small tubes are placed in the top of the chimney in such a position that their lower ends project into the outer air. Through these lower ends the air is drawn in and projected into the chimney in an upward direction through the smaller upper ends of the tubes.

Published during the week ending April 21, 1883.

3,817. H. J. Haddan, London. Securing doors and windows against burglars. (Com. by W. Kilian, Berlin). Aug. 10, 1882. Price 6d.

The key of the lock is provided with both a movable and a fixed ward, the former operating upon the tumblers of the lock and the latter withdrawing the bolt; but when a false key is used an alarm apparatus is set in action by a movable lattice on the inside of the door.

3,990. E. Tomlinson, London. Apparatus to facilitate the lighting of fires, &c. Aug. 19, 1882. Price 6d.

This is an improvement on Patent No. 2,931, of 1875, in passing the apparatus which holds the fire-lighter down into the grate vertically so that it can be the more easily withdrawn. A false bottom is fitted to the grate so that fuel can be introduced from below. A movable, adjustable blower is fitted over the fireplace. The chimney-top is perforated with conical pipes, which pass upward into the chimney-pot to increase the draught.

3,993. J. Hopewell, Salford. Door-mat boot and shoe cleaner. Aug. 19, 1882. Price 4d.

On one end of a foundation board or trough is a scraper and a grid, above which are placed two brushes with their bristles facing each other, and held in position close together by springs, while at the other end is a mat.

4,000. A. Keim, Munich. Rendering wall-paintings weather-proof, &c. Aug. 21, 1882. Price 6d.

A wall-plaster is made of caustic lime, quartz sand, pulverised marble, and fossil meal, developed by hydrofluoric acid and hardened by silicate of potash. On this is the painting, and the colours therefore are shaded by silicate of potash and mixed with hydrate of magnesia and alumina, fluor spar, zinc oxide, pulverised marble, carbonate of baryta, and manganese. The paintings are afterwards fixed by pure silicate of potash, caustic ammonia, caustic potash, and marble.

4,074. D. Jones, Walton. System of heating baths. Aug. 25, 1882. Price 4d.

A pipe is led from the boiler to the vicinity of the bath, where there is a hand-pump by which the bath can be filled with hot water.

4,078. E. Barnes, London. Spring hinges for swing-doors. Aug. 25, 1882. Price 6d.

The shoe of the swing-door has a pin with a cam-headed radial projection, and in the case in the floor are two sliding-blocks, between which is the pin. Behind these blocks are springs, and when the door is opened the cam forces one of the blocks back, compressing the spring.

4,090. W. Thornburn, Boroughbridge. Means

and appliances for heating and warming. Aug. 25, 1882. Price 6d.

Two concentric cylinders form the stove, and the fire is in the bottom of the inner one. Across this are a number of tubes which open on both sides into the annular space between the two shells. Air or water is warmed in the annular space and in the cross tubes and conveyed into the room to be warmed. Oils may be used as fuel instead of coal or coke.

4,112. W. M. Brown, London. Baths. (Comby W. W. Rosenfield, New York, U.S.A.) Aug. 29, 1882. Price 6d.

A shower or spray pipe extends the whole length of the bath, and another movable pipe is fitted by which the water can be directed where required.

4,165. W. R. Lake, London. Steam and hot-water apparatus for heating buildings. (Comby E. F. Osborne, St. Paul's, U.S.A.) Aug. 31, 1882. Price 1s. 2d.

This is an improvement on Patent No. 46 of 1881, in a variety of details, which are described in twenty-one pages of specification, stated in twenty-three claims, and illustrated in twenty-three figures in the drawings, but which are not capable of being condensed.

THE COMPETITION FOR THE NEW PUBLIC OFFICES.

Sir,—As you will probably agree with me that it is a matter of considerable importance to a great number of architects, I should like to ask the question whether the competition for the War and Admiralty offices is to be public or limited. Mr. Shaw-Lefevre's words in the House of Commons on April 5th, were, "I propose very shortly to invite a competition of architects."

It is obvious that these words may mean a private competition, and, if so, the matter may soon be definitely settled and protest rendered unavailable. This would be a mistake. It appears to me that as this is a national affair, and as we all,—whether, as architects, we rank in the first or other position,—pay our share of the national taxation, the proper attitude of the Government is to throw the competition open to all, and to exhibit the designs before making a decision.

The great expense of a public competition is sure to keep it within moderate limits; but, however numerous the designs contributed may be, a competent judge would soon see that the choice will necessarily rest between a very few. The Government lose nothing by a public competition. Architects of the first rank may hint to Mr. Shaw-Lefevre that they do not engage in public competitions, but we know that they do, and that they would not, under any circumstances, let slip the chance of being selected for a national appointment. On the other hand, if the Government confine the invitation for designs to a few, serious injustice will be done to those architects who are shut out, amongst whom great but unknown genius and practical skill may exist. The Government, therefore, may possibly lose the advantage of securing the highest talent.

All the men, at present, in the first rank have had to fight their way upwards. Of course, in speaking of first and second class architects, I use the expression merely to distinguish between those who give their attention to public works and those who, as a rule, take private business only.

On what grounds can the Government justify the putting an obstacle in the way of others, who, being contributors to the national taxes, appear to me to have certain rights in this matter?

Personally I have no interest in the matter; but I think that the new public offices, being a national building, should, in justice, be competed for publicly. Justicia.

THE CANTOR LECTURES ON METAL IN ARCHITECTURE.

Sir,—In your *résumé* of my Cantor lectures, there is one rather important omission which, if unnoticed on my part, would make me appear to be most ungrateful. My lectures were illustrated in a very practical manner by the kindness of Messrs. Gardner, of 453, Strand; Messrs. Perry, of New Bond-street; and Messrs. Hart, Son, & Peard, of Wych-street. The superb reduced copies in bronze of some of the candelabra by Sansovino, Ricci, and Donatello, lent by Messrs. Perry, and the reproduction of the antique bronze lamp candelabra, and statuettes from Pompeii and Herculaneum, by Messrs. Gardner, were far more valuable than the most exact drawing, photograph, or print, to illustrate what had been done in bronze. But it was to Messrs. Gardner I was more particularly indebted for the superb collection of wrought-iron work applied to modern requirements, and which formed an exhibition in itself; and I should like to publicly express my thanks for the same.

George H. Birch.

COMPETITIONS.

Baldwin's Bridge Trust Competition.—Mr. Alfred M. Fowler, M. Inst. C.E., Manchester, has been awarded the first premium for the new Bridge, Eton, Windsor. The designs were submitted to an eminent engineer.

Sheffield New Sunday School.—The trustees of South-street New Connexion Sunday Schools invited architects in Sheffield and elsewhere to submit designs for new school buildings to cost 2,000*l.*, and from sixteen plans sent in they have selected one by Mr. C. J. Innocent, of Sheffield, as the most suitable.

New Church, &c., for the Old Meeting Trust, Birmingham.—In a competition limited to seven local architects, the adjudicator, Mr. Thos. Worthington, F.R.I.B.A., has given the following as his award:—

First.—Mr. Jethro A. Cossins, Corporation-street, Birmingham.

Second. Mr. J. A. Chatwin, Temple-street, Birmingham.

Third.—Messrs. Henman & Beddoe, Benet's-hill, Birmingham.

The members of the Trust met recently, and by a resolution, confirmed Mr. Worthington's award, and entrusted the carrying out of the work to Mr. Cossins. The probable cost of the new building will be about 15,000*l.* We have a letter objecting strongly to the proceedings.

Police Station, Walsall.—At a special meeting of the Walsall Town Council, on the 23rd inst., it was resolved, on the proposition of Messrs. Sharp & Russell, by twelve votes against seven, to accept the plans marked "Dora, No. 1," for the new police station, reading-room, &c., at Bloxwich, the estimated cost of which was 1,520*l.* On the names of the competing architects being opened, it was found that the design selected was that of Mr. F. E. F. Bailey, Walsall.

CHURCH-BUILDING NEWS.

Luton.—On Easter Sunday a new reredos in Luton Parish Church was exposed to view. It has for its centre-piece a representation, in Venetian mosaic, of Da Vinci's "The Last Supper." This was executed in Venice, by Salviati & Co. There is some good alabaster work, with marble panels, on either side of the table, and the decoration is continued to the head of the east window in mosaic, of various designs, including the emblems of the four Evangelists. Over the window, in mosaic work, is a choir of angels on a gold ground. The blind window on the north wall of the chancel is filled in with pictures in mosaic, and it is intended to place in the recess almost immediately below,—that known as the Easter Tomb,—a painting in stained glass of Christ raising Lazarus. The lower part of the walls is of dark maroon, with floreated crosses in gold, and above the colouring shows a design in chequered work, with alternate stars and *fleur-de-lis*, copied from some work in Antwerp Cathedral. The chancel roof as far as the rails, is painted blue, illuminated with stars of gold, the rafters being treated in similar style; outside the rail the roof is coloured green, with white stars. The mosaic work, with the exception of the centre-piece, is the handicraft of Mr. A. Cappello, 472, King's-road, Chelsea, who also did the figures in the panels of the pulpit.

Cockington.—One of the most picturesque spots in all Devon is the coombe within whose bosom the fair village of Cockington snugly nestles. Those who have visited Cockington will remember its parish church, which stands within the grounds of Mr. Richard Mallet, the worthy owner of Cockington Court. It is dedicated to SS. George and Mary conjointly, and is in some respects noteworthy. Especially is it so in the pitch of the floor, which slopes from the western door downwards towards the chancel. The font is also very curious, and has an old brass inscription all around its eight sides. The ancient rood-screen is also a fine feature. Messrs. Hine & Odgers, architects, Plymouth, prepared drawings for the restoration of this remarkable fifteenth-century church some time ago. The work has now been in part carried out, and after being closed for some time the church was reopened at Easter. The work done has been carried out mainly at the cost of Mr. Mallet. The walls have been stripped of the plastering which disfigured them and the stones have been re-pointed. The windows have been carefully repaired. The organ gallery has been removed, the pulpit placed on the north side, new stalls and a reredos, all in carven oak have been erected; the chancel roof has been repaired, and carved bosses by Hems inserted, and a pavement of Maw's encaustic tiles has been laid down. The reredos, which contains a representation of the Last Supper, was made at the establishment of Mr. Harry Hems, who also supplied the Litany desk and lectern. The general contractor for the work completed was Mr. Blowey.

Northallerton.—The restoration of the above church here is making rapid progress. The contractors, Messrs. Dodgson & Wilson, are using their best endeavours to get the work completed before the end of the year. During the progress of the works some interesting discoveries have been made.

Whimple (Devon).—The Rector of Whimple (the Rev. L. Sanders), having determined to erect at his own cost a reredos in the chancel of the parish church, Mr. R. Medley Fulford, architect, of Exeter, prepared designs, and these having been placed in the hands of Mr. Harry Hems, of Exeter, the reredos, which is of Caen stone, has just been completed. In style it is in accordance with the architecture of the church, viz., Perpendicular Gothic. It is, however, freely treated. Resting upon a moulded table of polished Devonshire marble of variegated colour, the reredos is of a somewhat unusual form, having two bold buttresses at either side, and terminating in the centre by a steep gable which in its turn is filled with light traceried masonry. On each side of the central compartment are diagonal panels, in which are sculptured representations of the Agnus Dei and the Bleeding Pelican. In the centre, standing upon a tall elevated shaft, is a carved figure of our Lord in Majesty.

DISSENTING CHURCH-BUILDING NEWS.

Limekilns (Dunfermline).—Considerable improvements have been made to the Presbyterian Church here, which has just celebrated its centenary. Sir Andrew Walker contributed 200*l.*, and has also erected two memorial windows and a pulpit to the memory of Lady Walker. The erection of these memorials has now been completed. The two windows represent incidents in our Lord's risen and glorified life. The first is the advent of the women to the empty sepulchre from which our Lord has risen, and the second is His appearance to Mary Magdalene in the garden. The pictures are surrounded by Renaissance ornament *en grisaille*, and the whole is surrounded by a border of the same character. The windows were designed and executed by Messrs. Lavers & Westlake, of Endell-street, London, and sustain the reputation of those artists. The pulpit, which is of pitch pine, is a handsome erection, designed by Messrs. Ernest George & Peto, architects, London. The style is what is known as the Jacobean. The pulpit is surrounded by an elders' pew, with fluted panelling. Behind the preacher is a panelled sceen, with fluted pilasters and carved pediment. The front of the pulpit has a projecting central portion, with carved arcading and fluted pilasters. The joinery work has been executed by Messrs. Mitchell & Kinghorn, Dunfermline.

Chorlton-cum-Hardy.—The memorial stone of a new Congregational school chapel, which is in course of erection in Barlow Moor-road, near the corner of Sandy-lane, Chorlton-cum-Hardy, was laid on the 14th inst. The new building, which only forms part of the scheme the building committee have drawn up, will consist externally of grey bricks with facings, buttresses, and chimneys of red stock brick, and the roof timbers, and the internal woodwork generally will be of stained and varnished pine. It has been designed to accommodate 350 people. At one end will be grouped eight class-rooms, some of them being separated from the large room only by a curtain, so that they may be used as transepts. Adjoining these there are to be committee-rooms and a vestry. The building will be heated by hot water, and it will be ventilated by inlet tubes and extracting flues, on what is known as the Tobin system. The cost of the work, including furnishing, will be about 1,600*l.* The contractors are Messrs. Wilson, Toft, & Huntley, City-road, Manchester; the architects being Messrs. Goldsmith, Son, & Welford, Faulkner-street.

Miscellanea.

Neasden.—We may add to our report of the new works at Neasden, for the Metropolitan Railway Company, that the general superintendence of the works was placed in the hands of Mr. J. R. Brede, for the Company; the whole of the ironwork in the buildings and all the machinery were erected under the direction of Mr. T. Stewart, Mr. Henry Charlton being the manager for the contractors from the commencement to the completion of the contract.

The Home in Banner-street.—A writer in *All the Year Round* thus describes the Home in Banner-street, St. Luke's:—"Upon the kerb, in the gutter, in the mud, in the mist, in the cold, there is a solid straight block of human wretches. There, in a compact oblong mass, they stand waiting in absolute abject military order for their poor, sad, pitiable turn! Upon the kerb, in the gutter, in the mud, in the mist and the cold, here is a straight thick stretch of wretched fellow-creatures, spreading thirty or forty in length, four or five deep,—meek, humble, downcast, silent; patiently waiting, quenched and quelled, for a constable to give the sign that one by one may leave the ranks and enter in. And what shelter,—for let it be looked at now,—is there for these pitiable souls, now that they have been beckoned in? Where do they pass to, now they have filtered in from the streets, and the dusk, and the foggy air? It is along these clean passages; it is up these clean stairs. It is away from this ground-floor here. Past it. Beyond it. Past these bare white landing-walls. Past more. And then,—a thick door is opened, and it is,—there! On the floor. On thin black waterproof squabs. Under thin black waterproof skins. Yes, it is on the floor. It is flat, supine, so that all can be seen at the same heart-rending sweep; it is on mere slices, or flakes, of squabs, stuffed with cut coir; under mere tarpaulins of skins, shiny, leather-like, each drawn round each, close and tight. Yes, looking down low, on the floor, there they are in lines and lines; head there, feet here,—head there, feet here; stretched, severed, kept distinct and apart by dull, bare, narrow wooden slides or partitions, like trays, like graves, like troughs,—like regulated divisions, close and straight together, for showing separate wares. And each poor pitiable figure, lying there in that poor gloom, with no grace of rest left, with no picturesqueness of sleep, or of the preparation for it, with no tenderness of attitude or association, each poor pitiable figure ranged there is,—a woman! nothing but that mere semblance left to mark her, all else beaten and blotted away!"

International Fisheries Exhibition.—The contributions from the large number of foreign countries taking part in this exhibition (which is to be opened by her Majesty the Queen on the 12th proximo) are now arriving with great rapidity. Six hundred tons of exhibits from Canada, as well as heavy consignments from Japan, Tasmania, and the Straits Settlements, are at the docks. The commissioners for the United States, Sweden, and Newfoundland have already delivered many van-loads of goods at the buildings. A large staff of men is now engaged in receiving goods, and on the general work of installation. The Chinese Court of the exhibition is fast approaching completion. The decoration of this court promises to be exceedingly rich and brilliant. The Chinese models of boats will undoubtedly attract great attention. Among the more remarkable of these models is one of a Swatow cargo junk, capable of carrying 1,000 tons; not more than two or three of these remarkable boats are believed to be in existence. Also noteworthy is a model of the peculiar boats used at the Annual Dragon Festivals, and among the models of houses are those of a Chinese temple and an ice-house.

Furniture Exhibition at the Agricultural Hall.—The third annual Furniture Trades Exhibition was opened on Monday last. Not only are the ground-floor and approaches well stocked, but the galleries are also fully occupied by exhibitors, who number about 350, comprising London and provincial firms, as well as a number of foreign houses. The new arcade leading to the hall is filled with greenhouses and horticultural appliances. The Oriental court, in Berners Hall, contains, amongst other objects of interest, two ancient houses from Damascus, furnished throughout in Arabian fashion. The process of Brussels carpet manufacture is shown in operation in the north gallery, and close by is a Turkey carpet loom from Smyrna, and a little further on is arranged a very curious Japanese garden by Messrs. Francke & Co., Yokohama. A number of blind workpeople from the Association for Promoting the General Welfare of the Blind, 28, Berners-street, carry on the trades of brush, basket, and mat-making in the King Edward's Hall. Messrs. Doulton & Co. exhibit the processes of pottery manufacture; they have also a display of tile stoves, over-mantels, and majolica ware.

The Wellington Statue at Hyde Park Corner.—On Tuesday morning the statue of the Duke of Wellington was removed from the position it has occupied since it was taken down from the arch at the Hyde-park-corner to a spot in front of Apsley House. Mr. A. B. Mitford, permanent secretary to the Office of Works, was present, and a large number of people looked on. An inclined plane or tramway had been constructed from the old site to the new, by means of huge blocks of wood resting on transverse wooden bearings. The statue of the Duke and charger remained fixed inside the timber cradle, resting on strong girders, on which it was lowered, and which together formed a carriage. This was, with its burden, lowered slowly by hydraulic jacks on to the tramway. Underneath, rollers were placed, and the whole structure was connected by means of stout cables with an engine placed at the end of the tramway. At the same time, ropes in the rear prevented the movement down the tramway being too quick. Mr. Burt, who superintended the works, gave the signal, and the statue glided smoothly down the plane. As the rollers were left behind by the statue they were quickly placed again in front, and the whole journey of 150ft. was safely accomplished in about forty minutes. The Site Committee commenced their meetings on Wednesday, to decide where the statue is finally to stand. The new roads will be open to the public on May 1.

De-Phosphorisation of Iron.—At an ordinary meeting of the Liverpool Association of Science and Arts, held on the 14th inst., Mr. John Armstrong read a paper on "The De-phosphorisation of Phosphoric Pig-iron by the Thomas-Gilchrist Process." The lecturer first alluded to the efforts of Snelus to solve the problem, detailing his series of experiments, which led up to his patenting "the use of lime and limestone, magnesian or otherwise, for the lining of all furnaces in which metals are operated upon when fluid." Thomas and Gilchrist first used a mixture of limestone and silicate of soda for their linings, but lately they had used a brick made from magnesian limestone, adding lime during the blow, with results so satisfactory that quite 1,000,000 tons of steel were made last year from phosphoric pigs. The lecturer next pointed out the great benefit continental steel makers were reaping by the process, which enabled them to use the pig-iron of their own country, instead of importing from the hæmatite mines of Cumberland. He characterised the Thomas-Gilchrist process as the greatest metallurgical invention since the introduction of the Bessemer and Siemens methods of making steel.

The Proposed Cathedral for Liverpool. The sub-committee on the subject of sites met on Tuesday last at the Town-hall. The Mayor took the chair, and moved that the Bishop be appointed permanent chairman. This was seconded by Mr. Ralph Brocklebank and passed unanimously, and the Bishop then took the chair. A list of the suggested sites was read over, and various opinions were expressed respecting some of them. Mr. Shelmerdine, the City Surveyor, was in attendance to show the sites on the largest Ordnance map, and to mention the areas; but it was found that much information on various points was necessary, and that this would be best collected by a smaller committee, who should be authorised to call in the assistance of experts if necessary. This was agreed to, and the selected number comprised about ten or eleven with special qualifications, and the secretaries and treasurers. It is understood (says the Liverpool *Daily Post*) that they will merely give facts, but not recommend any special course.

Leicester.—The foundation-stone of a new shoe-factory, for the Co-operative Wholesale Society, Limited, was laid on the 2nd inst., by Mr. J. T. W. Mitchell, the chairman of the Society, in the presence of a large assembly of delegates from all parts of the country. The new building will be in the Classical style, and will have a frontage of 116 ft. to the street. The architect is Mr. Tait, and the contractors Messrs. Jewsbury, Cox, Norman & Underwood, and Illston & Arnold.

New Medical Schools, Edinburgh.—In "Building Notes from Edinburgh," in our last, the sum stated to have been subscribed towards the completion of these buildings was, by a slip of the pen, erroneously given as 30*l.* instead of 30,000*l.*

The Shorthand Society.—This society, established two years ago for the purpose of "the study of the science and literature of shorthand and the investigation and discussion of the principles which should govern the construction of a system of shorthand adopted for general use," held its annual dinner on Saturday last in the new "Queen's Room" at the Holborn Restaurant, when a goodly number of members and friends were present. Mr. Cornelius Walford, F.S.S., the President, occupied the chair. The toasts were only three in number, viz., "The Queen and Royal Family," "The Houses of Parliament" (responded to by Lord George Hamilton, M.P.), and "Success to the Shorthand Society" (proposed by Lord George Hamilton). The Chairman, in responding to the last-named toast, read letters from Mr. Alderman Cotton, M.P., and Mr. W. H. Smith, M.P., regretting their inability to be present, and also mentioned in the same connexion the names of Mr. George Augustus Sala and Mr. Charles Wyman, the latter of whom had unfortunately been stricken down by illness. The remainder of the evening was spent in a somewhat novel manner. Instead of the complimentary toasts usually given on such occasions, several members had each a subject upon which to speak or to give a short paper. Dr. Westby-Gibson discoursed on the bibliography of shorthand; Mr. R. Gowing, editor of the *School Board Chronicle*, on shorthand as an aid to education; Mr. Francis Turner, barrister-at-law, on shorthand in the "Gallery"; Mr. T. A. Reed, on shorthand in the law courts; Mr. A. H. Browne, on shorthand in India; Mr. M. H. Lowe, on the prospects of reporters; Mr. T. Anderson, on the past and future of shorthand; Mr. E. H. Bramley, on shorthand as an aid to the press; Mr. J. G. Petrie, on shorthand and type-writing. Mr. E. Pocknell (who was referred to by the president as the "moving spirit and founder of the society") dealt with shorthand organisations; and Mr. A. L. Lewis, with the professional press. A very pleasant and instructive evening was spent by the company. The meetings of the society are held monthly at the City Club, Ludgate-circus, and Mr. H. H. Pestell is honorary secretary.

The District Railway Ventilators.—In the House of Commons, on Tuesday, a discussion arose on the Metropolitan District Railway Bill. Some opposition was raised to the second reading, but this was not pressed, and after the Bill had been read a second time, Mr. Marriott moved that it be an instruction to the Select Committee to insert a clause—on conditions—making it compulsory on the company to remove the new ventilators along the line of the Embankment and elsewhere. In support of it, he criticised sharply the conduct of the company, asserting that its chief object had been to save its own pocket, and that while it took the public property for nothing, it had sold land of its own which was available for the purposes of ventilation. Mr. Anderson moved an amendment, characterising the instruction as vindictive and careless of the comfort and health of the millions who travel by the Underground Railway. On a division, Mr. Marriott's instruction was carried by 200 to 110. On the motion of Lord A. Percy, a further instruction was agreed to, directing the Committee to inquire into the company's powers to build over the open cuttings, and, if necessary, to repeal or amend them.

Additions, Oldham Infirmary.—An additional story to the south wing of the Oldham Infirmary has been formally opened. The new building, the gift of Mr. Wm. Richardson, has been erected at a cost exceeding 3,000*l.*, and comprises a large and a small ward, kitchen, bath-room, store-room, lavatories, and other requisite offices. Messrs. Potts, Pickup, and Dixon are the architects.

Wolverhampton Outfall Works.—The Town Council of Wolverhampton have instructed Mr. Edward Pritchard, C.E., of Westminster and Birmingham, to make an inspection of the sewage outfall works, and to report upon the subject generally.

Stone.—The whole of the Bath stone used at the National Liberal Club, illustrated in our last week's issue, was supplied from the Box Hill Quarries of Messrs. Randell, Saunders, & Co., Limited.

Mr. Henry Monson, the Assistant Surveyor to the Local Board of Acton, was on Thursday last, the 19th inst., appointed Surveyor to the Vestry of St. James's, Westminster. There were fifty-one applications for the vacancy.

The Tenements of the Poor.—The Right Hon. Jas. Stansfeld, M.P., presided on the 13th inst. over a conference held in the Hall of the Society of Arts, and convened by the Charity Organisation Society. The object of the conference was to consider questions in connexion with the supervision of tenement houses in the metropolis. The questions put down for discussion were,—the present condition of courts and streets in which the poorest classes are lodged, and the moral, sanitary, and other evils arising from the street-doors being left open all night; whether an improvement could not be effected by urging the local authorities in the metropolis to apply to the Home Secretary, under the section of the Public Health Act, 1866, for by-laws for the supervision and inspection of tenements and houses; and also, whether steps could not be taken to bring the condition of these courts before the ground landlords. The proceedings were opened by the reading of a paper by Miss Buller generally bearing upon the subject before the conference. In this the evils which arose from the doors of the tenements of the poor remaining open all night were described, and, as a remedy, it was urged that more stringent legislation should be obtained. Reliance was also placed upon the efforts being made by social reformers. In the discussion which followed, several medical officers of health gave their experience of the existing state of affairs, and Mr. Hollond, M.P., remarked that there was no reason why those by-laws for the tenements of the poor which had been applied in the provinces should not also be applied in London. Lord Mount-Temple said it appeared that the remedy consisted in the provision of locks upon the doors with keys placed in the care of the different inhabitants of the tenement-house, and he considered it should not be difficult to provide what was required. At present the staircases of tenement-houses were portions of the thoroughfares, and, so long as they continued to be so, he did not see why the police should not have the power to walk in and out. Other speakers, however, urged that it was impossible to keep up a lock-and-key system. Mr. Stansfeld, M.P., summed up the discussion, and said he looked forward to the time when sanitary authorities should not merely think of sanitary inspection and compulsion, but also of sanitary education. Ultimately a resolution, proposed by Lord Mount-Temple, was agreed to, urging the expediency of the local authorities in London exercising the powers conferred upon them by the 47th section of the Sanitary Act of 1874 for the issuing of by-laws as to tenement-houses, and that open staircases of tenement-houses should be as accessible to the police as public thoroughfares.

Hammersmith Bridge.—The Metropolitan Board of Works (Bridges) Bill came before a Select Committee of the House of Commons on Tuesday last, when Sir Joseph Bazalgette, C.E., described the alterations to be made in Hammersmith Bridge. The foundations are to be strengthened by deepening them 6 ft., and the weight upon them is to be lightened by the substitution of iron piers instead of the present heavy structure. The bridge itself is to be on the chain suspension principle, and is to have a roadway of 29 ft. wide instead of 20 ft., and there are to be cantilevers giving a footway on each side. The headway of the arches at Trinity high water is to be increased from 11 ft. to 15 ft., and the gradient of the road reduced from 1 in 40 to 1 in 50 at each end, while the centre is to be level. It provides for a temporary bridge instead of a ferry, the approach to which will go through the premises of the West Middlesex Water Company, with whom arrangements had been made. The estimated cost was £138,500. The Bill passed through Committee.

TENDERS.

For works at Messrs. Carter, Paterson, & Co.'s Croydon Depôt. Mr. Wm. Eve, architect:—

Maides & Harper	£1,695 0 0
Brown	1,690 0 0
Harris & Wardrop	1,683 0 0
F. Higgs	1,618 0 0
Smith	1,557 0 0
Hubble & Trott	1,516 0 0
Docking	1,483 0 0

For alterations at Messrs. Carter, Paterson, & Co.'s Depôt, Notting Hill. Mr. Wm. Eve, architect:—

Brown	£399 0 0
Cowns	397 0 0
Hubble & Trott	393 10 0
F. Higgs	380 0 0
Harris & Wardrop	374 0 0

For main drainage and sewage disposal, for the Wanstead Local Board of Health. Contracts 2 and 3. Mr. J. T. Bressey, surveyor to the Board. Quantities supplied:—

J. Jackson, Leyton	£19,999 0 0
J. Bell, Wood Green	12,803 19 6
Nowell & Robson, Kensington	12,122 0 0
J. Dickson, St. Albans	12,008 16 10
Beadle Bros., Erith	11,912 3 6
G. G. Rayner, Liverpool	11,657 11 4
McKenzie, Williams, & Co., Finsbury	11,578 0 0
B. Cooke & Co., Battersea	11,367 0 0
J. W. & J. Neave, Stratford	10,769 16 10
G. Stevenson, Chesterfield	10,729 0 0
G. Cowdery & Sons, Gloucester	10,579 10 10
Hill Bros., High Wycombe	10,203 13 6
James Smith, Chelsea	10,071 2 2
Bottoms Bros., Battersea	9,246 4 6

For storage reservoir at Tunbridge Wells. General works:—

B. W. Ward, Leicester	£36,368 8 6!
Holme & King, Salford	21,128 16 4
Beadle Bros., Erith	19,770 7 4
Evans Bros., Wolverhampton	19,186 15 0
F. Nowell, Westminster	17,633 2 2
J. W. & J. Neave, London	17,626 7 1
J. P. Batch, Norwich	17,446 13 6
H. J. Saunders, Southampton	17,048 2 4
Vernon, Ewens, & Co., London	16,911 12 1
J. Dickson, St. Albans	16,833 6 0
Paramor & Sons, Margate	16,633 6 11
Nellett & Bentley, London	16,148 9 5
W. Hill & Co., Westminster	14,539 14 4
H. Lockwood, Manchester*	12,187 12 6!

* Accepted.

For alterations to No. 13, George-street, Plymouth, for Mr. A. Stedall. Mr. George Edwards, architect:—

Stimpson & Co.	£563 0 0
Scharien & Williams (accepted)	540 0 0
Finch*	520 0 0

* Would not agree to complete by time named.

For fittings to Nos. 8 and 9, Ludgate-square, E.C., for Mr. A. Stedall. Mr. George Edwards, architect:—

Stimpson & Co.	£217 0 0
Goad	177 0 0
Green (accepted)	147 0 0

For alterations, painting, &c., at the Milkwood Tavern, Milkwood-road, Loughborough Junction, for Mr. Wm. Barrett. Mr. C. Jones, architect:—

Hooper	£117 0 0
Creed	107 0 0
Scharien & Williams	105 0 0

For alterations and additions to the Alexandra Schools, Penge, for the Beckenham School Board. Mr. John Ladds, architect:—

J. Longley, Crawley	£2,760 0 0

[Remainder illegible.]

For alterations to house in High-street, Leighton, Buzzard, for the Leighton-Buzzard Coffee House Company (Limited). Mr. Frederick Gotto, architect, Leighton-Buzzard:—

W. Mugglestone, Leighton-Buzzard	£116 0 0
D. Cook & Sons, Leighton-Buzzard	98 15 0
H. Edwards, Egginton, Leighton-Buzzard	97 10 0
T. P. Webb, Leighton-Buzzard*	90 0 0

* Accepted.

For "The Cote," Clarendon Park, for Mr. C. F. Beckwith. Mr. Thos. P. Boun, architect, Leicester:—

Harris	£295 0 0
Bentley	280 0 0
Northan	272 10 0
Orton	259 0 0
Bass & Elliot (accepted)	256 0 0

For new front to Independent Chapel at Narborough. Mr. Thos. P. Bown, architect, Leicester:—

Langton & Son (accepted)	£135 0 0

For four villas, Laurel-road, Highfields. Mr. Thos. P. Bown, architect, Leicester:—

Northan (accepted)	£1,620 0 0

For five cottages, Market Harborough, for Miss Horsley. Mr. Thos. P. Bown, architect:—

Smith & Carpenter (accepted)	£654 0 0

For three villas, Market Harborough, for Messrs. H. & C. Freestone. Mr. T. P. Bown, architect:—

Smith & Carpenter (accepted)	£1,150 4 7

For villa residence, for Mr. Mason, Knighton-lane. Mr. Thos. P. Bown, architect:—

Tebbut & Freeman (accepted)	£875 17 6

For sundry works at Park Lodge, Streatham, for Mr. J. Smith. Messrs. Notley & Trollope, architect:—

Burford	£230 0 0
Colls & Son	216 0 0
Godden	203 0 0
Walker	198 0 0
Mason	197 0 0
Harrison & Wood	197 0 0
Le Gassick	140 0 0

For dwelling-house and business premises, for Messrs. Trigg, Wine Merchants, Streatham High-road. Mr. Wheeler, 119, Cheapside, architect

Hill Bros. (accepted).

Accepted for the erection of house and business premises, 36, Coney-street, York. Mr. William Brown, York, architect. Quantities by the architect:—

J. W. B. Lee (Excavator and Bricklayer).
J. Clark (Mason).
T. P. Barry (Carpenter and Joiner).
Hargraves (Slater).
G. Jennings (Plasterer).
J. H. Shoutsmith (Plumber and Glazier).
Dearlove & Dodd (Ironfounder and Smith).
Bellerby (Painter).

For alterations to 2, Willow-terrace, Stoke Newington. Mr. F. Taperell, architect:—

J. Hicks	£360 0 0
W. Shurmur	349 0 0
Combes & Son	342 0 0

For houses, Chapel-street, Somers Town. Messrs. Saville & Son, architects:—

	No. 1.	No. 2.	No. 3.	No. 4.
Mark	£2,350	£2,200	£2,430	£2,300
Steed Bros.	2,059	1,928	2,135	2,093
Royal	2,041	1,911	1,966	1,836
W. Shurmur	1,782	1,689	1,719	1,627
Lamble	1,595	1,490	1,535	1,449
Spencer	1,585	1,490	1,663	1,583
Jackson & Todd	1,559	Not filled in.		

For the erection of a villa-residence on Dane-road West, St. Leonard's-on-Sea, for Mr. C. Vipan. Messrs. Fowler & Hill, architects. Quantities supplied by Messrs. Fowler & Herman:—

Shepherd, Bermondsey	£4,393 0 0
Rodda, St. Leonards	4,380 0 0
Vidler, Hastings	4,279 0 0
Cruttenden, St. Leonard's	3,972 0 0
Eldridge & Cruttenden, St. Leonard's	3,925 0 0
Salter, St. Leonard's	3,826 0 0
Howell & Son, Hastings	3,750 0 0

Accepted for the erection of a building at Stainland, near Halifax, comprising Mechanics' Institute, together with accommodation for the Local and School Boards, and other public purposes. Messrs. Leeming & Leeming, architects, Northgate Chambers, Halifax:—

Masons.

Normanton & Whiteley, Stainland	£916 0 0

Carpenter and Joiner.

A. Park, Stainland	490 0 0

Plumber and Glazier.

J. Naylor, Halifax	80 0 0

Plasterer and Slater.

S. Collins, Stainland	128 0 0

Whitesmith.

Taylor & Parsons, Bradford	45 12 0

Painter.

S. Collins, Stainland	43 0 0

Heating Apparatus.

J. Naylor, Halifax	94 0 0

For house and stables at High Barnet, for Dr. Harnett. Mr. John Ladds, architect, 4, Chapel-street, Bedford-row:—

W. James, High Barnet.

For shop at the corner of Moorfield-road and High-street, Orpington, Kent, for Mr. F. Stanger, St. Mary Cray, Kent. Mr. John Ladds, architect, 4, Chapel-street, Bedford-row. Quantities not supplied:—

T. Knight, Sidcup (too late)	£772 0 0
Brett & Sons, St. Mary Cray	764 0 0
H. Baldwin, Bromley	695 0 0
W. Wright, Chelsfield	665 0 0
F. Wood, Chislehurst (accepted)	587 0 0

For alterations, painting, and decorating, at the York Hotel, Albermarle-street, Piccadilly. Mr. W. H. Collbran, architect:—

Cruske	£2,292 0 0
King	2,130 0 0
Eladon	1,890 0 0
H. Smith	1,881 0 0
W. H. Smith	1,862 0 0
Styles & Holdstock (accepted)	1,830 0 0
Cowland	1,789 0 0

For the erection of offices, &c., Midland-road, Wellingborough, for Mr. C. J. K. Woolston. Quantities by the architect, Mr. E. Sharman:—

G. Henson	£630 0 0
J. Leete	619 0 0
E. Brown	611 0 0
W. Harrison	590 0 0
J. Underwood (accepted)	583 0 0

For completing eight detached houses in the Windsor-road and Royal-road, Upper Teddington, for Messrs. Saunders & Co. Mr. Robert Evans, architect:—

Miller	£1,285 0 0
Collins	881 0 0
Taylor	869 0 0
Robinson	841 0 0
Wright & Coles	830 0 0
Groves	733 10 0
Rockwell	705 0 0
Bryant	653 0 0

For the erection of four shops, with residences, Starch Green-road, Shepherd's Bush, W., for Mr. S. Fortescue. Mr. Neville Kempthorne, architect, Acton, W.:—

G. Lyford	£2,272 0 0
F. Bray	2,250 0 0
W. H. Wheeler	2,063 0 0
G. White (accepted)	2,020 0 0

For the erection of a bank at Chatham, for the London and Provincial Banking Co. Messrs. Pennington & Bridgen, architects:—

Hearn	£2,537 0 0
Sawyer	2,453 0 0
Wall Bros.	2,398 0 0
Calland	2,270 0 0
Naylor	2,083 0 0

For the erection of a Baptist Chapel at Gorse Hill, near Swindon, Wilts. Mr Wm. Drew, Swindon, architect:—

Wiltshire	£605 0 0
Colborne	555 10 0
Jackson	530 0 0
Henley	523 10 0
Barrett (accepted)	522 8 0

For the erection of four villa-residences at Walthamstow. Mr. W. A. Longmore, architect:—

S. J. Scott (accepted).

For embossed gold ornamental writing, &c., on the front windows at the chief office of the Royal Liver Friendly Society. William Summers, architect.

Jones & Firmin, Blackfriars-rd. (accepted) £238 0 0

For the erection of a cottage hospital at Bexley Heath, for the Bexley United Charities. Messrs. A. & C. Harston, architects, 15, Leadenhall-street. Quantities supplied:—

Strickland Bros., Erith	£1,453 10 0
Balsam Bros., Old Kent-road	1,420 0 0
Waite, Dartford	1,395 15 6
Ellingham, Bexley Heath	1,305 0 0
Butler Bros., Bexley Heath*	1,296 0 0

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McGregor	£7,200	£100	£7,100
Hicks	6,487	270	6,217
Higgs & Hill	5,984	200	5,784
Anley	6,070	400	5,670
Perry & Co.	6,000	350	5,650
Lawrance	5,992	358	5,634
Chappell	5,927	453	5,474
Nightingale	5,721	286	5,435
Boyce	5,834	460	5,374
Colls & Sons	5,532	320	5,212
Conder (accepted)	5,300	349	4,960

For rebuilding Nos. 11 and 12, Goldsmith-street. Mr. Wimble, architect :—

Laurence	£3,419 0 0
Rees	3,277 0 0
Falkner	3,187 0 0
Scrivener & Co.	3,166 0 0
Croaker	3,030 0 0
Mercer	3,015 0 0

For the erection of three pairs of villas in Broughton-road, Ealing. Mr. Robert Willey, 66, Ludgate Hill, architect

Nye, Ealing	£3,750 0 0
Penny & Co., Ealing	3,150 0 0
Stops, Ealing	2,889 0 0
Hart (accepted)	2,750 0 0

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Smith, Kennington	2,597 0 0
Brown, Southall	2,150 0 0
Penny & Co., Ealing	1,875 0 0
Nye, Ealing	1,870 0 0
Waters (accepted)	1,798 0 0

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Fox	3,343 0 0
Humphreys	3,190 0 0
Swain	2,977 4 0
Conder	2,700 0 0

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Mills, Leamington	1,831 0 0
Cashmore, Warwick	1,820 0 0
Vincent, Leamington	1,781 0 0
Tallis, Warwick	1,730 0 0
Lee, Leamington	1,620 0 0
Robbins, Warwick	1,594 0 0
Smith, Leamington (accepted)	1,570 0 0

For stabling, Bloxham, Oxfordshire, for Mr. C. H. B. Whitworth. Mr. J. Cundall, architect. Quantities by Messrs. R. L. Curtis & Sons :—

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Bartlett, Bloxham	1,226 18 0
Claridge, Banbury (accepted)	1,178 0 0

For new class rooms, West End Chapel, Hammersmith. Messrs. Paull & Bonella, architects. Quantities by Mr. Leonard Campbell :—

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Picton	1,675 0 0
Adams & Son	1,383 0 0
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Cormick & Son	1,260 0 0
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For the erection of East Cliff Villas, Ramsgate. Mr. Alfred R. Pite, architect, Bloomsbury-square :—

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P. G. Pound, Bow-road	349 18 0
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* Accepted.

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VOL. XLIV. No. 2260. SATURDAY, MAY 5, 1883.

ILLUSTRATIONS.

Proposed Improvements, Madeira-road, Brighton (Double-page Engraving).—Selected Design, by Mr. John Johnson, Architect; Second Premiated Design, by Mr. E. E. Scott, Architect 604
Church of St. Peter, St. Leonard's-on-Sea (Double-page Engraving).—Mr. James Brooks, Architect 606
The Cathedral of Palermo, Sicily (Double-page Engraving) 608, 609

CONTENTS.

The Latest on the Statue of Athene by Phidias, in Gold and Ivory 591
The Society of Painters in Water Colours 592
The Grosvenor Gallery 593
A Retrospect at Spring-gardens. 1855—1882 595
Architecture at the Royal Academy 596
New Parish Church at Hammersmith: Visit of the Architectural Association 597
Regularity and Irregularity 598
An Ancient Greek Bronze Horse 598
The Continental Sunday 599
A Recent Decision on the Right of Land and Houses to Support 600
The Navigation of the River Jordan 600
The Parkes Museum of Hygiene 600
The Cromwell Homestead at Putney 601
Switzerland 601
The Iron and Steel Industries 601
Cathedral of Palermo 602
Church of St. Peter, Bohemia, St. Leonard-s-on-Sea 602
Proposed Improvements, Madeira-road, Brighton: The Selected Design 602
The Wellington Statue 602
The Furniture Trades' Exhibition at Islington 615
The New Stock Exchange Buildings 615
Dwellings for the Working Classes at Home and Abroad 616
The Money Value of a Diminished Death-rate 617
Royal Institute of British Architects: Report of the Council 617
General Scott 618
Notes from Birmingham 618
New Council Chamber at the London Guildhall 619
Competitions Abroad 619
Foreign Notes 619
The Proposed Statuary for Blackfriars Bridge 619
The Surveyors' Institution 619
The Royal Manchester Institution 619
Birkenhead New Town hall and Sessions House 620
New Scottish National Church for London 620
Building Trades' Exhibition at Birmingham 620
Weston-super-Mare Master Builders' Association 621
Wilson's Grammar-School, Camberwell 621
Building Patent Record 621
Parliamentary Lettings 621
Sewerage and Drainage Notes 621
Who is Responsible? 622
Miscellanea 622



The Latest on the Statue of Athene by Phidias, in Gold and Ivory.

R. FERGUSSON, in his recent important publication, "The Parthenon," concerns himself chiefly with discussion of the architectural problem of framing a consistent theory as to how the light of day was sufficiently, safely, and effectively admitted into the interior of the temple. It is needless to say that the conditions of the problem are grasped with the author's usual frankness and decision; and the arrangement more than once set forth in our pages, which is ultimately favoured as overcoming difficulties which are fully recognised, is one that must be held to have possession of the field, at least until some new theorist can succeed in showing us a more excellent way. It is quite incidentally to this discussion that the design of Phidias's statue of Athene, the chief glory of the temple, comes under consideration. In plate 1, Mr. Fergusson reproduces the tentative restoration of Quatremère de Quincy, while another proposal, according to his own conclusions, is exhibited on the frontispiece. There are few, but still not unimportant, differences between the two; and both are at variance with some other restorations. This is no more than was to be expected, when we consider that the ancient authorities, literary and monumental, leave so much unstated or uncertain,—so much freely open to conjecture or dependent on the interpretation of indefinite texts. It is worth while to take this opportunity of examining somewhat closely whether certain definite limits may not be set to probabilities, at least, if we cannot hope to settle all and once for all on a basis of unimpeached certainty.

Of the various descriptions and notices of this great work, conspicuous consideration is claimed for those by the eye-witnesses, Thucydides and Pausanias. To Thucydides we owe only one particular, but that very important,—that the golden drapery of the statue was of such value, 40 talents weight of gold, as to be taken into account as an important item in the resources which were available if ever the State were driven to extremity. The description given by Pausanias is in these terms:—"The statue itself of Athene is made of ivory and gold; upon the top of her helmet is the figure of a sphinx, and on each side of her helmet are griffins in relief, winged and with eagle beaks. The statue of Athene is erect, in a chiton reaching to her feet, and on her breast is a head of Medusa formed of ivory, as is also Nike (Victory) of four cubits. In her hand she has a spear, and at her feet her shield is placed, and near the spear is a serpent; this serpent may be taken for Erichthonius. On the basis of the statue is worked the birth of Pandora in relief."

Pausanias drops no word to indicate that the statue was not still in the same state in which it had been left by Phidias, but it were hard to believe that the golden drapery had come down through centuries,—through direct destitution of the city, through the excesses of civil warfare and dissension, and the chances involved in occupation by embittered enemies,—and never been realised beyond recovery to meet the exigencies of the state, or never been the plunder of victors. We must suppose that some provision was made originally in case of such a removal of the gold drapery as Pericles assumes would occur under pressure of such difficulties as did indeed occur too soon, for substitution of some fac-simile, if only of a cheaper metal gilt. Was this what Pausanias saw?

The sphinx of the helmet was evidently a figure in the round supporting the crest; the head of Medusa was, of course, the gorgon head attached as usual to the ægis. Pausanias does not state that the Victory, of about four cubits high, is on the hand of the goddess, and when we consider what difficulty is implied in a figure 6 ft. high being supported on the extended hand of the figure, we should not have been authorised to infer from this loose notice alone what is certain from other evidence, that such was its position. The next clause, by the most natural interpretation, whatever the intention of the author, must be held to imply that spear, shield, and serpent were all on the same side of the goddess. It is the manner of Pausanias to describe objects in order as they present themselves, and it would be contrary to all analogy to suppose him to have written in effect, "She has a spear in her right hand, and at her feet at the left is her shield, and near her spear on the right is the Erichthonian serpent."

The phrase κεῖται is not to be translated "lies," as if the shield were lying down on the ground, but "is placed" or "settled permanently." How, then, are we to suppose the shield was retained upright? It could not have been shown as leaning against the leg and drapery of the goddess, and consequently, in the absence of mention of any supporting adjunct, it seems most natural to assume that it was steadied by her hand upon the upper rim. But we have already seen that by the terms of our authority, the spear was on this side, and if we are bound to read those terms in the very strictest sense, the goddess was grasping the spear with her left hand, which could scarcely be made gracefully available for simultaneous occupation with her shield. At the same time, we must not venture to limit the dexterity of the artist, and so long as the chief pressure of the hand was visibly applied to one object,—either to the spear or the shield,—very slight contact with the other might suffice to satisfy the requirements of equilibrium and the impression reported by the traveller. The phrase which he uses is equivalent to "in her hand she has," not "she holds," and is a much less definite expression.

The confirmations of Pausanias as thus interpreted are numerous, remarkable, and, but that at present it were premature, might be pronounced conclusive. Among the monumental illustrations, Athenian coins have the first claim to our regard. Michaelis on the Parthenon engraves several (plate 15 of his Atlas), which, like Athenian coins generally, are poor specimens of art, but are so far important that they have close correspondence to each other in presentations of a figure of Athene, which must be recognised as that of the Parthenon statue. The coins 18, 19, 20, 21, and 27 agree in exhibiting Athene equipped with helmet, spear, shield, and a figure of Victory on her extended right hand, and all agree in showing both spear and shield on the left hand of the goddess. The shield rests on the ground, and she steadies it with her left hand upon its upper rim. The position of the spear is but clumsily rendered; it is clear that it is not grasped by the left hand. In four out of the five examples it seems to spring up from behind both the goddess's arm and her shield. This is manifestly an instance of the same unhesitating resource of a medallist to help his want of mastery of relief, or to meet the embarrassment inseparable from a work on a small scale, of which Greek numismatics furnish frequent examples. On numerous coins the trident of Poseidon, who advances to our right, is elevated for striking parallel to his shoulders, but shown as carried past the back of his head instead of in front of the figure. On other coins we have the same contradictory management of the club of Hercules or the spear of a horseman. So the intention on the Athenian coins is perfectly clear, to indicate that the spear rests upon the ground, and is supported aslant by leaning against the hollow of the left forearm in front. Such a position is quite sufficient to account for the expression of Pausanias that she has a spear in her hand, even though we should be disinclined, which there is no sufficient reason why we should be, to conclude that her hand was at least in contact with it. In not a single representation does the goddess hold the spear in her right hand, and there is thus no escape from the alternative that on the left it must have been. The two bas-reliefs on the same plate

11 and 14, show the spear supported precisely in this manner. Bas-reliefs 8, 9, 10, 11, 13, 15, 16, and 17 confirm the assumed management of the shield.

This necessarily carries the serpent, which Pausanias said was near the spear, to the left side also. Here the Athenian coins desert us. Three of the five consistently do not show the serpent at all, as it would be hidden by the shield; the other two show it on her right, and advanced, with head erect, well in front of her. Here, again, we have probably a licence adopted to get the serpent into sight on any terms; as in a profile view of the statue it would be out of sight behind the shield, or would only create confusion of lines, where scale was small, and execution anything but finished, by appearing emergent from behind it, and crossing the drapery of the goddess. For no better reason, and, in fact, as the one stratagem available in parallel difficulties, the bas-reliefs 6 and 13 show the serpent below the right arm of the goddess,—indeed, with crest so elevated above its coils, as if it might have been utilised to support the extended and weighted right arm.

Two remarkable statuettes remain still to be adverted to. One of these was found only recently at Athens; it is of Pentelic marble, about 3 ft. 4 in. high, of coarse though complicated workmanship, and very valuable from its details and preservation. It gives the Sphinx surmounting the helmet of the goddess, though not the griffins in relief on either side, the gorgon's head central on the ægis upon her breast, the shield on the left side steadied by her hand upon it. No track of the position of a spear seems to have been discovered, but the serpent on her left and between her and the shield, and the occupation of her right hand in holding a Victory, make it certain that the left side is the place for the spear. It may be remarked that the serpent here raises itself on its coils with an aspect of vigilance, and in a manner to suggest that the erectness of the serpents on the bas-reliefs already noticed, was reminiscent of a common original.

Ampelius ("Liber Memorialis," 8, 10) tells us that the goddess's spear was *de gramine*, that is, a reed,—doubtless, as Mr. Fergusson surmises, a bamboo,—and he adds his testimony to the mode in which the shield was supported,—"Cujus ad sinistram clipeus appositus quem digito tangit"; that is, she had a shield on her left which she rather had her hand in contact with than was grasping.

The other,—the Lenormant statuette,—was also found at Athens, and is illustrated in figs. 1, 1*a*, 1*b*, of the plate of Michaelis. It agrees with the other in position of the left hand, shield, and serpent; and its reference to the Athene of the Parthenon is certified by an indication of bas-reliefs on the front of the basis as well as on the shield.

This common reference of the model to the magnificent original, is further vindicated by agreement in the pose of the figure, and in the general cast of the drapery. The goddess in both the statuettes, and all but one of the bas-reliefs, uniformly rests her weight on the right leg, over which the drapery descends in deep vertical folds, while it is more smoothly strained over the thigh of the slightly bent, as less responsible left. Even the coins exhibit this attitude in some instances, and are never inconsistent with it.

The question still remains what confirmation of Pausanias, or rather what explanation of his reference to the figure of Victory, is obtainable from the monuments.

We cannot be wrong in taking it for granted, both from the analogy and the testimony of other monuments, if scarcely from the curt if not corrupt text of Pausanias, that the Victory was upon the hand of the goddess; what we have to thank him for besides information as to its height, is at least according to the most natural interpretation of his expressions, that it was formed of ivory. The Athenian coins already referred to, four bas-reliefs, and the recently discovered statuette, all exhibit the Victory winged, and standing upon the extended right hand of the goddess. So the coins of Elis show the Victory upon the extended right hand of Zeus Olympius,—the second great chryselephantine statue of Phidias.

Whatever allowance we may make for the seeming buoyancy of the winged Victory, the sculptor would have been very ill-advised to trust to this so far as not to pose the goddess in an attitude which would be naturally assumed in extending upon her hand an object of some manifestly considerable weight. The arm and shoulder on this side would be naturally advanced, and that alone would cause a position to be taken spontaneously that bringing the right foot also, however, slightly in advance, would make it chiefly responsible for firmness of position of the entire body.

As regards the question whether the Victory was flying towards, or at least, facing the goddess, or was turned from her in the direction of the Athenian demus, Pausanias gives us no hint to help to a reply; and coins are contradictory or equivocal, even as they are with respect to the Victory of Olympian Zeus; the statuette last found shows the little figure far more distinctly turning outward than towards the goddess. An appreciation of the fitness of the case is what we have to fly back upon; from our own point of view it is decidedly in favour of the goddess having the air of presenting Victory to her Athenians. So would she appear graciously interested in them, dignified, but still sympathetic. In the other aspect she would surely seem withdrawn from attention to her votaries,—presenting a compliment to herself; the Athenians who entered the temple bent on interchange of greeting with the patroness of their state would find her too much engaged and engrossed to attend to them.

The mechanical problem, how the Victory was to be sustained in position is serious indeed; however lightly it might have been constructed, its weight would tell very destructively with the leverage due to the extended arm. Nay, the problem is serious enough how the arm itself of a figure 36 ft. high was to be supported in free air. The Athenian statuette indicates the readiest way,—the introduction of a slender column to support the hand. That coins should leave this out is not surprising; it was not only that the field of the coin was amply occupied already, but the object in itself was only resorted to perforce because other help was none, and might in other cases be readily and happily dispensed with. The more remarkable is it that in one bas-relief where there was no need for it or its appearance whatever, it was retained (Michaelis, 15. 7). This fact seems, indeed, to us conclusive that such an adjunct,—an adjunct which seems so indispensable in some form or other from the colossal proportions of the figure,—there certainly was.

We have still to collate the particulars of the work which are specified by Pliny (Nat. Hist., xxxvi., 4). They are introduced in a manner strange enough, but which, as we are glad to have them, we need not cavil at. "Throughout all the nations who have information of the fame of the Olympian Jupiter, there is no doubt with any man as to the supreme distinction of Phidias; but in order that even those who have not seen his works may know that he merits his renown, we will bring forward small examples (*details of comparatively minute scale*), and matters of invention merely. We will neither employ for our purpose the beauty of the Olympian Jupiter, nor the vastness of the Minerva, executed at Athens, of ivory and gold, twenty-six cubits high as it is; but her shield, on the convex circuit of which he wrought in relief the battle of Amazons, on the concavity of it the contest of the gods and giants, on the edges of her sandals that of the Centaurs and Lapithæ; in such manner with him was every particular susceptible of art. The subject carved on the basis he called the Birth of Pandora; as many as twenty gods are introduced; the Victory is especially admirable. Connoisseurs admire both the serpent and the bronze sphinx under the very spear-point (*sub ipsa cuspide*). So much is said incidentally of an artist never to be sufficiently praised, that it may also be understood that he displayed magnificence equally in small things."

In the account of the birth of Pandora on the basis, Pliny is confirmed by the eye-witness Pausanias, and as to the battle of the Amazons by Plutarch. What he says of the inner side of the shield having been enriched with an elaborate and finished composition is by no means inconsistent with the position we have assigned to the serpent. This may easily have been so managed as to allow sufficient view of the embellished concavity of the shield. There is an anomaly in his allusion to the especial beauty of a figure of Victory as if it were one of the twenty divinities on the basis. A Victory is certainly to be expected at such a scene, by the analogy of her appearance on the vase-paintings at the births of Athene and other divinities. But I am strongly of opinion that Pliny confused this figure on the basis, if such there were, with the admiration expressed for the figure on the hand of the goddess. What, again, are we to make of his account of a bronze sphinx under the very spear-point of the goddess, as if she held her spear reversed, and were transfixing the monster, as St. George transfixes the dragon? Again, confusion is to be suspected,—this time with the sphinx, of which we have such ample proof on the helmet of the goddess. It has been objected that the sphinx on the helmet would probably be of gold; but this, after all, is only a conjecture, and at the utmost it would only oblige us to read *auream* for *æneam*. If, as has also been suspected, confusion crept in between *cuspide* and *casside*, this is more likely to have originated with Pliny himself, or those from whom he adopted a phrase ready made, than from copyists of his text, as the change of this single word will scarcely cover all the difficulty, the substitution of "over the *cassis*," for "under the *cuspis*."

That a sphinx should have been introduced upon the basis, where it would be in company with a serpent, the traditional denizen of the Acropolis, and where it must have been of considerable size, and yet should not have reappeared in any of the copies, or any allusion or description elsewhere, is nearly incomprehensible, and we need not hesitate to disallow it as an element of this Phidian composition, absolutely, uncompromisingly. If ever there was a case in which the testimony of a single witness, not an eye-witness and entirely unconfirmed, must be rejected, this is surely that case.

It thus appears,—to make as clear as possible to what conclusions we are committed, however liable to be exposed to dispute,—that we have seen reason to disallow the sphinx upon the basis beside the goddess which has been adopted in deference to Pliny by Canina, Quatremère de Quincy, Edward Falkener, and now by Fergusson. We coincide with Falkener as against the rest in placing the Victory on the right hand of the goddess and the spear at the left, though with entire disagreement as to the general pose of the statue. The chief difference of Fergusson from Quatremère de Quincy, apart from improved drapery and attitude, is the direction given to the Victory as proffering a wreath to the goddess.

It has been made a question, which it may not be rash to answer conjecturally in the affirmative, whether the 36 ft. given by Pliny as the height of the statue does not include the elaborately-sculptured basis. Another question may be suggested whether the 6 ft. given by Pausanias as the height of the Victory is not to be measured from the feet to the tips of elevated wings.

THE SOCIETY OF PAINTERS IN WATER-COLOURS.

The Society's exhibition this year is a very good one, most of the best members keeping quite up to their mark, while some of them show exceptional excellence. One of the more recently-elected members,—Mr. Wilmot Pilsbury,—has more than fulfilled the promise which his first contributions gave. The hard and rather mechanical style which was observable in his former works has been considerably modified, and his drawings this year show all a great advance, and mark him as one of the foremost members of the Society. "The Pond by the Farm" (20) is a beautiful drawing, combining great finish of detail with breadth of style and a harmony of colour which gives unity to the whole. "January" (275) is more remarkable for beauty of local colour and detail; and "Sand-hills in Sunlight" (223) is a remarkable study of special effect and colour, dealing with a subject very difficult to render interesting. Another member,—Mr. Parker,—has taken up new ground, suggesting recollections of the style of Pinwell, in the hard, precise finish of scenes including many figures and a great multiplicity of detail. These qualities are most conspicuously illustrated in "The New Milk-pail" (251), a street scene in which the figures are beautifully finished, and all the accessories painted with most conscientious care; it is not what can be called a very pure water-colour style, being somewhat hard and much indebted to body colour; but such a subject could hardly be adequately treated otherwise, and when we observe what very vague and unfinished features and figures are

often tolerated in the broader style of pure water-colour, we can pardon a certain hardness for the sake of the workmanlike precision with which Mr. Parker's figures are treated. Mr. Naftel is a veteran member who never deteriorates or stands still; in this exhibition he has taken up with great success a class of subjects not previously much dealt with in his works, of which "On the Beach at Amalfi" (13) is the best specimen,—a scene in which bright colours and a great amount of light in the buildings and the beach crowded with boats and figures are successfully treated without any effect of glare or crudeness. Another excellent drawing by the same artist, "From the Boulder Stone, Borrowdale" (33), shows his power of treating a subject of quite a different class. Indeed, no one of the older members has shown more enterprise in his art, and more determination to enlarge his borders with succeeding years; in which he contrasts favourably with some of those who year after year repeat much the same effects, good in themselves, but apt to pall by repetition. Mr. Thorne Waite contributes a large and beautiful drawing, "Tea Time" (7), a hayfield scene in sight of the sea, which pleases us the more because it shows a breaking away from the too artificial blending of scene and figures into one subdued harmony, beautiful but hardly according to nature, which we had felt as a limitation of the interest of some of his former works, in which the tone of figures and landscape seemed too much fused and blended, to the detriment of the real living interest of figures and scene. In this fine work, without any hardness, the diversity of the colour in the figures and in the details of the landscape is fully brought out; it is a genuine open-air landscape, not a compilation of the art of the studio. An exhibitor with whom we have not been familiar here, Mr. W. E. Lockhart, of the Royal Scottish Academy, paints architectural details and scenes in which buildings are prominent incidents, admirably; his large interior, "A Baptism in San Giovanni, Siena" (25), is not very interesting in the figures, but the painting of the font with its bronze reliefs is admirable; and the "Old Scottish Harbour" (74), with its picturesque groups of houses and its lantern on the top of a rough stone pillar in the foreground, is a capital example of topographical realism combined with artistic effect. Mr. Alfred Hunt sends three drawings, of which the finest, "On the North-Eastern Coast" (178), should have been more centrally hung and in a better light. It is a view looking down upon a river and town from high ground, with the sea in the distance, and displays that remarkable combination of a perfectly soft aërial effect and exquisite delicacy of colour, with the conscientious making-out of all the details of the scene, in which Mr. Hunt stands alone among English landscape-painters since Turner. At the first glance we seem to see a misty, but rich and beautifully-toned landscape, not very much made out in detail; but as we study it all the details of the scene come out, almost as if in nature herself, out of the maze of blended colours and softly massed conglomeration of buildings and landscape. Of his smaller drawings the finest is "Trifaen, Carnarvonshire" (293). Of the drawings in which figures predominate, Mr. Walter Duncan is eminent in his picture of a beautiful girl playing on an organ, a child listening, under the title "Cujus Animam"; the head of the girl is one of the finest things he has done, spiritual but not "sentimental" (in the wrong sense of the latter word). "A Student of Ancient Folk-lore" (63), by M. Glindoni, is a clever interior, with a figure of an old man in delighted rapture over an old book. Mr. W. J. Wainwright has a very clever thing entitled "A very Old Story" (84), representing a man of the jack-boot and buff-jerkin type, in a state of unavailing regret over the ill-fortune dealt him by the cards which strew the floor; the drawing of the figure is admirable, and the colouring very rich and powerful, in a broad and bold style. The same artist contributes also a very clever, but very disagreeable, life-size study of the head of a blackguardly-looking fellow who is supposed to be delivering himself of "A Bon-mot" (200) over his cups, a very vulgar one, we may conclude; the thing is well done, but was hardly worth doing. Mrs. Allingham contributes fewer works than usual, but one, at least, is in her finest style, "Drying Clothes" (296), in which the central point is a very handsome rustic girl busy at the clothes-line. Comparisons may be odious, but sometimes it is by their means that we best appreciate the excellence of really fine work; and any one who compares the painting and modelling of the face in this drawing with the faces of the women in an adjoining work, "Interior of a Larder—Sorting Game" (299), by an artist who has done many excellent things, must feel strongly the difference between merely "spirited" execution and really perfect work of the highest class. An interior by Mrs. Allingham, on the same screen, "Rock-a-by, Baby" (303), is nearly as good in its way, the child's little face being an exquisite bit of painting. Mr. Marks's "Toothache in the Middle Ages" (105) is a very good specimen of the peculiar humour which he infuses into subjects of this class; not very refined, but always effective, and in this case perhaps conveying a certain sort of moral, as implying that the real ills of life do not vary much in different ages, and under different veils of habit and costume. Mr. Parker's "Love in a Maze" (158), a half-length of a country girl playing at some cats-cradle kind of game with thread, gives us a beautifully painted head, beautiful in itself too, and in a fine rich ripe style of execution. That the same painter should have produced both this and "The New Milk-can" indicates far greater diversity of powers than we should previously have looked for from this artist. Mr. C. Gregory's large work, "The Doctor" (183), is a gipsy encampment scene to which the doctor has been summoned from the adjoining hamlet; the figures fail to interest us very much, the best part of the painting being really in the accessories, the medley of pots and pans and other *impedimenta* of a gipsy-encampment.

Among the landscapes Mr. Powell's "Firth of Clyde" (19) is a fine work, and Mr. Herbert Marshall's "Holborn-hill" (192) is a splendid success in the picturesque of a London street scene; his small work, "Limehouse Reach" (134), is also very fine, though the tone of the water seems rather artificially forced into harmony with the general scheme of colour. A beautiful little drawing by the late Mr. Duncan, "Boulogne Boats in a Gale" (112), suggests, by comparison with Mr. H. Moore's large and powerful drawing, "Off the Start—Coast of Devon" (55), a question whether some of our old lights were not nearer the truth in sea painting than some more modern ones who are much reverenced. It is true that Duncan was often mannered and rather tame in his seas, and that this is an exceptionally good specimen; true that the force and weight of the sea in Mr. Moore's work is remarkable; but is this the colour of sea water, even off the Devon coast, where the water does assume very dark tones, no doubt? The desire for force of effect seems to have led Mr. Moore a little too far in this as in other instances,—overstepping nature. Mr. Albert Goodwin sends several of the poetical fancies in which he is fond of indulging; "The Invincible Armada" (10), a replica of an oil-painting (there are several such repetitions in the gallery), and "Zobeide and the Prince leaving the City of Inhabitants to be turned into Stone" (77); he has also a large and fine work, "The Sole Survivor" (131), where one of the crew of a wrecked orange-ship is waiting for a rope-ladder lowered from the cliffs above: we look from under the rocks into a small bay surrounded by cliffs, and with the sea jumping rather than rolling into it. The same artist's small view of "Bruges" (66) from the outskirts of the town is a most interesting treatment of varied architectural features in combination with landscape. Among the drawings in which architecture is illustrated is one by Mr. Ruskin, a very carefully-worked piece of architectural detail from "The Duomo of Lucca" (263), which, like other works by the same hand, makes us regret we do not oftener see the results of his pencil as well as those of his pen. A little bit by Mr. Henry Wallis, "A Spanish Moorish Doorway at Toledo" (233), is worth the attention of architects. Mr. Boyce has two or three drawings in his well-known and rather artificial though very original style of treating landscape; but Mr. Boyce is at his best when he has buildings to introduce, and his most successful work is certainly "The Back of Great Tangley House, Surrey" (300), where the red roof and chimneys, rising from behind a row of trees, have that kind of real poetry which he knows how to impart even to very plain and simple buildings. Among the landscapes, too, should be mentioned Mr. Waterlow's "A Well by the Sea" (228), noticeable for the amount of light and truly fresh atmospheric character of the work. In somewhat ungrateful contrast to such work (to make odious comparisons again) is a small drawing with a more distinguished name appended to it, "View from the Eastern Slope of Siloam" (268), by Mr. Holman Hunt, of which we can only say that if Mr. Hunt knows what he is about in landscape, no one else does. For an artist of such wonderful powers in some respects, he seems to go wrong about landscape with a perversity which it is difficult in any way to comprehend. We ought not to conclude without mentioning two other works admirable in their way,—Mr. Bradley's "Lost" (16), a hunting scene, with a pack of hounds at fault in the middle of the high road, and some admirably-drawn horses and huntsmen (and women); and Mrs. Angell's "Roses and Lemons" (266). There are more works of high merit than we can do justice to in our space, however, and the Society may well be congratulated on their exhibition.

THE GROSVENOR GALLERY.

THE exhibitions at this gallery show no signs of diminishing in interest, though, or perhaps because, there is less to be seen of the special school of work which was originally so prominent in the gallery. The fact that Mr. Watts is not represented by any work in his greatest style, or of the first importance, is, however, an undoubted weakness in comparison with other years; for though we have sometimes thought this painter went rather out of the way in painting subjects too vague and too purely allegorical for painting to deal successfully with, his great pictures of this type, nevertheless, represented, in several cases at least, the most important painting, intellectually, of the year. His ideal works this year consist of a painting of a knight in armour, and of four allegorical subjects, the four mystical riders of the book of Revelations (103–106), pictures on a small scale, but which we take to be studies for frescos or mosaics to be executed on a large scale: this supposition at least may best explain the peculiar hardness of treatment and the very conventional character of the horses, which might pass as decorative work in such a medium as mosaic, but in painting on this small scale appear like somewhat absurd parodies of the natural animal called the horse. There is a grandeur in the action of some of the riders; but we cannot say the series interests us much. The half-length figure of a knight in armour (73) is a very sad production, in which the knight and his armour seem equally in want of cleaning; there is something very morbid in such a work as this. Mr. Watts makes some amends by a beautiful portrait of "The Hon. Mary Baring" (96), a study in warm, rich tones, blended into a subdued harmony only relieved by the white lace collar: as usual in Mr. Watts's portraits, the expression of character and feeling in the face is the predominant aim, rather than of realistic flesh painting. A work in somewhat similar tones, and which we suppose may be classed as a portrait, is No. 204, "The rain it raineth every day," where a girl is leaning with her head on the arm of the chair, looking with a melancholy expression at the window: if meant as a portrait, it is a pleasing variety in portraiture; if otherwise, the *motif* is somewhat slight for so large a work. A small painting, called "Haystacks" (59), suggests the question whether it could have had any chance of being hung in a first-class exhibition, except out of mere compliment to the artist's name and position, which is hardly a right principle on which to hang works, and tends to lower the standard of landscape-painting,—not too high at the Grosvenor Gallery as it is.

Mr. Burne Jones's "Wheel of Fortune" (67) is no doubt one of the most important works in the gallery in point of aim; that is to say, it is a serious and highly-wrought treatment of a serious idea; but it is a very hazardous thing to materialise allegory into fact in this way. A colossal "Fortune," turning a thing something like a mill-wheel with small figures of naked men bound to it, becomes, in spite of fine drawing and fine colour, very near to the level of a child's picture-book, or, at best, to that of such a work as Quarles's emblems, effective in their day, but from our point of view too puerile in character. The expressions on the countenances of the men are finely conceived, and the drawing of their figures is very superior to some drawing by the same artist which has been seen

at the Grosvenor Gallery; but a painter who can seriously put this kind of thing forth as an illustration of such an idea as the vicissitudes of fortune in human life seems to us to be quite apart from the intellectual life of his day, and is appealing only to the sympathies of rather weak-minded people. We much prefer his picture of "The Hours" (184), which is what it professes to be, a very graceful fancy; and Mr. Burne Jones is really much more at home in dealing with the decorative effect of coloured draperies and ornamental accessories than with the nude figure. The painting would make a fine subject for treatment, on a larger scale, in stained glass.

The Grosvernor Gallery always contains a considerable proportion of examples of the nude figure, of which there are several specimens of very varied types here. Mr. Burne Jones's figures in the "Fortune" just referred to, represent a somewhat conventional decorative type, akin to the work of Sir F. Leighton in regard to their relation to nature, though not so finely drawn or so highly finished. Of the same type, but still inferior, are Sir Noël Paton's figures in "Oberon and the Mermaid" (94); property nudities these look like, kept for the illustration of classic or fairy legend when required. The realistic treatment of the figure is illustrated in Mr. Calderon's beautiful little painting, No. 82, with two lines of poetry for a title, but representing a woman standing on the grass by a pool in a woodland nook, where she has been bathing. Here the painting of the flesh is most conscientiously carried out from nature; this is not a conventional or decorative nude figure, but a living body with the blood coursing beneath and colouring the skin, and the surface diversified by delicate variations of shadow and reflected colour. How far more difficult it is to produce such a figure as this than the bloodless figure of the decorative painter, even those who are not painters may realise with a little consideration; we should call this the best piece of painting in the gallery this year,—all the better because, though realistic, the artist has imparted a dignity and grace to it which raise it into the region of poetry. The brilliant and clever painting by Mr. Hale, "Psyche before Venus" (22), is a contrast in this respect; it is what ought to be a poetic subject treated with absolute and rather brutal realism. The naked Venus, seated in her gold throne with her yellow hair falling in masses behind her, and leering triumphantly at her victim Psyche, represents the queen of lust rather than of love; the drawing of the body, and the painting of its vivid carnations, and of the glistening reflected lights from her delicate skin, are exceedingly clever and successful; but as a rendering of an ideal legend, the picture is simply commonplace. Another realistic study, put frankly as such, by Mr. Van Haanen (91), is a model holding behind her a crimson drapery in festoon, against which the figure is partly relieved: this is a good study, but more a picture for study than for exhibition; it has little interest. Miss Dorothy Tennant's pretty little work, "Tyro beside Enipeus" (117), not remarkable for execution, nevertheless deserves mention as showing more of the poetry of the nude figure; Miss Tennant seems to have taken for a model, as to feeling and manner, Lefebvre or some of the French painters of the nude who have followed his lead. Mr. Collier has an important and highly-finished work representing "Pharaoh's Handmaidens" (151), who may class as nude studies, being as nearly so as may be: this was Pharaoh's taste, no doubt; "le roi le veult." These three dusky maidens stand in a hall, backed by coloured details of Egyptian architecture; the decorative effect of the whole is fine, the figures are finely drawn, but the painting, as a whole, is hard.

Of other paintings in which figures are predominant there are not many to be remarked on apart from the portraits. Mr. J. R. Reid's "The Yarn" (154), where some children are listening to an old sailor, is a capital piece of character both in the faces of the personages and the incidents of a fishing-town quay and shore. Mr. P. R. Morris, in "Returning from Confirmation" (127) repeats very much the same *motif* as in his now well-known "Première Communion." Mr. Schmalz, whose name is not very familiar to us, has two good pieces of colour, "How Long?" representing apparently a Mediæval maiden sighing for a lover, with a background of bottle glass with a stained glass picture in the centre, and "Exotics" (58), a face framed in leaves and flowers, and very pretty in effect; in neither case, however, are the faces of any special interest of character or expression. Sir Coutts Lindsay's "A Japanese Girl" (55) is a very interesting and successful study; the face is finely painted, and the peculiar drapery she wears, a flannel with promiscuous blue stripes wandering over a white ground, gives a distinct character to the work in the way of costume and colour. Mr. David Carr has chosen a fine and tragic subject in his "At the Doors of La Force" (140): the figure of the lady pushed through the fateful doors which are just being closed behind her is, no doubt, that of the unhappy Princess de Lamballe, who stands shrinking at the top of the steps and pushing back vainly against the doors; the subject is, no doubt, in a sense a very ambitious one, and we sympathise with a painter who chooses such a subject of real historic interest and tragic meaning, now when so many painters seem to think that any subject will do for painting. Mr. Carr has not realised the expression which we should expect on such a face at such a moment, and the tone of the painting is rather disagreeably white; it is an attempt rather than a success, but an attempt well meant. Mr. Boughton's "The Peacemaker" (172), a scene in North Holland, where an eccentric-looking clergyman interposes in the quarrel of a wife with her boorish husband, is quite successful, and a capital bit of humour; but then, how far easier is success with a subject of this kind than with such a subject as "La Force"; a point not to be left out of consideration. Mr. Holiday's "Dante and Beatrice" (165), a supposed scene in Old Florence, is as hard as hard can be, and very deficient in character in the figures; it brings us no whit nearer to the reality of Dante and Beatrice, and if a picture on such a subject does not do so, where is the value of it? Mr. Bartlett's "Summer-time on the Lagoon of Chioggia, Venice" (178) really does bring us nearer to the people it represents; we undertand from it the manners and habits of these semi-aquatic loafers on the lagoon, who splash in and out of the water as their natural element; the figures are very well drawn, moreover. Mr. Boughton's "The Sacred Mistletoe" (93), on the other hand, is a picture which means nothing, and refers to no time and no social period; it is simply a half-length from a model the artist has frequently used lately, dressed in a semi-antique costume of very vague period or nationality, and carrying mistletoe which has been cut with a knife out of the South Kensington Museum. The face is a pretty one, but the texture is remarkably hard and uniform, and by no means like flesh. Mr. Spencer Stanhope's pictures, with their lanky figures and impossible landscapes (let us thank Heaven that they are impossible), are simply absurd; and we regret to see a lady artist of real ability like Miss Pickering taking up the same kind of affected conventional style in her picture, "By the Rivers of Babylon" (43), where we see a crowd of figures, neither Israelites nor of any distinguishable nationality, seated about in stiff attitudes, and one standing on a bench to "hang his harp on the willows," with the air of a theatrical "super" hired to do the thing at the proper moment, but in a purely mechanical and perfunctory manner.

The portraits of the year are numerous, and a large proportion of them of high quality; none perhaps more so, in regard to the practical end of portrait-painting, the producing of a well-modelled, pleasing, and accurate likeness, than Mr. Alma Tadema's "Count von Bylandt" (2), in which the painting of the face is one of the most delicate and finished pieces of work which even Mr. Tadema has produced. Mr. Millais's portrait of the "Duchess of Westminster" (69) is a beautiful example of that noble simplicity which he can put into the portrait of a sitter of dignified and refined personality; the portrait is a side view, three-quarter length, the lady stands in a simple natural attitude, her hands before her, in black dress with white lace, and black gloves; there is no trace of picture-making in the work; it is simply a perfect representation. The artist in another portrait, that of "Master Freeman" (77), has apparently been bent on producing a repetition of Gainsborough; the attempt is rather too obvious, though very successful as a reproduction. Mr. Frank Holl's portraits, that of Mr. Tenniel especially, are admirable specimens of unpretentious realistic portraiture; those by Mr. Richmond have too much the air of arrangements for producing effect, in one o two cases very prominently so, a manner of por traiture which we hold to be far inferior i good taste and simplicity to the more simpl and unadorned style of Mr. Millais. Mrs Jopling's portrait of "Miss Ellen Terry" (39 is very like the original, but somewhat hard an raw in the treatment of the red dress. Mr Herkomer's "Mrs. Stanford" is a pretty por trait; that of "Herr Joachim," by the same artist, is a very fine one, conveying admirably the character of the great master of the violin whose style combines so eminently power with simplicity, a union of characteristics which his physiognomy and manner equally indicate; and this the artist has not missed in his interpretation (so to speak) of his subject.

Mr. Nettleship's lion, "Blind" (102), and followed with savage interest by a troop of hyænas, is one of the finest and most spirited pieces of animal painting we have seen for some time: superior to the "Dirge in the Desert" of last year, though we still think he rather overdoes the massive character of the lion's limbs. This is a fault on the right side, however; a scraggy lion would be of little value from an artistic point of view, however he might get on in real life. Among other works which are neither figure subjects nor purely landscape, are several in which architectural elements are very admirably treated. Foremost among these we may place Mr. Hemy's "Putney Bridge in 1882" (194), a picture evidently painted with a prospective view to its future value when the picturesque structure which forms its main object shall have been swept away. The artist takes the bridge in sharp perspective from the beach opposite Putney; he has rather exaggerated the close-setting of the timber buttresses, which are a little wider spaced than he has shown them; in other respects the representation is remarkably true, and the foreground, with its complicated detail, is admirably painted and very real. The river itself is the weakest part of the painting, the water looks hard and conventional. Mr. Gregory's various small paintings of bits of Venice,—"The Grand Canal" (19), "A Boat-Builder's Yard" (53), and others,—are beautiful specimens of bright, truly defined, and conscientious painting of architectural subjects; and (though in a very different style) Mr. Whipple's "One of the back Streets of Cairo" (90), showing solid brown stone walls and massive corbellings, is very good. Among landscapes properly so-called, Mr. Parsons sends two (33, 51), both of which appear as meant to represent bright summer weather, one in a garden and one in open meadows, and both of which comparatively fail through want of force in the shadows and of brillancy in the lights. Mr. Waterlow's "A Fisherman's Garden" (97), is an instructive contrast to these; it is true that the subject is of the slightest, and that the finish of detail is not so conscientious or laborious as in Mr. Parsons's paintings; but Mr. Waterlow does not overload his sun-lit portions or underrate the depth of shadow; consequently his picture gives real daylight, and is full of the freshness of nature. Mr. Mark Fisher sends an autumn landscape (207), which we welcome as an indication that he is going to make some break in his perpetual repetition of one effect of spring time, which he has repeated till it has become wearisome. Mr. J. W. North's "Early Summer" and "Apples" (76, 189) are also repetitions of an effect discovered by their author, but which is so beautiful in itself, and so unlike, in its light and glitter, the work of any other artist, that we can hardly regret its repetition. Mr. Keeley Halswelle and Mr. Fahey are making pictures rather than imitating nature. Each of them has invented an effect which pleases him, which is not too far from nature, and which he can execute with ease and freedom; and each of them continues to produce works of the same type, and each presenting about the same degree of difficulty, and the same demand for study. One of these by itself would pass for a charming work, no doubt, but a succession of them seems too like a succession of receipts for landscape, not bad in themselves, but produced with little thought and little relation to the real facts and details of nature. The exhibition contains two of Mr. Whistler's "Nocturnes," which are also almost precise repetitions of tricks of effect which he has previously exhibited here, and which certainly do not gain by repetition.

As a small practical point, worth taking into consideration, however, we suggest that it is

time the silly and inconvenient affectation of publishing the programmes on rough paper, with uncut edges, should be given up. It is a pure absurdity, resulting originally merely from the desire to do everything in a different way from every one else; it looks shabby and unfinished, and it increases tenfold the difficulty of turning over the catalogue for reference,—an inconvenience especially felt by those whose duty it is to report in the press the character of the exhibitions.

A RETROSPECT AT SPRING GARDENS.

1855—1882.

"in populous city pent
Where houses thick and sewers annoy the air."
MILTON.

AT the recent annual dinner to his colleagues (perhaps the last he will give in this capacity), Sir J. McGarel Hogg, the chairman of the Board, alluded to the circumstance of their having been originally constituted in order to purify the tidal way of the Thames by constructing new main drainage works for the metropolis.* At that juncture the sewage and rainfall of London passed directly into the river through the system established by the Metropolitan Commission of Sewers, whose functions had extended over the seven previous years. It being beyond our present purpose to discuss the status and jurisdiction of the innumerable local authorities who then controlled metropolitan affairs, we may briefly premise that the first comprehensive measure in this direction dates from King Henry VIII.'s reign, when (in 1531) the "Bill of Sewers" was passed for consolidating certain previous statutes the earliest of which ran from the time of King Henry III. To the Commission of 1848 was assigned a district extending for twelve miles around St. Paul's. For this they eventually constructed some eighty miles and more of brick sewers, together with nearly five times that length of pipe drainage. The population was estimated at two millions and a half of inhabitants, varying in density from two persons per acre in Lewisham to 284 in Cripplegate, with an elevation ranging from 2 ft. above high-water mark at Newington to 350 ft. at Hampstead.†

In a report of the Court of Sewers for Westminster and Middlesex, October 3rd, 1845, the daily amount of London sewage discharged into the Thames from north and south together is calculated at 9,502,720 cubic feet, equivalent to a surface of more than thirty-six acres covered to a depth of 6 ft.; and this at a period when the population was little more than one-half of what it is now. But only within comparatively recent times did the sewers universally communicate with the dwellings. In Charles II.'s reign a house's nuisance was placed in the street before the door, and the scavengers would notify their unsavoury office by beating a wooden clapper. The sewage of a house was commonly received in a well; as soon as this was full its contents were pumped into the kennels. Oldham, writing at this time, describes a disgusting practice which survived during the earlier half of the eighteenth century, and is made familiar to us by Hogarth's graphic plate of "Night." Similar instances will occur to readers of Smollett; Swift's "City Shower" is but too faithful a picture of that day; and we can the more readily comprehend the reason of the incessant contests for "the wall," when we remember that even as late as the end of the seventeenth century all rain-water from the roofs flowed by spouts and clumsy gargoyles into the streets beneath, and that the footpaths were not generally paved until the Act thereto of 1762.‡

The old streams and water-courses of London had long served as channels, often uncovered, for conveying sewage to the river. The principal of these were the Westbourne (Ranelagh sewer), crossed by the Knight's Bridge; the King's Scholar's Pond, and the sewer (Mill Ditch) beneath Great College-street, in Westminster, both of these being outfalls of the delta of the Aye-bourne; the Old-bourne; and the time-honoured Fleet. Its stream replenished by the various springs or wells that gave it a cognomen, and latterly fed by many hundred tributary drains and sewers, the Fleet played a considerable share in draining the localities through which it passed from its sources at Hampstead to Bridewell Dock. Ben Jonson gives us a highly-circumstantial description of the river into whose filth Pope bids the votaries of Dulness to dive, and which he apostrophises in his "Dunciad" as:—

"The King of Dykes! than whom no sluice of mud
With deeper sable blots the silver flood."

Within living memory portions remained exposed at Kentish Town, Bagnigge Wells-road, Coldbath-fields, and Field-lane of this once fair stream, navigable for barges and coal-ships to Holborn. The ditch between Holborn and Fleet Bridges was arched over in the year 1735, and the Stocks Market, removed from the site of the modern Mansion House, erected thereon. The watch-house for St. Bride's parish then stood on an arch across what Maitland terms the muddy and genuine ditch; the part southwards from Wilkes's obelisk at the north end of New Bridge-street continued open until the building, thirty years later, of Chatham-place and Mylne's Blackfriars Bridge.*

On entering office the Metropolitan Board of Works found that about one-fifth of the then existing 165 miles of sewers were uncovered noisome drains, and that much of the others were of defective design and in bad repair. They spent nearly three-quarters of a million of money in reconstructing many of these and fitting them for connexion with their new system. With authority to raise loans and to levy a rate of 3d. in the pound upon extra-municipal property, the Board were soon in a position to begin their greatest scheme,—the main drainage works of the high, middle, and low levels in the north, and of the high and low levels in the south of the Metropolitan area, after the plans of Sir (then Mr.) Joseph W. Bazalgette. In a little pamphlet drawn up by Mr. J. E. Wakefield, clerk of the Board, this system is stated to comprise upwards of eighty miles of main intercepting sewers of various dimensions, ranging up to 11 ft. 6 in. diameter, with four pumping stations, two on the north bank and two on the south bank of the Thames, to raise the sewage from the lower levels. The total sum expended upon the new works for intercepting the sewage from the river within Metropolitan limits, and the reconstruction of the main sewers, is about five and a half millions sterling.

The embankment of the Thames is no new project. Sir Christopher Wren, borrowing the idea from Sir John Kiviett, embodied it in his plan for rebuilding the City immediately after the Great Fire. Just one hundred years afterwards the Corporation embanked a mile of the northern foreshore on each side of the Steel-yard, but nothing further was done, though Sir F. French, in the year 1824, the Duke of Newcastle in 1844, and John Martin, the painter, in 1858, warmly recommended the advisability of the work. In 1860 the Board took the matter in hand. On the 7th of August, 1862, an Act passed for "embanking the north side of the Thames from Westminster Bridge to Blackfriars Bridge, and for making new streets in and near thereto." Three months later the river wall was begun. The southern or Albert Embankment was the first to be completed (in 1869), the Victoria Embankment was finished in 1870, the Chelsea Embankment four years later. By these means as much as fifty-two acres and a half are reclaimed from the tidal way. In the meanwhile the Board were employed in the laying-out of new streets through crowded districts, in widening, straightening, or lengthening others. Of the new thoroughfare the more important are Garrick-street, Covent-garden (1861), Burdett-road from Limehouse and Stepney to Victoria Park (1862), Southwark-street (1864), Queen Victoria-street (1871), Appold-street, Shoreditch (1879), and Northumberland-avenue (1876). The tortuous lines of communication between Hart-street, Bloomsbury, and the remote eastern parts of London, were opened up into the new thoroughfares of Theobalds-road (1878), Clerkenwell-road (1878), Great Eastern-street (1876), and Bethnal Green-road (1879). For the fresh thoroughfares many valuable relics of "Old London" were sacrificed. Though it is not to them we would now direct attention, we may pause a moment to recall what we have irrecoverably lost in the neighbourhood of Clerkenwell, and to think how ill-exchanged for Northumberland House are the two monster hotels at Charing-cross. A sum considerably exceeding ten millions sterling was required to meet the cost of these alterations together with the embankment of the Thames. To this must be added a further charge of 1,200,000*l.* contributed to minor street improvements, including the several changes involved by the completion between Trinity-square and Eastcheap of the "Inner Circle" by the Metropolitan and Metropolitan District Railways. In giving us new streets the Board have not been unmindful of the wants of the poorer classes for new dwellings on the one hand, and breathing space on the other. Fourteen areas in different parts of London were, or shortly will be, cleared of the unhealthy homes pronounced to be unfit for human occupation hitherto covering them. Those areas are devoted to the erection thereon of more suitable habitations for them that stood in so sore a need. The occupants themselves are provided with two new recreation-grounds, one of 113 acres in the north, the other of sixty-three acres in the south-east,—Finsbury and Southwark Parks. Moreover, the Board are in freehold possession of an aggregate of very nearly 1,600 acres of common land which they secured permanently for public uses by, in most cases, purchasing the rights of the lords of the manors and other parties interested. The largest, and by no means entirely despoiled of the picturesque, are Clapham Common (220 acres), Wormwood or Wormholt Scrubbs (194 acres), Tooting Common and Tooting Bec (207 acres), Blackheath (267 acres), Hampstead Heath (240 acres), London Fields, Hackney Downs, &c. (180 acres); the smallest, Eel-brook Common, Parson's Green, Brook Green, Hammersmith (21 acres), and Shepherd's-bush (8 acres).

The Board's most popular enterprises perhaps, since they immediately appeal directly to our pockets and our apprehension for personal safety, are their freeing of the bridges and organisation of the Fire Brigade. The earliest mechanical contrivances for extinguishing fires were the syringes or squirts—the "engines" of Dryden's "Annus Mirabilis,"—

"Now streets grow throng'd, and busy as by day:
Some run for buckets to the hallow'd quire;
Some cut the pipes, and some the engines play,
And some more bold mount ladders to the fire,"

with which, as with other material, all parishes furnished themselves by order of the corporation in 1668, when a Fire Police was first established. To the "hand-squirts of brass," enumerated in the order there soon succeeded engines fitted with leathern pipes. A patent was taken out for the latter in 1676, and about 1720 two Germans had a manufactory at Bethnal-green of water-tight seamless hose.* In the year 1798 the Fire-watch of London was formed; at the beginning of the current century Sir F. M. Eden, chairman of the Globe Insurance Office, made an unsuccessful endeavour to found a general fire establishment. For all practical purposes the insurance offices were our chief protectors against the common foe, each keeping its own firemen, in liveries with silver badges, and plant.† About the year 1825 the Sun, Union, and Royal Exchange offices started a fire brigade, which was subsequently subsidised by the Atlas and Phœnix. Nearly every office belonged to the remodelled "London Fire Establishment," that took charge in 1833. Braidwood was its chief officer when he lost his life in the great fire at Tooley-street some years since. When the Board assumed office the Brigade numbered ninety-six men, with thirty-seven engines. In 1866 the insurance offices handed their establishment over to them: it now numbers about 580 men, with 130 engines of various kinds. W. Braithwaite first publicly applied steam-power to the working of a fire-engine at the burning of the then Argyll Rooms, in Little Argyll-street, 1830. The freeing of all the bridges across the Thames upon which tolls were levied was effected at an outlay of almost one million and a half sterling.

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* In pursuance of the Metropolis Local Management Act, 18 & 19 Vict., cap. 120 (1855), amended in 1862. The late Sir John Thwaites was elected first chairman, 22nd December, 1855.

† As a matter of fact, much of Lambeth and Westminster lies below this level; the door-step of Jack Straw's Castle, Hampstead Heath, is said to be even with the cross of St. Paul's.

‡ The first sewer in Chancery-lane was made by the Lord-Keeper Guildford, *temp.* Charles II.

* See the view in Hone's "Table Book," No. iii., of the walls of Coldbath Fields Prison, 1825; and those numbered 2,378/9, 2,382, 2,386/7, in the Crace Collection, British Museum.

* Timbs's "Curiosities of London." See also the various appliances delineated in one of Hogarth's satirical prints; and Gay's "Trivia," b. iii.

† The Phœnix, opened 1682 at "The Rainbow," in Fleet-street, was the first fire-office; next in age were the Friendly Society (1684), the Hand-in-Hand (1696), the Sun, by Charles Povey (1706), &c.

Hammersmith Suspension-bridge, opened in 1827, and the two wooden bridges at Battersea and Putney are to be rebuilt on a more lasting and commodious scale. The extent of the Board's financial operations can be gathered from the fact that whereas in 1861 they received what was considered the vast capital of about a million pounds, and spent 960,000*l.*, it appears their Three and a Half and Three per Cent. Stocks now exceed a total of twenty-one millions. During the interval 1861-69 they borrowed at comparatively high rates in the open market, but for schemes of unusual magnitude, such as, for example, the main drainage, the payment of principal and interest was guaranteed by Government. The Board's Loan Act of 1869 authorised the creation of a Metropolitan Consolidated Stock, originally issued at 3½ per cent., redeemable in sixty years. Moreover a total sum of more than eleven and a half millions has been devoted by the several vestries and district boards since 1856 upon new sewers (about 1,000 miles in length), paving (calculated as equal to 12,000,000 square yards), together with kindred improvements and sanitary reforms.

ARCHITECTURE AT THE ROYAL ACADEMY.

WE have so often complained of the repetition of the same kind of design and drawing year after year in the Architectural Room at the Royal Academy, that it is gratifying to be able to note this year some things of original interest, and having a special merit of their own, apart from mere neat drawing of buildings in a fashionable style. Some items in the collection which on this account deserve more detailed mention than the rest we will select first. Of these, one of the most important is Mr. Holiday's design for a stained-glass window to be placed in St. Margaret's Church, Westminster, by the members of the House of Commons, in memory of Lord Frederick Cavendish. The memorialists have gone to the right man in Mr. Holiday, whose design is represented in three drawings, numbered 1,138, 1,140, and 1,169. Of these, the second named is a coloured drawing, on a small scale, of the whole design, and Nos. 1,138 and 1,169 are cartoons in black and white giving the full-size design of the figures (nearly life-size) in two of the principal compartments. The subject of the window includes four larger compartments, representing four scenes in the Passion of Christ, —the Agony in the Garden, Christ ordered to take up His Cross, Christ bearing the Cross, and the Entombment. The Crucifixion is omitted intentionally, and for some not quite apparent reason, we may suppose. These subjects form the upper portion of the main lights of the window, and four smaller subjects, not all quite easily made out on the small scale of the drawing, form a kind of *predella* beneath. Under each subject is an open book, exhibiting a brief passage of Scripture (some of these also are not quite decipherable in the drawing) giving the key to the subject, these mimic books being in the midst of bands of decorative foliage running under each set of subjects. The two subjects drawn full size are "The Agony of Christ" and "The Man of Sorrows," the two first of the subjects shown in the general drawing. This is work far superior to what is generally to be seen in stained-glass design put forth by this or that "firm"; it is the work of an individual artist of considerable powers, and thoroughly trained in figure-drawing. No. 1,169, in particular, is a very fine design: the figure of Christ, seated, and looking upward, is very pathetic, the figure of "the angel from Heaven strengthening him," is fine in conception and attitude; above and behind him appears a second angel, covering his eyes with his hands; the two fill up the space above the principal figure in a manner consonant with the demands both of expression and of decorative effect. The small drawing of the whole design shows a rich and harmonious scheme of colour. It is satisfactory to find that the memorial, so entirely worthy as a matter of feeling, is to be made worthy of the occasion in an artistic point of view also.

A study for a church window, No. 1,174, a small coloured drawing, by Mr. James West, is also a good drawing, more free and less conventional than many stained glass designs that are produced, but which, we fear, must be mentioned partly because it illustrates the entire absence of that serious and pathetic feeling which is conspicuous in Mr. Holiday's window, and which is what really justifies the claim of a design of this kind to be called religious art, far more than any quasi-Mediæval stiffness of drawing. Here is a design put forth as for "a church window," great portion of which is occupied by the most frivolous follies of late Renaissance ornament, masks, ribbons, and festoons; things silly, unsuitable, and unmeaning in themselves, and in this case not even original, but mere copies of the weaknesses of a school of decorative design at present in fashion. The designs by Mr. Frampton for "A Thanksgiving Window, St. Paul's, New Beckenham, Kent," and for "East Window, Ings Church, Westmoreland" (1,131, 1,132) have a certain freedom in drawing, but are not very refined in colour, and the latter, at least, is too pictorial in style for stained glass. A design by Mr. Henry Hughes for an "East Window for St. Mary-le-Bow Church" (1,239), representing the Presentation in the Temple, looks like a translation into stained glass of a sacred subject from the works of some one of the earlier Italian painters, who were so addicted to representing such subjects in the midst of an architectural framing; here the architectural framework is treated decoratively in a manner suitable to stained glass, but it is rather heavy in design and too yellow in colour; the broad band of ornament of a Renaissance character running all round the window is a good and effective point in the design.

Mr. James Brooks's "Church of St. Peter, St. Leonard's-on-the-Sea," is apparently a brick church, shown in two large perspective drawings executed in pen and ink (1,153, 1,157), and is a very picturesque and powerful design. It is mainly founded, in its details, on Early English Gothic, so far at least as the treatment of the windows can characterise it. The east end is flanked by plain buttresses placed rectangularly, but which are corbelled out above into octagonal turrets, in a very picturesque and effective manner. The transepts are accentuated by massive square turrets, with an arcaded upper stage above the eaves; and the central feature is a saddleback tower, from the centre of the ridge of which rises an octagonal lantern and spirelet. The whole makes, particularly as seen from the east end, a remarkably picturesque group. A view of it will be found in our present number. Mr. J. L. Pearson's "St. Stephen's, Bournemouth" (1,161), is another specimen of early Gothic features treated in an original and effective manner; the spire is sternly plain, unbroken by any projecting feature in its whole height, but rising from amid a group of eight pinnacles at the base, those at the angles being pushed out to the angle of the tower, and connected with the face of the spire by a solid coped backing, no such toys as flying buttresses being admitted into this solid and plain architecture. There is some originality in the treatment of the west window and its contiguous features, which can, however, hardly be described apart from the drawing. Mr. Ernest George's "Church at Tarasp, Engadine, Switzerland" (1,192), is a remarkable little building, obviously designed to fulfil the character of a church among the mountains. It is a low, very solid building, with massive stone walls, small windows, and a single roof with heavy overhanging eaves; a square porch, the roof carried on wooden balusters with open spaces between, breaks the line of the wall, and a low massive square tower, further eastward, rises from the south side of the nave, ending in a saddle-back roof and octagon lantern; the whole exterior is perfectly plain and unpretending; the tower appears to blend, at its base, with the rock from which it rises; the whole expresses simplicity combined with solidity, and has a marked character suitable to its situation. Mr. Cubitt's "Church of the Redeemer, Edgbaston" (1,214), though not unexceptionable in point of taste, has some claim to originality; it is a transept church with three octagonal apses at the east end, very solid in its masses of walls and buttresses, but this character seems to be gained at the expense of light, for the windows must certainly be too small for practical purposes, unless the promoters wish for a very dim religious light indeed; the crossing is crowned by a large octagonal tower, which, unless we are deceived (the drawing is hung rather high), is built with a slight inward slope or batter as it rises,—an effect certainly novel, though not very pleasing to the eye at present unaccustomed to it; but one ought not to discourage experiments in effect if they lead to a little chance o variety of architectural expression. Mr. J. O. Scott's "New Church of St. John the Baptist, Norwich" (1,137), is placed quite too high to see, except that it is apparently of Transitional Gothic character, with heavy cylindrical piers; we praise the author for having sent geometrical drawings (north elevation and longitudinal section), which we have always urged ought to be more represented in the architectural room, instead of the continual array of perspectives; but if the result of this is that the geometrical drawings are skied, this is certainly no encouragement "pour les autres."

The water-colour drawing, representing the new fittings at St. Peter's, Vere-street (1,142), designed by Mr. J. K. Colling, is an effective illustration of some very good modern woodwork, in which a certain degree of Gothic richness and piquancy of detail is infused into forms mainly Classic in type; the lectern, with its elaborately-carved shaft supporting the desk, is a very pretty piece of work. A view of the interior will be found in a previous volume. Mr. Aitchison's decorative designs form, as usual, interesting items in the collection. Nos. 1,145 and 1,146 represent respectively designs for a bookcase and a morning-room at 9, Chesterfield-gardens. The book-case is Classic in style, with red fluted columns between the bays, a duller red dado, with panels painted in arabesques in low grey-green tones; the frieze is decorated with more delicate arabesques, white on a red ground. The architectural portions in No. 1,146 show the same prevailing tones, the fireplace and its adjuncts being relieved against a surface of delicate buff arabesques on a dark ground; the wall generally is a diaper of light red, considerably brighter than the other reds used. No. 1,185 is the decoration of a dining-room at 1, Grosvenor-crescent, simple in the extreme, the dado and doors being formed of a dark wood (apparently natural colour or only varnished,—at least, the effect of grained wood seems intended in the drawing), with arabesques on a darker ground in the door panels; a flowered paper of delicate grey and buff tones covers the wall. There is nothing remarkable or pretending to much in any of these little coloured drawings of decorative schemes, except the good taste and freedom from anything showy or too pronounced which characterises them all. Other drawings showing schemes of decoration are "Design for the Decoration of a Municipal Hall" (1,238), by Mr. Page Turner, and "Decorative Arrangement of the New Library, Warwick Castle" (1,228), by Mr. G. E. Fox. The latter shows much arrangement of arabesque ornament in gilding on a deep blue ground, which may, we suppose, please some people, or it would not be done, but which looks very crude in effect.

Mr. Waterhouse exhibits a drawing of "Owens College, Manchester: proposed Extension, including Museums and principal Entrance Gateway" (1,156). The drawing does not show precisely what the new additions are; the style is one which may be called Mr. Waterhouse's adaptation of Gothic, the general effect of which we are familiar with in other buildings. A competition "Design for the Victor Emanuel Memorial," embodying a proposed rebuilding of the Pons Sublicius, at Rome (1,176), by Mr. Daniel Brade, claims mention on account of its subject. It is a side elevation of the bridge, the lower or constructional portion treated as rusticated work in a very massive style, the upper portion covered with a roof supported on an open colonnade, with an open attic raised upon it in the centre portion. At each end of the bridge is a massive and ornate triumphal arch giving access to it, and forming a heavy termination, or *appui*, at either end of the colonnade. It is difficult precisely to estimate the effect, without a section to show width and proportion. The design is certainly not remarkable, though it is in good taste, and not unsuitable as an architectural treatment of a bridge. Mr. Waterhouse's "Turner Memorial, Dingle Head, near Liverpool" (1,191) is a perspective view of a proposed new hospital or "Home of Rest for Chronic Sufferers," a picturesque and homelike-looking building, with a circular tower and spirelet rising effectively above the roofs. Mr. Robson's "A London School" (1,207) is decidedly interesting, though rather odd. The school windows on the main floor are pointed, and with Gothic finials to the hood-moulds, running through the string above the windows, and blossoming on the upper side of it; but the windows are separated by rusticated pilasters

the space below each window again being occupied by a small pointed wall arcade; all this obviously in brickwork. It looks like an attempt to draw together features from various styles into one typical "school" style; the result is suggestive and picturesque, but rather a medley, especially as the less important parts of the building are treated in a very plain and purely practical manner. Mr. Aitchison's "Royal Exchange Assurance, 29, Pall Mall" (1,220), is an example, on the contrary, of remarkably homogeneous design, in which the same character is kept up through every detail, and the design appears as a whole, not as a set of parts thrown together in a search after "the picturesque." It is a brick building of more Elizabethan than any other type, with baluster-shaped decorative shafts between mullioned windows; the front is broken by projecting balconies on the third floor which hardly seem sufficiently supported, and the gable at the top is somewhat licentious and *rococo* in outline and detail; but the effect of the whole is good, and, at any rate, as we observed, homogeneous. We are led to insist on that latter quality, in regard to the ridiculously patched-up appearance of some designs exhibited (if that can be called "design" which seems to aim at appearing purely accidental), such as the sham antique collection of buildings called "Harrington-gardens" (1,201), with the names of architects one of whom at least ought to know better. Old streets do occasionally assume this kind of appearance of pieces of buildings in ever so many different manners all huddled together, and they have a picturesque suggestiveness then; but to go about to make this kind of thing deliberately is child's play. Mr. Wimperis's "Business Premises about to be erected in Mayfair" (1,224) is worth notice as showing the attempt to conform sufficiently to the present fashionable style in respect of details, while giving the building a certain breadth of treatment in its leading features. The ground story is boldly treated, with rather deeply-recessed round-arched windows between pilasters; the second and third floor windows are grouped within round-headed wall-arcading running through two stories. We welcome any symptoms of a leaning to something like order and symmetry in architectural design, as a practical protest against the present fashion of studied irregularity in house-building. Another instance is furnished by Mr. Robson's very pretty and tasteful little building, called "A Gentleman's Cottage" (1,163), which is exactly the idea conveyed by the design,—a gentleman's, as distinguished from a rustic's, cottage. This is a plain parallelogram in plan, the lower story treated with great simplicity, with square-headed windows in a plain wall, and above the string course, over these windows, the construction is half-timber, making a kind of frieze effect under the eaves; the building is simple but effective, refined but unpretentious. A pretty and picturesque house is that shown by Mr. Oakley, "Residence at Robertsbridge" (1,234), which, though plain and homelike, is treated with a certain variety of incident,—a plain, open loggia at one angle; the bay going down to a lower level than the rest, and carried on an open arcade; the chimney placed so as to strengthen and accentuate the meeting angle of the two portions of the house. A house of larger class, "Newton Surmaville, Yeovil" (1,199), has a certain character, derived from the alternation of projecting masses of blank wall (containing the fire-breasts and flues) with recessed walls pierced with large mullioned windows. Mr. Norman Shaw sends two drawings, one of a house (1,124), of which we should merely say that it represents the usual fine drawing and the usual style of house we are accustomed to see from his pencil, in which heavy brick walls with a conglomeration of odds and ends of Jacobean or Queen Anne detail rest, or appear to rest, on wooden window-frames, with other such pieces of architectural logic, for which brilliant drawing does not atone, and which will raise the surprise and the criticism of future generations; his other drawing is "A Chimney-piece in the Picture Gallery, Cragside" (1,197), showing an immense stone chimney-breast, segmental or elliptical on plan, projecting into the room, covered with Jacobean ornament, bands, wreaths, and Cupids, very effectively arranged and drawn, supported on a pilaster and column on each side, much entasised. This is a most effective drawing.

The elevations of the new Glasgow Municipal Buildings are sent by Mr. Young (1,204, 1,216); but considering the scale and importance of the building, they present remarkably little for comment; they represent Classic architecture of a sufficiently dignified, but in the main very ordinary, type, affording no new feature for remark. It is impossible to think that very much has been made of a fine opportunity in this case. Mr. Sydney Vacher sends two elevations of a "Design for Middlesbrough Town Hall" (1,167), which presents the peculiarity (as one must now consider it) of being in nearly pure Gothic style (Early Decorated type); it is rather thin and weak in character; the author is to be commended for accompanying his elevations by two plans. The "Sketches of various Houses at Bedford Park," by Mr. May (1,123), represent pretty but somewhat gimcrack house architecture; the "Mission House, Guernsey" (1,121), by Messrs. Notley & Trollope, is simply building, not architecture. Mr. Edis seems to have managed to put a rather effective little addition to a very ordinary type of house, in his "Entrance Front, West Woodhay House" (1,134), where a new brick gable, with some decorative stone carving, and a picturesque lantern and spirelet above, are added to a house of the ordinary square-window and angle-quoins class. Mr. Ernest George sends a drawing giving a view of a yacht's cabin as designed by him: in these days of luxury there seems such a desire to make the interior of a ship's cabin like the interior of the most comfortable of houses, that there is hardly scope left for any of the special character which might be imparted to a ship's cabin, nor is such character visible here; it is a tastefully furnished room, the perspective effect of which conveys the idea that it is too large to belong to any but a yacht of colossal dimensions. Mr. Macartney's "Ingle Nook, Holmbrook, Cumberland" (1,170), is a nice bit of interior; the same kind of architectural incident in a more elaborate form is shown in Messrs. Belcher's "Curriers' Hall, as Rebuilt" (1,221). Mr. Aitchison's "Design for Roof over the Quadrangle, Royal Exchange" (1,166), is simple enough, but shows the attempt to treat an iron girder roof, with glass interspaces, in a suitable and effective manner. Mr. E. W. Poley's "Hall and Staircase" (1,173), is a very elaborate pen-drawing of an interior, with a profusion of decorative detail, producing a rich effect, and with some very good points in detail (treatment of the stair balusters, for instance); but, then, we want colour really to judge of such a design. "The Hall, Nether Court" (122), is an interior not remarkable in detail, but the drawing is a most successful one in effect. A perspective drawing of the new "City of London School" (1,136) is exhibited by the architects, Messrs. Davis & Emmanuel; this design we commented on at the time of the competition. The building as carried out is a very effective and suitable one. Mr. Brewer's design for an organ to be placed between the nave and chancel of a parish church (1,210),—one of the best drawings in the room,—has been reproduced in our pages. Among drawings of existing buildings may be named "The Beauchamp Chapel, Warwick" (1,122), by Mr. F. W. Richardson; "The Norman Porch at Canterbury" (1,187), by Mr. Addison; and "A Street in Viterbo" (1,240), with round and segmental arches flying every way in picturesque confusion, by Mr. J. H. Ince.

An interesting piece of decorative design is the coloured drawing of two pastoral staves, for the bishoprics of Bath and Wells and St. David's respectively, designed by Mr. J. D. Sedding (1,175). These are purely Mediæval imitations, but they are exceedingly well done, and show a thorough knowledge of the class of work. That for Bath and Wells shows the late form of staff, in which the original "knop" had developed into a kind of miniature shrine, with little niches and figures; the crook is crocketed on the outer edge, and ornamented with alternate crystals and gold bands with surface ornament. The St. David's crook represents an earlier form, with the knop in its original shape; the crook is ornamented with a series of niches with small figures in gold, and separated by gems; the crook ends in a serpent's head (a common feature in the Mediæval crooks), and encloses in its circle a little sculptured group in ivory of the Annunciation. These are very well drawn and designed, and in the true spirit of Mediæval work, which the designer appears to have thoroughly studied.

The authorities appear to have been bent on curtailing the number of architectural drawings, the place usually occupied by a portion of such drawings being occupied by miniatures, &c., which have generally been put upon screens in the middle of the room (now dispensed with). If this has curtailed some of the eternal repetitions of the same class of house, &c., we do not regret it. The Architectural Room at the Academy is never, to our thinking, a satisfactory branch of the exhibition, inasmuch as it stands on a different footing from the rest of the exhibition; the pictures and sculpture being themselves the actual end and aim of the artist, the architectural drawings being only a representation of architecture, and not the thing itself. For this, as well as other reasons, there would be likely to be a more satisfactory architectural exhibition if there were a separate collection elsewhere. It is true that the original Architectural Exhibition failed, but public taste is much advanced in regard to the subject now, or public interest at least. In a purely architectural exhibition there might be more of scientific architecture and less of mere picture-making, which in the Academy seems always to be favoured. How little some of the exhibitors have to do with their own drawings is amusingly shown in Nos. 1,129, 1,130, representing different buildings in different places, and with the names of two separate architects, but so obviously drawn by the same hand that they have been hung, perhaps in a spirit of gentle satire, next to each other. There ought to be far more of personal and less of proxy work in the Architectural Room

NEW PARISH CHURCH AT HAMMERSMITH.

VISIT OF THE ARCHITECTURAL ASSOCIATION.

On Saturday last the members of the Architectural Association paid a visit to the works in progress at the above church, where they were received by Mr. Hugh Roumieu Gough, of Queen Anne's-gate, S.W., joint architect of the church with Mr. J. P. Seddon, who was also present. Mr. Gough gave information respecting the various materials being employed, and exhibited numerous working drawings. Mr. Gough, in the course of his remarks, explained that the object he had in view was to produce a noble, dignified, and substantial building at a moderate cost; and in order to attain this end, he had spent much time in visiting quarries at home and abroad, selecting such materials as were moderate in cost and of sound and durable character. How far he had succeeded might be judged by the fact that the beautiful marble clustered columns, with their richly-moulded caps and bases, which he had obtained from Belgium, were costing less than Portland stone; that in granite, the use of which was originally contemplated, the cost, at the lowest estimate he could obtain, would have been 4,200*l*., whereas the price for the same work in this marble, which is very similar to Purbeck, was only 940*l*. The red Mansfield wall-stones of the exterior, and the brown Ancaster of the interior, both from Mr. Lindley's quarries, were being supplied at a less cost than Kentish rag-stone, the appearance of both being, to his mind, far superior. Blue Bath stone, slightly harder than that of the ordinary colour, is used for the arch-moulds of nave arcade and chancel arch. The materials and workmanship, no less than the good proportions, which were stated to nearly correspond with those of Tintern Abbey, were much admired. Mr. Gough, in his subsequent remarks whilst taking the members over the works, expressed himself as greatly pleased with the careful and painstaking manner in which the contractors, Messrs. Chamberlain Bros., of Hammersmith, were carrying out the work. The portion of the church now being erected will be completed by the end of September, and it is then hoped that the chancel and a portion of the tower will be proceeded with.

Mr. Seddon, in the course of a few observations, gave credit to his colleague in the work for the attention which he had given to the question of materials.

Before inspecting the new church, the visitors glanced at the interior of the old building and its monuments, of which we gave some particulars a few weeks ago.* Some further details of the new church will be found in our last volume, accompanied by interior and exterior views, plans, and sections.†

* *Builder*, p. 373, *ante*.
† Vol. xliii., p. 718, 721, 727. (Dec. 2, 1882.)

REGULARITY AND IRREGULARITY.

OPPOSED as these qualities seem to be they constantly appear associated in the same natural objects. The constellations of heaven, although each member of them is illustrated by science as controlled under the most regular laws, are interspersed through space in no order that we can discriminate. The surface of the earth, which in general form is the regular result of the laws of gravitation and motion, is most irregular in detail, and its oceans and continents appear disposed without regard to any plan of symmetry. And even in our own form, regular in parity as are the two sides of the frame, anatomy exhibits the organs of life which support its existence adjusted in unexpected irregularity. Thus in nature are these apparently opposite qualities interwoven with the most complete results, and in art, as an imitation of nature, a similar consequence may be anticipated, and the following remarks are addressed in that direction.

Thus, in the contemplation of the productions of painting, although a due balance of forms and colours, and light and shade, is one of the great elements of success and satisfaction, it may be recognised that if this be strained to the point of formality it is anything but pleasing, while, on the other hand, it must be acknowledged that among the greatest triumphs of this art are some in which the opposite sides of the picture are the most diverse. Notwithstanding, however, such instances, it must be accepted that a certain regularity in the general composition of a picture tends to great dignity, as may be well noted in those four grand achievements by Raffaelle, of the Dispute on the Sacrament, the Judgment on Ananias, the group of the Madonna di San Sisto at Dresden, and his last noble work, the Transfiguration. In each of these, however, the general arrangement, which is regular, is most felicitously relieved by a studied, although perfectly easy, variety of details, as exhibited in the diversity of the individual figures, of the light and shade, and of the colour.

In sculpture also, while the utmost symmetry of form and feature is essential to beauty, much variety in the disposition of the limbs is requisite for grace, as may be seen illustrated in the most approved statues of ancient and modern art. So much does the agreeable in action or in repose demand variety in the composition of a figure, that if the one arm of a statue is outstretched, it is the leg on the opposite side which most suitably partakes of a similar character of action, as illustrated, for instance, in the father in the group of the Laocoon, and also in the Belvedere Apollo. To this rule, however, are to be found exceptions adopted for some special object, as in the Warrior of Agasias, wherein grace is sacrificed to vigour, and the arm and the leg on the same side are both outstretched. Still more does grace require that corresponding limbs, as the two arms and legs, should be in positions differing from each other, as may be recognised almost without exception in the standard works of Greek, Roman, and modern times. It is, indeed, in great measure, the absence of this variety in the action of corresponding limbs which renders the sculpture of ancient Egypt so rigid and lifeless, and, whatever may be the impressive effect of its statues in other respects, deprives them of grace.

In turning to the sister art of architecture, although symmetry in any edifice is essential to the attainment of a high-class of beauty, it appears extremely conducive to its most attractive effect that this should be relieved and enhanced by an ingenious fancy in the diversity of its parts; or, in other words, that regularity and irregularity should both be present, not only in outline, but in light and shade, and colour, and also in variety of decoration both on the exterior of, and within, the structure.

Similar considerations may in degree be held to apply to the situation and *entourage* of a fine work of architecture. The famed temple of the Parthenon was an example of the most beautiful and refined regularity of intrinsic structural forms and general effect, yet nothing could be more irregular than the situation selected for it, or than the mode in which this exquisite production of Greek building and the other associated edifices were grouped on the rock of the Acropolis. As a community of structures clustered on a height overlooking a wide plain, much as Windsor and Stirling Castles do over the flat extents around them, so did the chief home of Athenian worship dominate over the city beneath, and the vale up to the Pentelic range on the one side, and the waves of the Ægean on the other, and thus was welcomed from afar by the returning mariner. From this seaward view this marble-crowned eminence must have appeared brilliant and beautiful in the extreme; but little regularity could have been recognised in its general contour of precipitous cliff, sloping approach, and scattered buildings culminating in the splendid group on the summit. Neither could it have been otherwise from any point in the valley beneath and around; and yet its diadem of architecture was composed of individual gems of perfect regularity, and each shrine and sanctuary possessed its special glory of symmetry, while, as an assemblage, they were grouped together in a variety ever changing in each fresh view.

There is another class of architecture, very diverse from the Greek, which still more invites these remarks, namely, the Gothic. This style, while equally with other fashions of structural art, it exacts the presence of regularity and precision in many of its portions and details, yet appears more than the rest to admit irregularity and even eccentricity as ingredients fertile in that picturesqueness which is so characteristic of its best efforts. Indeed, Gothic structure seems to rejoice to meet with unexpected difficulties, and to gird itself up with exultation to deal with obstacles, and to triumph over them; out of the contest with which not uncommonly arise effects which are among its most delightful achievements. So often is this the case that a great latitude seems to be accorded to this style of architecture insomuch that a corresponding parity of double parts appears scarcely expected, and, indeed, is occasionally in design purposely avoided.

Also in architecture of kinds more grave and solid, although the contours of double parts are required to be more in unison and to more strictly correspond, yet this ceases to be essential in respect to plan. Indeed, in many cases it yields satisfaction that it should not be so, but that, even when uniformity is adhered to in the exterior of an edifice, the interior should be varied in this respect, not only for the purpose of being in conformity with the uses of the structure, but also as conducive to the best artistic effects and as relieving the sense from the feeling of monotony and repetition.

Also, in the grouping together of edifices, a most agreeable diversity may be regarded occasionally as the outcome of accident, as, for instance, in the chance irregularity of the plan of an old city, wherein shapely buildings arising among hovels and the confusion of ruins, may have their symmetry greatly enhanced by such picturesque contrast. Threading our way through some tortuous alley or by-path, all at once we come in view of some unexpected triumph of architecture, which delights our senses the more because of the surprise and of the haphazard appearance of all the objects around it; and herein the meeting of the two opposites, regularity and irregularity, produces a startling interest and pleasing excitement which either quality by itself would fail to produce.

Too great a regularity of plan is apt to breed monotony, and to be thus less favourable to the production of pleasant effects than great irregularity, for the occurrence of picturesque views in a town is frequently the direct result of what may be called chance in its first laying out, arising from circumstances beyond control. These may either be the variety of level of its site, or its having to accommodate itself to the windings of a river on whose banks it arises. Or it may even be that the first footsteps of a wayfarer long ago across a former wilderness, from becoming afterwards a beaten track and accepted path, may have originated the highway which has now become the main avenue through the heart of a populous town, the arrangement of which fortune may thus have disposed more picturesquely than if it had been originally laid out by civic consultation and the line and rule of a practical surveyor.

It may be recognised, indeed, that it is by the working together of these two opposing qualities, irregularity and regularity, that the most varied and charming urban effects have been produced, and therefore no scheme in this respect can be less promising than the "gridiron" conception of plotting out a nascent town which has been somewhat too prevalent with our cousins over the western waves, in which all the streets are laid out in straight lines meeting at right angles, and indicated by a nomenclature equally monotonous and prosaic.

Decoration is under similar conditions with her sisters, her happiest effects being those which arise from a combination of the two opposite qualities in question, with, however, some modification, there being some details of decoration which are essentially those of much repetition, as is the case in those of the egg-and-tongue and other ornamental mouldings, and in the many frets and borders which, by their continued correspondence throughout, bind together the architecture and connect the labours of the other arts. Indeed, by such repetition they enhance by the opposite element the variety which is expected from their productions, especially those of painting and sculpture. Indeed, the province of decoration may be divided into two sections, in one of which repetition is a main element, and in the other as much variety is welcomed as in the works of the sister arts, as is especially the case with that department of the ornamental art which has received the name of Arabesque, among the ingredients of which variety is as agreeable as in painting and sculpture. In fact, in this province the art of decoration merges into the others, and truly indeed it may be noted that, although distinct in the centres of their fields, the margins of all the fine arts are blended together more like those of the colours of the rainbow than divided by any positive line of demarcation. Also it may be observed, in respect to decoration generally, that even in the most rigid and conventional portions, as in the mouldings, it bespeaks barrenness of resource if a moulding be exactly repeated in any one face or aspect of a building inside or out; so that in every point of view we are conducted back again to the happy effects springing from the combination of regularity and irregularity.

In these imperfect comments we have but slightly touched upon this two-fold principle, which appears to pervade all the arrangements of nature. It is, however, readily to be recognised as the cause, or at least as the companion, of her most charming effects; and art, in following her great prototype, may well benefit by noting the various ways in which these are produced.

AN ANCIENT GREEK BRONZE HORSE.

THE Greek paper *Parnassos* states that recently, as some Æginetan fishermen were fishing for sponges, near Delos, they came upon an ancient bronze horse at the bottom of the sea, about two fathoms and a half deep. It is of colossal size, and is almost covered with shell-fish. After much effort the fishermen succeeded in breaking off one of the feet of the horse, and took it home to Ægina, where they offered it for sale. The matter came to the knowledge of one or two archæologists, who purchased the equine bronze foot. This they found to be of excellent workmanship, and it appears clearly to indicate that the equestrian statue is a valuable relic of antiquity. It has accordingly been determined to endeavour to discover the whereabouts of the horse, and to fish it up, if possible, entire. It is suspected that the statue is probably an ancient votive offering, which was once set up in the island of Delos. The interest felt in the matter is all the greater as, if the work is recovered, it will be the first bronze horse of a large size which has been preserved since the classical age of ancient Greek art. There are very few equestrian statues preserved from ancient times, and hardly one which can be demonstrated to be of Greek origin.

A Locomotive for Tramways.—At a meeting of the Liverpool Engineering Society, on the 25th ult., Mr. H. Bramall, president, in the chair, a paper, entitled "A New Tramway Locomotive," was read by Mr. William Wilkinson, of Wigan, the patentee. The author dealt with the comparative merits of the two classes of locomotives, — air-condensing and water-condensing,—hitherto in use for tramway purposes, and then proceeded to give a general description of the Wilkinson tramway engine, pointing out the principal characteristics of the same, in which the steam, instead of being condensed, is highly superheated, and thereby rendered invisible on its emission into the atmosphere; and he also called particular attention to the capabilities of this engine for ascending very steep gradients, giving, as instances, an incline of 1 in 11½ now being worked by this engine in the town of Huddersfield, and another of 1 in 13,—883 yards in length,—in the town of Nottingham.

THE CONTINENTAL SUNDAY.

THE exhibition season has set in with its usual severity, and with it, we must for some weeks yet to come, daily listen, both in society and in the press, to much and expressed satisfaction concerning the spread of art interest in the nation. With the return of these now annual events, the campaign of those who advocate the aims of the Sunday Society may be said to have once again been opened. Meetings have already been, and are yet to be, held, and the aid of powerful sympathy from the highest intellectual quarters is enlisted in the good cause. Through the energy of the Society the thin end of the wedge has been cautiously but surely inserted into the apparently unyielding block, and by the skilful aid of that power which it is said enables the clauses of any Act of Parliament to be ridden between by a coach and four horses, the public obtain admission to certain of the London exhibitions on the very day on which the jealous law so grudgingly closes all public institutions of an intellectual character. In the feeling shown in this matter one is indeed reminded of the depth of truth in the Premier's recent utterances concerning the singularly narrow-minded prejudices of the people at large whenever religious matters are broached.

In the furtherance of the objects they have in view, the advocates of the Sunday Society movement probably find no more unremitting enemies than those who express the fear of the hinted possibility of the "Continental Sunday" for England, and such is the terror of that institution that it is apparently sufficient to appal by its mere mention the stoutest-hearted. It may be remarked that this vision of the "Continental Sunday" is invariably very highly coloured; the eyes of prejudice are not sufficiently achromatic to recognise many interesting facts in relation to the so-called "Continental Sunday." The terrible sketch,—for picture it cannot be called, so vaguely are the details roughed in,—portrays work continuing universally on the Sabbath the same as on week days. Now, it is a curious fact, familiar to all who know the Continent, and especially Paris,—which is somehow always implied in reference to the foreign Sunday,—that there has been of late years a growing disposition to close the shops on the Sunday (in certain districts it will be found, indeed, that very few shops are open), a fact which would certainly go rather ominously against the statement that the opening of museums on the Sunday would be calculated to eventually lead to an unrestrained exercise of business on the day of rest. It has long since become apparent to most employers of labour that the Divine institution of a weekly period of repose, so far from being a loss, is, on the contrary, an absolute gain. Many employers have so far recognised this fact as to have seen the advantage of procuring for those they employ every possible means of healthful and intellectual enjoyment during their hours of rest, and the system has been found to work admirably both at home and abroad.

It is a similar system, but on a much larger scale, that it is advocated should be applied to the nation at large, the enjoyment of the utmost amount of wholesome distraction during the few hours of relaxation left us by the relentless exactions of modern competition. This is a privilege enjoyed by our Continental neighbours, who wisely regard the Sunday as the fittest day of all to throw open to the public all the treasures and stores of information, which really only justly merit the title of "national" on the score of being thus made accessible to the public on the one day when the suspension of business gives that freedom of mind which is so largely necessary for the reception of fresh subjects of thought.

It certainly affords a singular contrast, a Sunday in Paris and that in our great metropolis, barely nine hours distant. A Sunday in London is too familiar a feature to require more than a passing allusion to its acknowledged dulness; for it is only the antiquary, the misanthrope, or the very appreciative artist who can obtain much pleasure from the deserted streets of the busy City,—the quiet of the old City churches, and the scraps of greenery in their quaint old churchyards. All Londoners do not enjoy the privilege of membership in an ever-open club at the West End, the very imperfect substitute, the public-house, literally bundling out its *habitués* during certain hours of the day.

A Sunday in Paris, on the other hand, places at the disposal of the Parisian such a selection of places of cultivated enjoyment, that a lengthened stay would be necessary to the stranger broad-minded enough after his preliminary devotions in the Rue d'Agnesseau or the Avenue Marbœuf, to attempt to exhaust even a portion of their number.

The great national museums he will find all open,—the Louvre, with its picture-galleries, its collections of modern and antique sculpture, and all those varied departments that render the Louvre a combination of our British Museum, the South Kensington Museum, and the National Gallery. In the heart of the students' quarter the Luxembourg Palace throws open its galleries of modern art, crowded from morning till evening. If it be during the summer months, the *salon* is open free to the public, who overflow the twenty-five rooms and spacious central garden of the Palais de l'Industrie, the *queue* waiting outside for admission winding half round the huge building. At the École des Beaux Arts the courts of the school are all open, the collections of casts, and among them a *full-sized* copy of an angle of the Parthenon, are always interesting objects of attention. The gallery containing the copies, by the pupils at the Villa de Medici, of the most famous works of the Italian masters, and in the great hall,—the familiar Salle Melpomene,—there is certain, the whole year round, to be some interesting exhibition on view; the studies of the competitors for the much-envied *Prix de Rome*, the works they have sent home from Italy or Greece, some great architectural competition, or the display of the collected works of some deceased artist; ample, in fact, to engage the attention during more than the pleasant afternoon which can be passed in the quiet courts of the École, where the bust of the youthful genius Regnault looks down from the calm seclusion of the little colonnade which surrounds the Cour du Murier, always with some fresh wreaths placed at the foot of the monument to show how long will live the memory of one who shed such lustre on the industrious and well-organised school in the Quai Malaquais.

At no great distance off in the busy neighbourhood of the Boulevard St. Michel (the student's home *par excellence*) there is almost certain to be some good lecture (even on the Sunday morning) at the École des Arts Décoratifs, while if that admirable little establishment is closed, the Cluny Museum, within but a few steps, is no unagreeable or uninstructive compensation. There, all the treasures gathered so earnestly by M. du Sommerard (and at the present moment under the charge of his son, just as at the École des Beaux Arts the son of Alexandre Lenoir of the last century is the director of the École of to-day), can be seen and studied in the quaint old historical palace in which these relics of the past so fitly seem to find a place.

The Jardin des Plantes, at no great distance, is open to all to enter, and is no monopolised privilege of a few members like our own Zoological Gardens on the pleasant Sunday afternoons. At the other end of the town the Jardin d'Acclimitation, a modern edition of Richelieu's and Buffon's Jardin des Plantes, is one of the greatest attractions of a Parisian Sunday; music adds a fresh charm to the beauties of nature, and happy thousands enjoy heartily the privilege of existence.

The mechanic and the young apprentice find at the Conservatoire des Arts et Métiers, all the great inventions of their predecessors, and the most recent innovations into the field of science, many of the machines during portion of the day being in full action.

Again for the art-lover, the confraternity of the auctioneers who are lodged so conveniently in Paris under one roof, display in the rooms of the Hôtel Drouot the treasures in the sales of the forthcoming week, and crowded indeed are most of the well-arranged rooms on the first floor, when in the season the great sales offer to the collectors the treasures which the public are admitted to examine freely on the Sunday. During these Sunday views the rooms of the Hôtel Drouot are converted into a veritable museum, and the means of instruction thus placed at the disposal of the art collector is not overlooked by the Parisian.

The museum recently opened in the Palace of the Trocadéro, where the invaluable collection of architectural casts originally projected by Viollet le Duc constitutes now one of the noblest museums in the world, is one of the many places of study freely thrown open on the Sunday; while in the same building the Ethnographical Museum is of no less interest, the curious collection of Mexican antiquities recently sent home from Central America forming at the present moment no small attraction on the Sunday afternoons.

Few places are more popular with the Parisian out for the Sunday afternoon than the Invalides, guarded by the old military pensioners who suggested to Charles II.,—to Nell Gwynne, tradition says,—the foundation of our own Chelsea Hospital. But the Invalides is a more instructive spot to visit than the old brick building at Chelsea, for it contains one of the most complete and admirably organised museums of arms and armour in existence, and very instructive indeed are the carefully costumed figures representing the French soldier from the earliest days down to the present time, while a recent addition has completed the collection by the figures of a number of Greek and Roman warriors and gladiators dressed with all the care for which the learned antiquary who is the director of the museum has long obtained in his country a just reputation. Nothing, again, could be more interesting than the large number of carefully-dressed figures in the museum, representing the more primitive of the existing peoples and costumes of the world, the Red Indians, South Americans, Zulus, Mexicans, Greenlanders, and Pacific Islanders. A Sunday afternoon at the Invalides is, indeed, one of the great features of Paris, and few, we suspect, would question the value of such institutions could they but be witnesses of the intelligent interest invariably displayed by the numbers of visitors who crowd the galleries. One is, indeed, led to regret that our Chelsea Hospital should not be converted into a similar institution, and the collections so inconveniently housed at the Tower removed thither.

What to say of the numerous other institutions open to the public on Sunday we scarcely know, having already encroached so largely on the space at our disposal. Sunday with the Parisian is the day which he chooses to become acquainted and to familiarise his family with those great institutions of which he is so justly proud. It is not alone information he gathers,—too much stress, perhaps, is laid upon this point,—but his mind has been wholesomely and in a cultivated manner distracted from the sordid thought of every-day life. It will be difficult for him after the contemplation of such treasures to pass the rest of his day in a degrading manner. Insensibly his standard has been raised, and the amusement which he will further seek will not necessarily be of a low nature. Should he be fond of music he has no small choice, from the three popular Sunday classic concerts of the Cirque d'Hiver, the Châtelet, or the Château d'Eau, which have been famous for years, and where, for a few pence, Beethoven and the other great masters can be heard as they are played nowhere else in the world, or, as is more often the case, he and his family, after listening to the band in the Tuileries gardens, quietly take their three-halfpenny tram-car, after perhaps half an hour of waiting, to their home on the third or fourth floor of the house they occupy in one of the many neighbourhoods of the capital. Perhaps if he is in funds he may go to the theatre, but, far more likely, he will adjourn to the neighbouring *café*, and discuss, over wine that is unfortunately too often scarcely worthy of the name, a quiet game of dominoes, and the local politics. High or low the process is more or less the same. The Sunday has been pleasantly passed, and that pride in, and understanding of, their greatness fostered, which is the true mainspring of so much being effected by our neighbours that is left unattempted in our country, for the simple reason that the so-called un-"reflecting many" are shut out on the one day of the week which they have at their disposal for such a mode of recreation, from the privileges which the contrasted "enlightened few" have all the rest of the week to enjoy, and then too often fail to rightly put to advantage. Nor have the duties of religion been overlooked. Hourly from five o'clock in the morning till the ten o'clock high mass, the bells have been ringing from the old towers of Notre Dame, and echoed from every church and chapel in the capital, calling to their devotions those who later in the day, when the few household duties are performed, may be seen dressed in their Sunday best out for a day of rest and enjoyment, and, taking class for class, it will, we suspect, be discovered that many more of these so-called godless Sunday revellers have attended divine

worship than will be found to be the case in our great centres of industry on the too-often riotous "day of rest" which people at home are too prone to compare sanctimoniously with the Continental Sunday.

A RECENT DECISION ON THE RIGHT OF LAND AND HOUSES TO SUPPORT.

It is somewhat curious that questions of such general importance as those connected with the right of houses to support such as have recently been before the courts should have, comparatively speaking, been so numerous of late years. The great case of Angus *v.* Dalton, which decided the question of the right of a house to have lateral support, will still be fresh in the minds of those who are interested in this subject. Quite recently another point which has made this subject of support clearer has been before the courts, and has drawn from the Master of the Rolls and Lord Justice Bowen, in the Court of Appeal, two instructive and powerful judgments. The exact question in dispute was whether a person who purchases land from a railway company which has been taken under their compulsory powers, and which is sold by them as superfluous land, has a right to have the surface supported by the minerals which lie beneath it. It is not a little surprising that this point should never have been decided before the present year, but now that it has been settled by the Court of Appeal, it is clear that a distinct addition has been made, not only to the law which is looked to by practitioners, but that which may be considered, if we may style it so, popular law, which should be borne in mind by laymen, and, in this matter, by all owners of land and houses.

The House of Lords decided some years ago that a railway company had no right to have the land on which their line was placed supported by the minerals beneath it. So long as these were worked by the owner in a reasonable manner the company had no right to complain, because the Legislature had, by the Railway Clauses Act of 1845, decided that the owner of the minerals was only bound to compensate the railway company if they suffered damage in consequence of improper working. It is further, however, to be borne in mind that the owner of the mine is bound to give the company notice before beginning the working, and to allow the company an opportunity, by paying compensation, of preventing the minerals being gotten. Then in this recent case of Pountney *v.* Clayton came the question as to what were the rights of a purchaser from the railway company whose houses had been let down in consequence of the taking of the minerals beneath the surface. In the south of England the matter is less important than in the north, but in that part of the country there can be no doubt of its importance. The case was decided by the Court of Appeal on the broad ground that a vendor can only dispose to a purchaser of that which he himself possesses, and thus a vendor having no right of support from the minerals beneath the surface could not give to a purchaser from him a right of support which he himself did not possess. The company held the land subject to the mines beneath being worked in a reasonable and proper manner, and to a right to compensation if their property was injured by improper working. But there was no dispute as to the way in which the mines were worked; no one alleged that they were not carefully worked. The ordinary rule of law is so well known that the house-owner can claim damages if his house be injured by the letting down of the surface, that it is not surprising that the purchasers of this land from the Wrexham, Mold, and Connah's Quay Railway Company should have supposed that they purchased both the land and the right to support. It is hardly fitting that in a case of this nature we should enter into any elaborate examination of the legal grounds on which this judgment proceeds; what we desire to do and have done is to point out that purchasers of the superfluous land of railway companies have now a clear decision to show that they have no right of support unless the company have compensated the mine-owners for not working them. The practical lesson is that those who purchase superfluous land or land and houses in a mineral district from a company should obtain at the time an indemnity against any damage which may be caused through the proper working of the mines beneath the surface.

THE NAVIGATION OF THE RIVER JORDAN.

Amateur work is, from its very nature, usually inferior work, otherwise special education would be of but little value. But of all things to which the amateur can lay his hand he should be specially diffident of those which involve the science of the engineer; for in them, Nature herself is a critic. In art, in administration, in legislation, even in medicine, the failures of the amateur may be, to a certain extent, concealed, excused, or condoned. But physical facts are not so accommodating as is public opinion, and they steadily refuse to be explained away.

This truth is of especial importance as regards the proceedings of the speculator. When the object of the latter is merely to take scrip or shares, as the founder of the Rothschild family once said, "As a shower-bath, in and out again directly," the physical possibility of the scheme may be the last thing with which he concerns himself. His only care is, that any plan which he advocates shall be one which the public will think feasible. And unfortunately this is a very different thing from practical possibility. Of this kind of project, one not only drawing for its support in a large measure on the unknown, but further contemning and despising what is well and exactly known, has just been brought before the English public. It is a plan for superseding the Suez Canal by making the River Jordan into a highway of maritime commerce.

The scheme, although not a new one, is one of those which seem eminently calculated, at the first glance, to win the public favour. A glamour attends any project for restoring the prosperity of Palestine. A glance at the map is enough to induce most persons who are not geologists, and many who are, to believe that the Jordan formerly ran into the Red Sea at the Gulf of Akaba. Its present abrupt ending in the fathomless gulf of the Dead Sea presents, to all but the physicist, a mysterious problem. The Bay of Acre offers harbourage far superior to any that can be manufactured off Port Said. It is beyond the reach of the constant easterly movement of the silt and sand brought down by the Nile. A river valley, that of the Kishon, runs in a south-easterly direction from the south promontory of the Bay of Acre towards the Jordan, and its affluents interlace (on the map) with those of the Jordan. All, indeed, is very favourable, with the exception of the primary condition required, adaptability of level.

But the moment the engineer puts his level on the ground, there is an end of the project. It is not a matter of question or of opinion. Its feasibility can only be maintained in absolute ignorance. The river Kishon falls only at the rate of about 10 ft. a mile,—an inclination not formidable for ordinary canalisation, but absolutely conclusive against a maritime canal. The water-shed, as may be seen on the map of Western Palestine, reduced from the 1-in. survey, is nowhere lower than 270 ft. above the Mediterranean. Add to this the depth of the canal itself, and there is required a cutting of forty miles long, steadily increasing in its depth from 20 ft. or 30 ft. to 300 ft. The depth of the great gap that would have to be cut across the backbone of Palestine must be half as much again as that which looks so formidable beneath the platform of the suspension bridge at Clifton.

Between the Dead Sea and the Gulf of Akaba, however, the requisite cutting would be more than twice as much as that on the meridian of Nazareth. The surface of the Dead Sea is 1,292 ft. below that of the Mediterranean. The ground dips both ways towards this prodigious crater, the deepest place on which the sun shines. The exact point of the highest elevation, from which the country drops towards the Dead Sea on the north, and the Red Sea on the south, has not been surveyed. But it is considered, by the most recent authorities, to be not less than 800 ft. above the level of the Mediterranean, or 2,000 ft. and more above that of the Dead Sea. To talk of cutting a canal through such a country is about as feasible as to propose a railway to the moon.

It should not be forgotten that the depression which, at the surface of the Dead Sea, attains the abnormal depth which we have mentioned, becomes gradually deeper and deeper as we descend the valley of the Jordan. The Sea of Galilee is 684 ft. below the level of the Mediterranean. If it were possible to admit the waters of the latter sea into the valley of the Jordan they would rise to within a mile of the Lake of Huleh, which is only 7 ft. above the sea. The area of the valley that would be thus flooded cannot be less than 1,000 square miles, including the courses of the streams that fall into the Jordan. Much of the ground is cultivated, and the towns of Beisan, Jericho, and Tiberias would be overwhelmed by the inundation.

The Jordan navigation is not the only scheme as to which the opinion of a competent engineer, who took the pains to master the subject, would at once be fatal. But it is a very good example of a certain class of project, which the public is now invited to support. There are no more mischievous enemies to well-considered public works than the promoters of impossible schemes.

THE PARKES MUSEUM OF HYGIENE.

The president of the Parkes Museum, H.R.H. the Duke of Albany, has fixed Saturday, May 26th, for the opening of the Museum in its new premises, 74a, Margaret-street, W. Inasmuch as the Museum stands quite alone in this country as a permanent exhibition of apparatus connected with hygiene and public health, it is eminently entitled to public support, especially at the present time, when there is a growing need of facilities for obtaining a knowledge of the principles and practical application of sanitary science. The central position of the new premises will make the Museum more useful than it has hitherto been to professional men, owners of property, employers of labour, artisans, and others, both men and women; and in order that the benefits of the Museum may be extended to all classes, it will be open daily, between the hours of ten and seven, during which hours admission will be free from five to seven and from two to nine on Mondays and Saturdays; while free admission to the library and reading-room may always be had on the recommendation of a member. Arrangements are being made for granting the use of the museum to professors of hygiene and teachers of sanitary science, for the purpose of demonstrating to their pupils the uses of sanitary appliances. Sanitary apparatus of every kind will not only be exhibited, but, in many cases, will be shown in action, and the drainage of the premises has been specially planned for the purpose of illustrating the best methods, and has been carried out in such a manner as to be available for teaching purposes. The premises are held on lease, and special donations are earnestly requested, in order that the lease of the premises may be purchased.

The Museum, as we need hardly remind our readers, inasmuch as the history and progress of the Museum have been duly recorded in our pages, was founded as a memorial of the late Dr. E. A. Parkes, Professor of Hygiene in the Army Medical School at Netley, and author of the well-known "Manual," which is regarded by some as the first systematic work on hygiene ever published. The object of the Museum is to encourage the scientific investigation and practical study of all matters relating to health, whether of the individual or of communities, and to diffuse this knowledge widely. The Council of University College, London, afforded the Museum a temporary home, granting to it the use of a gallery for the exhibition of its collection, and the Museum was here opened to the public on June 28th, 1879, by the Right Hon. Sir R. A. Cross, G.C.B., then Secretary of State for the Home Department. The Museum was incorporated in June, 1882, and acquired the new premises, which are in a central situation, and consist of an exhibition-hall, corridors, and offices, and a library and reading-room. The necessary alterations in the fabric have been carried out by Mr. E. C. Robins, F.S.A., as honorary architect, who has devoted much care and skill to render the building suitable for the display of the collection, and the space in the centre of the hall has been made available for lectures and demonstrations, though the whole is smaller than is desirable. The hall, corridors, and reading-room are well lighted by day, and at night several different systems of gas-lighting are in use. The drainage of the Museum, which has been planned by Mr. Rogers Field, M. Inst. C.E. and Professor Corfield, M.D., and carried out by the former gentleman at his own cost, is a practical illustration of the best methods of overcoming difficulties commonly met with in

town houses. It is the intention of the Council to keep the collection fully abreast of the advance in the art, as well as in the science, of hygiene.

Mr. Thomas Twining, of Twickenham, author of "Lessons on Food and Nutrition," has presented to the Museum a series of food articles, intended to show how a collection suited for popular instruction may be methodically arranged in a limited space. The library, which already contains a considerable collection of standard works of reference, including Blue Books, and other reports relating to health (not easily accessible elsewhere), is being constantly enlarged. The reading-room is supplied with English and foreign periodicals which give attention to sanitary science.

THE CROMWELL HOMESTEAD AT PUTNEY.

PUTNEY is a pleasant town in the county of Surrey. It stands high and dry along the right bank of the Thames, and rises thence with a gentle slope to Putney-heath and Wimbledon-common: a breezy expanse, whence there are charming views of Coombe Valley, Kingston-hill, and Richmond Park on the west, and of the country away to the Surrey hills in the distance, on the south. The original name of the town was *Putlan* or *Putten*. The Celts gave it that name, because the high ground on which it stands is thrust out or extends from the main land to the river. The Saxons afterwards called it *Puttenhythe*, because here the foreshore of the river forms a famous *hythe* or haven for boats and vessels to receive and discharge passengers and goods. From these names it is easy to see how the town acquired its modern name of Putney. Owing to Putney lying directly on the line of transit between London and West Surrey, and the counties beyond, it has always been a busy, important place. For 2,000 years, until Putney Bridge was erected, in 1727, all persons, including kings, nobles, prelates, and others, travelling to and from London and West Surrey, embarked in or disembarked from boats, or crossed the river by the ferry-boat, at the hythe here. The approach to and from the hythe was by an opening, which still exists, in the river-wall at the lower or north end of Brewhouse-lane, the upper or south end of which enters Wandsworth-lane, whose western extremity communicates with the High-street. Where St. Mary's Villa now stands, in one acre of ground beside the Thames, between Brewhouse-lane and Putney Church, there stood, during the fifteenth and sixteenth centuries, a large half-timbered, high gabled cottage, with its outbuildings. This homestead, as it was called, was the residence and wool depôt, from 1415 to 1509, of the Cromwells of Putney. Here was born, in 1475, Katharine Cromwell, the eldest daughter of Walter Cromwell She married, in Putney Church, in 1494, a Welshman from Lanishen in Glamorganshire, named Morgan Williams, who carried on business as an ale-brewer and an innkeeper in Putney, where the Red Lion Inn now stands, for twenty-one years, from 1490 to 1511. Morgan Williams and Katharine Cromwell, his wife, were the great-great-grandfather and grandmother of Oliver Cromwell, the Lord Protector, and of John Hampden, the celebrated patriot. Here also was born, about 1485, her brother, Thomas Cromwell, Earl of Essex, the *malleus monachorum*, or, as Carlyle expresses it, "Hammer that smote monasteries on the head," in Henry VIII.'s time. The Cromwell Homestead was surrounded on all sides, except the north, facing the river, by a high brick wall; was approached from Brewhouse-lane on the east by a gateway, and from the churchyard on the west by a wicket; and to it belonged twenty-nine acres of pasture land, situated on the south side of the Upper Richmond-road at Priests' Bridge, in the parish of Putney. From 1415 to 1509 this property was held by copy of Court Roll from the Lord of the Manor of Wimbledon, first, by William Cromwell, who came from Norwell, in Nottinghamshire; then by his son, John Cromwell; then by his son, Walter Cromwell; and then by his daughter and her husband, Morgan Williams, who surrendered it on the 8th of May, 1509, "to the use of John Banks, dyer, of London." The manor, which belonged, from 1066 to 1535, to the Archbishopric of Canterbury, and included the parishes of Wimbledon, Putney, with the pretty hamlet of Rochampton, Mortlake, with the pleasant hamlet of East Sheen, part of the parish of Barnes, and Burstow, in the parish of Horley, in Surrey, was occupied by a graduated aristocracy of copyholders. They paid the Lord of the Manor 5s. per annum for every virgat of land they held; and as a virgat was equal to fifteen acres, the rent was 4d. per acre. The copyholders for each virgat of land they held had the right of grazing on the commons for twenty-five sheep, five beasts, and one goat; and as they held about 200 virgats in all, there were 5,000 sheep, 1,000 beasts, and 200 goats, to say nothing of pigs, kept on the manor, which, therefore, may be considered to have been a huge sheep-farm divided among a body of copyholders, who had certain privileges, and were governed by certain customs, peculiar to the manor. During the time the Cromwells owned their copyhold above described, they held on lease, on the east side of Brewhouse-lane, a slip of land about 100 ft. in breadth, extending from the Thames to Wandsworth-lane. Besides residing at their homestead, and carrying on business there as wool merchants, they also carried on business as fullers, brewers, and hostelry-keepers on this slip of land; the fullery and brewery being at the north end thereof near the river, where Messrs. Aviss's timber wharf now is; the hostelry at the south end by Wandsworth-lane, where the "Castle" public-house now stands; and between the brewery and the hostelry were a number of cottages which were occupied by their workpeople. The foregoing is entirely new information respecting the Cromwells of Putney, chiefly elucidated from the Court Rolls of Wimbledon Manor. In these Rolls Walter Cromwell, the father of Thomas Cromwell, Earl of Essex, is mentioned by that name ninety-six times, and by the name of Walter Smyth forty times. This seems strange, and I can only account for it by his grandmother being the sister, and his mother the daughter, of a smith and armourer, named William Smyth, who with William Cromwell left Norwell in 1414, at the instance of Archbishop Chicheley and the Abbots of Chertsey and Merton, and took up their abode in Putney, for the purpose of equipping and providing with arms and armour the tenants residing on their manors in Surrey for the war then about to be declared against France, which was ended the next year, 1415, with the battle of Agincourt. As a curiosity, I give the following entry, out of many similar entries, as contained in the Court Rolls:—

"Walter Cromwell, brewer of beer. } Each fined 6d. for
Morgan Williams, brewer of ale. } breaking the assize."

From henceforth there need be no more ink and paper wasted over the question as to whether or not the Cromwells were brewers. Walter Cromwell had a brewery at East Sheen as well as at Putney; and his son-in-law Morgan Williams, Oliver Cromwell's great-great-grandfather, had four breweries in hand at the same time: the first was at Putney, the second at Wimbledon, the third at Wandsworth, and the fourth at East Greenwich, near the old palace there. The descendants of Morgan Williams took to brewing, when occasion required, as young ducks take to water. He had two sons, Richard and Walter. In their youth they assumed their mother's maiden surname of Cromwell. That is how the Williams family of Lanishen came by that surname. There is no Cromwell road, street, or lane in Putney. When Wandsworth-lane is widened it should be called "Thomas Cromwell-road," in order to perpetuate the name of the man who, by suppressing the monasteries, cleared the ground and laid the foundation upon which the Protestant religion was established in the reigns of Edward VI. and Elizabeth. JOHN PHILLIPS.

SWITZERLAND.

AN important National Swiss Exhibition was opened in Berne on May 1st. It consists of no fewer that forty-five different groups of articles, all produced in the different cantons of the Confederation. One of the most striking of these groups is that of embroidery, a department of manufacture which is now carried on by machinery. It has undergone an enormous development in late years, employing no fewer than 45,000 persons, chiefly in Eastern Switzerland. In 1830, when the manufacture commenced, there were only two machines in existence. There are now 15,000.

THE IRON AND STEEL INDUSTRIES.

THE holding of the annual meeting of the Iron and Steel Institute in London, recalls attention to the condition of these great industries; and it can scarcely be said that the prospect is one that is in every respect promising. In the two great producing centres,—the north-east of England and Scotland,—the output of iron is very large; but there has been during the past few months a very considerable enlargement of the stocks of crude iron in the hands of the makers, and these stocks are now heavy,—the stores at Glasgow now holding 581,000 tons, and those at Middlesbrough 79,000 tons. In the latter district the quantity of iron in the stores is always trivial to that in the hands of the makers themselves; and adding the quantity estimated for Scotland in the hands of the makers, it is easy to be seen that the total held in the two districts exceeds 1,000,000 tons. There has been in the Cleveland and Durham district for some time a "restriction of the production" by most of the makers, but the Scottish makers have ceased to follow that policy. In the great hematite producing districts of the north-west the stocks of iron seem to be increasing, and attempts to limit the production and to lessen the wages of the workmen are being made. In others of the great iron-producing districts it is evident that there is a condition of the trade that is not the most satisfactory, and that shows itself by increase in the stocks and by decrease in the price of iron. Despite the attempts of the Cleveland iron-masters, the price of crude iron has fallen, and there is in consequence a weakness in the market, due to the doubt whether the lowest price has yet been touched. And to some extent this is the position of the other iron-producing districts, whilst the peculiarity of the position is that there is not that more favourable condition in the hematite iron districts that has usually been the case when dulness has affected the trade as a whole. There is now an enormous importation of iron ore from Spain and other districts, and this is smelted in some of the iron-making districts that are near to the seaboard, as in Durham and Wales, which seem to be able to smelt the ores thus imported cheaper than can the hematite ores found in the West Cumberland and Furness districts,—the latter being dependent upon the county of Durham for their coke, and having thus to pay very heavily for the transit of the latter.

It is thus difficult to say whether there is any probability of an early improvement in the great industries to which we have referred. Our home consuming trades are tolerably good customers for iron and steel, and the demand for ship-building purposes is larger now than it has ever been in the past. The demand from one or two of our colonies is also very large, but the foreign demand is very weak. That from the United States has known a partial collapse. Whilst discussion of the tariff question was taking place, the uncertainty checked orders, and the prolongation of the old tariff till past Midsummer has kept that effect. It is possible, too, that there has been a temporary check by the length of the winter, and the lateness of the opening of the Northern navigation. These causes are removed, or removing, and it is, therefore, fair to anticipate that there will be some revival of the demand from abroad shortly. But the demand for iron and steel is controlled in the long run by the condition of countries as a whole, and it requires good harvests and freedom from exhaustive wars to give that condition of nations that tends to promote permanent activity in the iron and steel industries. There may be, and probably will be, partial revival in some of the producing districts, and it is, on the other hand, tolerably certain that some of them will feel the present depression much more than do others. Some of our iron-making districts are so situated that they can only produce to profit when the price is high, and when the price falls it is the usual thing to find that there is a declension in the number of furnaces in blast in these districts. That process is going on now, though the natural order is being interfered with by the process of restriction that is being adopted by some of the districts, and that artificial check to production seems likely to become a little more general than it is. The competition with foreign producers of iron is increasing, and that restrictive policy here, by artificially forcing up prices, tends to lessen our ability to become successful in that competition. Whilst these fluctuations

are in progress, there is in that lessening of prices to which we have alluded, the best feature that the industries have. Cheapness always stimulates use, and the low prices to which iron and steel have fallen must largely increase the use, and must also tend to widen the area over which we distribute their products. There has been, too, in the past few years a large growth of the resources of many of our colonies, and we may anticipate that they will come to us for increased quantities of metal. It is to the growth of the demand over the world that that growth of the colonial one typifies to some extent that we have to look for recovery in the iron and steel trades, and that growth seems commencing, and must be looked upon as likely to continue.

CATHEDRAL OF PALERMO.

Sicily is full of interest, and Monreale must be considered as the most important portion of it as regards the history of architecture. Palermo is next so.

We give a view of the Cathedral of Palermo, including the main entrance, which is of later date than other Sicilian buildings, being principally of the fourteenth century. Mr. Fergusson, in a very interesting chapter on Sicilian Architecture, says of this building,—"Although possessing no dignity of outline or grace of form, it is more richly ornamented with intersecting arches and mosaic decorations externally than almost any other church of its class. It is richer, perhaps, and better than the Cathedral of Florence, inasmuch as here the decorations follow the construction, and are not a mere unmeaning panelling that might be applied to any place. Still, the effect of the whole is rather pretty than grand, and as an architectural display falls far short of the bolder Masonic expression of the Northern Gothic Churches."

CHURCH OF ST. PETER, BOHEMIA, ST. LEONARD'S-ON-SEA.

This church, with a parsonage and parish rooms, is about to be erected in that part of the parish of St. Paul known as Bohemia, on a site recently purchased of the Magdalene Charity Trustees, an estate now being laid out as building land. The position chosen by the architect is at the corner of the two roads, St. Peter's and Bohemia. The church will be built diagonally across the site to obtain the true orientation. The situation is a good one, being more than 100 ft. above the level of the sea, and the church will form a conspicuous object from the beach, and will be seen above the roofs of the houses in Warrior-square. The buildings are to be faced both inside and out with red bricks from Maidenhead, Berkshire, Doulting stone being used for the capitals and columns of arcading; the windows will also be of stone. The nave between the walls is 25 ft. 6 in. wide, 100 ft. long, and 75 ft. high up to the ridge of the roof. The chancel is the same width as the nave, and the roof is on the same level, the length being 44 ft. 3 in.; the width across the transept is 65 ft. 6 in.

On the south side of the chancel is the Founder's Chapel, which is 44 ft. 3 in. long and 17 ft. wide, having a groined ceiling. This is so arranged that early morning and other services, when there is only a small congregation, can be held here. The chapel on the north side is only 40 ft. long by 17 ft. wide; and the organ-chamber is over this. The north and south aisles are the same length as the nave, but only 12 ft. 3 in. wide; out of the north aisle is the baptistry, having a groined ceiling. The site being in such an exposed position, great care and attention has been bestowed on the arrangement of the entrances, all of which have double doors and other means to check the current of wind. The chancel, north chancel aisle, and the transepts are also to be groined in red brick and stone. The bell *flèche* is at the intersection of the nave, chancel, and north and south transept roofs, and will contain three bells, the cross on the top being about 200 ft. above the level of the nave floor. Two views of this church are hung at the Royal Academy Exhibition this year. Mr. James Brooks, of 35, Wellington-street, Strand, is the architect.

A Home for Orphan Boys (dedicated to St. Mark) is about to be erected at Natland, near Kendal, from the designs of Mr. D. Brade, F.R.I.B.A.

PROPOSED IMPROVEMENTS, MADEIRA-ROAD, BRIGHTON.

THE SELECTED DESIGN.

The view, from the smallness of the scale, gives only a general idea of the works contemplated, which extend from the Old Chain Pier to the concrete groyne opposite Paston-place, a distance of about 3,000 ft., and as the present ivy-covered cliff, grass plots, and shrubs are in an excellent thriving condition, it is proposed to retain them and add another 15-ft. promenade and shrubbery, with flower-beds and seats at intervals, thereby increasing the attraction of the walks. The great obvious advantage of retaining the existing arrangements is that a charming promenade and drive are not lost during the execution of the works. Beyond the shrubs the roadway would be 40 ft. wide, with an asphalted footway, 15 ft. wide, enclosed by a parapet with vases on pedestals to break the length of line and to give colour by means of flowers and shrubs. The sheltered seats next the grass slopes have flower-gardens enclosed by parapets to protect them from the wind. At the foot of the slope there would be a terrace, 15 ft. wide and 5 ft. above high-water level, so that at extraordinary high tides it might not be covered. Below this there is another terrace, 18 in. above high-water level, with a series of very broad steps next the sea, affording capital sitting accommodation at low tides, when children, &c., are amusing themselves on the sands. It is considered desirable not to extend the terraces, &c., beyond shore-line of high-water mark, because the charm of the beach would be lost, and the embankments would appear like dock walls; the projection, also, of the walls would defer the pleasure of a walk on the sands until long after the tide had receded, the difficulty of construction would also be increased, as there would, of course, be less time between the tides for working. Two iron staircases have been suggested to give further access to the promenades, but the general opinion is that the present steps are sufficient.

At the end of the concrete groyne are sheltered spaces, with retiring-places for ladies and gentlemen. These conveniences are also provided at the semicircular ends outside the baths, and it is thought that being at each end of the promenade they would be sufficient. Buildings of this nature are difficult to arrange without being objectionable.

The next portion of the scheme comprises tidal baths for men and women, situated near the Chain Pier, opposite Atlingworth-street, the water area for men being 200 ft. by 50 ft., and for women, 100 ft. by 50 ft.; there are also fifty-eight private baths for men and thirty for women. Between the two baths are waiting-rooms, also wash-house for towels; and below these is the boiler-house. The roof of the baths if made flat would give a sheltered promenade around of a length of about 900 ft., and, if necessary, a bridge could give access from the Marine Parade, the staircases from the promenades are at the four angles of the building.

A verandah is provided in front of the baths next the sea, so that visitors can enjoy a pleasant shady lounge in fine or wet weather. Shops for the sale of newspapers, light literature, refreshments, &c., are arranged in the semicircular ends of bath buildings, and in various positions drinking-fountains would be placed.

The works generally would be executed in Portland cement concrete and terra-cotta, and are approximately estimated to cost from 40,000*l.* to 53,000*l.*, according to the amount of the plan carried out.

The Town Council in the recent public competition awarded the first premium of 200*l.* to this design, submitted under the motto "Sea," the author being Mr. John Johnson, A.R.I.B.A., of 9, Queen Victoria-street, London, E.C., and it is expected that as soon as the subject has been farther considered, progress will be made with the several works.

THE DESIGN WHICH GAINED THE SECOND PREMIUM.

The design which we illustrate below the first was submitted by Mr. E. E. Scott, architect, of 46A, Regency-square, Brighton, and this has gained the second premium of 100*l.* The roadway is arranged for a width of 40 ft., with pathways 10 ft. wide on either side. In accordance with a suggestion of more than one medical man of the town, it is recommended to provide a covered walk under the shelter of the sea wall, and to do this for a considerable distance, roofing the pathway with metal and glass, so arranged as to prevent gravel falling from above breaking it, but not to impede the growth of ivy against the walls. Advantage has been taken of the situation of Royal-crescent and the double flight of steps so nearly in the centre of the Madeira promenade, so as to make a special feature here in the erection of covered seats and awnings,—ornamental parapets, both projected and recessed being proposed, with extensive covered space for lounge and bandstand. With a view of increasing the facility of access to the Marine Parade, it is suggested opposite Royal-crescent to form a lift, which should reach from the Parade to the centre of the covered way, and be worked by means of hydraulic appliances. It is designed that spaces be laid out with grass plots and flower-beds. This requires that the retaining sea-wall be built of considerable strength and a little below high-water mark, though not more so than the wall at Hastings, and recesses are provided for here and there so as not to interfere with the boats, &c., on the beach. The main feature of the design is the public baths. The building itself has a very ornamental appearance. The square erection shown in the centre would be of somewhat massive and compact architecture, with pinnarets at each corner. On either side are the baths for ladies and gentlemen respectively. A bold sea-wall is in front of the baths. This it is proposed to complete with concrete, faced with concrete blocks to be carried down to the line of chalk. The contour of this wall is such as to a great extent prevent the breaking of the waves over the ground above. At the angles are placed in the design enclosed pavilions, to be glazed with plate-glass, so that in the roughest weather they may be waterproof. The baths, it is recommended, should be formed of concrete, with glazed tiles, the walls of brick and concrete, with occasional facings in red and yellow terra-cotta and stone. Conveniences and appliances similar to those at the establishments at Hastings and Eastbourne are suggested for the interior arrangements of the baths. The estimate given for the work is 62,000*l.*, approximated thus:—For sea-wall in front, 10,000*l.*; baths, 37,500*l.*; covered way, 4,500*l.*; roads, paths, grass beds, &c., 10,000*l.*

Mr. Thomas Lainson, architect, of Brighton, with a design marked "Tout ensemble," gained the third premium of 50*l.*

THE WELLINGTON STATUE.

The following is the report of the Wellington Statue Committee:—

"The Committee appointed to consider the future site to be adopted for the colossal statue of the Duke of Wellington by Wyatt, met at Apsley House, on the 25th of April, 1883. Present:—The Duke of Wellington, K.G., the Viscount Hardinge, Sir F. Leighton, P.R.A., Mr. Boehm, R.A., Mr. Fergusson, Mr. Mitford, C.B. The Duke of Wellington was voted to the chair.

Mr. Mitford informed the Committee that various sites had been suggested, of which the chief were:—The Apsley House site, the Horse Guards site, Chelsea Hospital, Primrose-hill, the Tower of London, an exchange of sites with the statue of Achilles in Hyde Park, Knightsbridge Barracks.

Having regard to the unsuitableness of some of the sites and the distance of others, the Committee considered that the discussion might be narrowed to the two first of these sites,—namely, the Apsley House site and the Horse Guards.

The Committee felt that in considering the question due regard must be had for the memory of the illustrious warrior whom the statue commemorates. Even had it been for other reasons altogether appropriate, they would have had hesitation in recommending its retention in its present place on the ground of its colossal size. They are of opinion that while it is desirable to place it in some position befitting the military achievements of the Duke of Wellington, it would be out of harmony with its surroundings at Hyde Park-corner.

They recommend, therefore, that the statue should be placed upon a fitting pedestal upon a site immediately within the present railings of St. James's Park, facing the Horse Guards, and upon the central axis of the archway of that building.

Wellington.	J. E. Boehm.
Hardinge.	Jas. Fergusson.
Fred. Leighton.	A. B. Mitford.

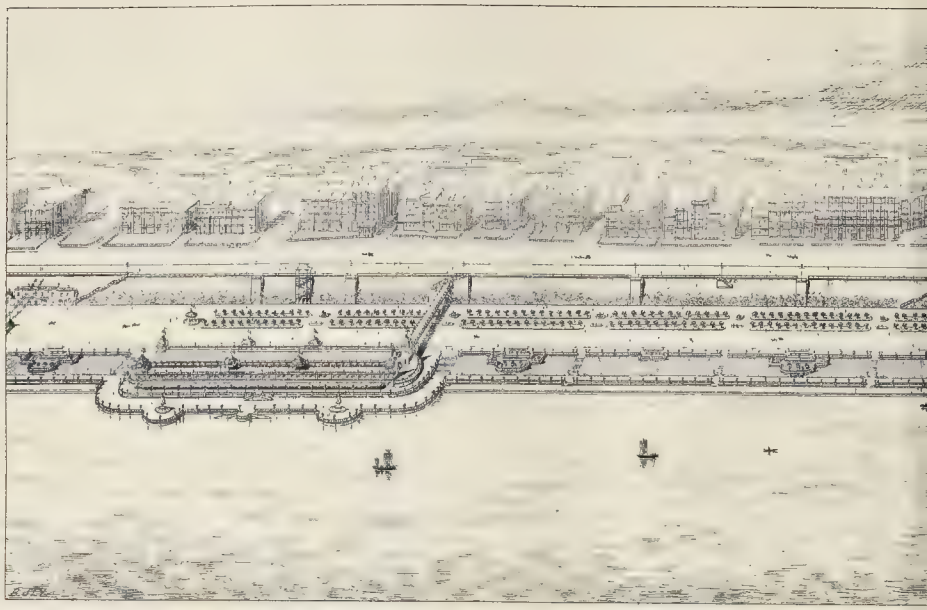
April 26."

The Bank of England.—Mr. A. W. Blomfield has been appointed architect to the Bank of England, in succession to Mr. P. C. Hardwick, resigned.

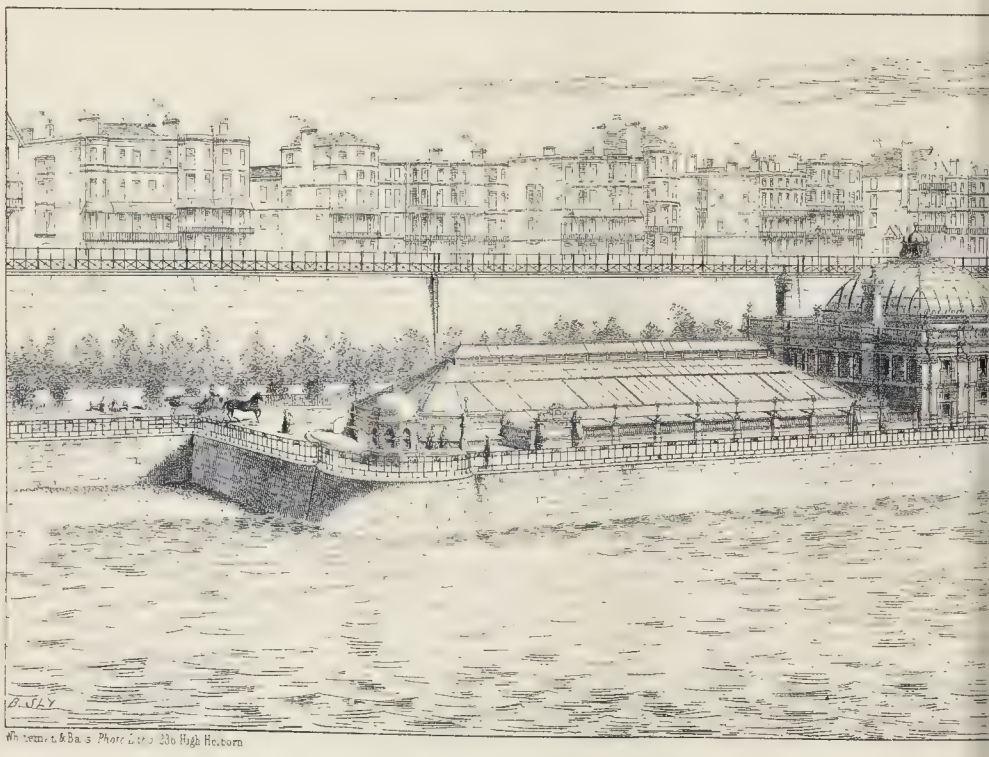




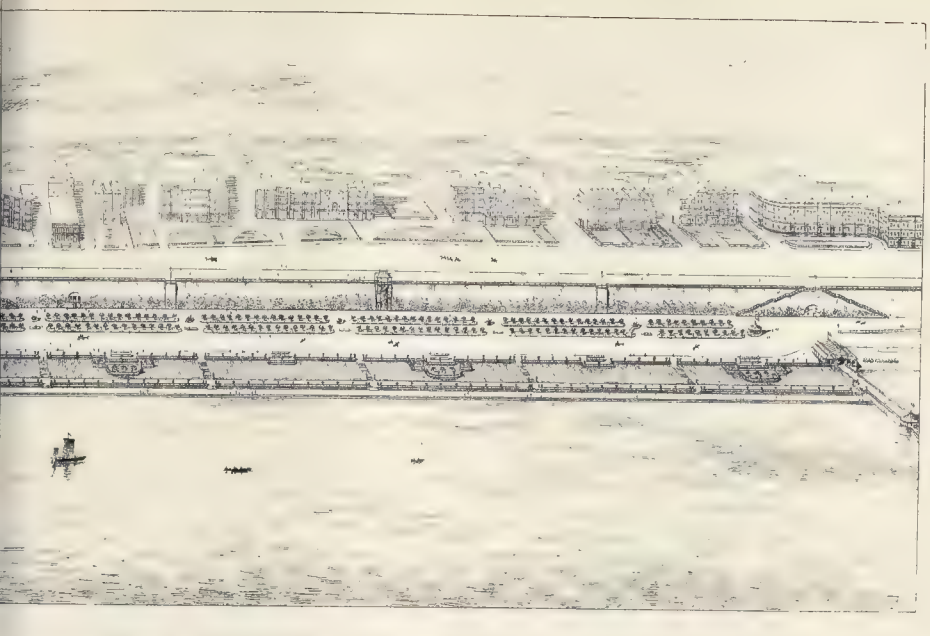
Church of S. Peter · S. Leonards · on Sea · James Brooks Architect.



PROPOSED IMPROVEMENTS, MADEIRA-ROAD, B



PROPOSED IMPROVEMENTS, MADEIRA-ROAD, BRIGHT



——Selected Design, by Mr. John Johnson, Architect.



ond Premiated Design, by Mr. E. E. Scott, Architect.





THE CATHEDRAL OF PALERMO, SICILY.

THE FURNITURE TRADES' EXHIBITION AT ISLINGTON.

THE third annual Furniture Trades' Exhibition, opened on the 23rd ult., and which is to remain open until the 16th inst., is the largest of its kind which has yet been held in the Agricultural Hall, and it contains a great deal of very good work, appropriate in design and honest in construction. Exhibits of a meretricious and *bizarre* character are in a decided minority, and in this respect the exhibition is somewhat in advance of its predecessors. Of course the influence of "fashion" is prominently manifested, but present tendencies appear to be in the direction of simplicity and suitability of design. One or two "crazes" make themselves rather prominent in the collection. For instance, the use of bevelled plate-glass for the smallest panes of cabinet-doors appears to have become somewhat of a mania, and hardly less prominent is the rage for "ornamental" brasswork for cabinets,—a rage which is carried so far that even in cabinets which are otherwise unexceptionable in design and workmanship, the hinges are to a great extent shams, plates of brass being screwed on to the outer frames of the doors in contact with, but really forming no part of, the hinges; just as in pseudo-Gothic churches and chapels a mass of iron strap-work is sometimes screwed on to the doors, quite apart from the hinges, although apparently forming part of them. We proceed to notice briefly a few of the more important exhibits.

At Stand 1 Messrs. Treloar & Sons, of Ludgate-hill, have a good display of their well-known specialities in carpets, mats, rugs, matting, and floorcloth. Messrs. Jno. Finch & Co. (Stand 2), of City-road, exhibit some good dining-room and bedroom furniture. At the next Stand (3), Mr. R. Hunter, of Cardington-street, Hampstead-road, has on view a collection of well-made cabinets and tables. At Stand 5 Messrs. Robert Boyle & Sons, of Holborn Viaduct, show their patent air-pump ventilators. Messrs. James Cox & Son, of High Wycombe (Stand 7), are exhibitors of some very good chairs. At Stand 8, Mr. George Brook, of Paul-street, Finsbury, shows machines in operation for covering buttons and nails used by upholsterers and coach-builders. At Stand 11, Messrs. Sewell & Sewell, of Worship-street, have on view some very good cabinets. Messrs. J. B. Etherington & Co., of Charterhouse-buildings (Stand 14) are exhibitors of American specialities, including a new step-ladder, very light and strong, and a new folding clothes-horse of remarkable line capacity. At Stand 20, Martin's Patent Wood Carving Company (Euston-road) exhibit mouldings carved by their patent process, which have at least the merit of being cheap. Messrs. W. Bailey & Son, of Curtain-road (Stand 26), are exhibitors of dining-room suites in oak, and of some well-designed overmantels. Messrs. S. G. Vaughan & Co., of Great Eastern-street, are exhibitors of cabinets, wardrobes, and sideboards, good in design and solid in construction. At Stand 28, Messrs. Brew & Claris, of Finsbury-pavement, have a number of very useful articles of furniture, including a combination washstand and table, suitable for offices or bachelors' chambers. Their combination easy chairs and beds, and couches and beds, are very ingenious and compact. A wash-stand, with beer-engine pump for water, is also shown. Messrs. Cameron, Amberg, & Co., of Little Britain (Stand 39), show their handy and ingenious system of cabinets for filing and indexing letters and other papers, one of which, specially adapted to the builder's requirements, is well worthy of attention. At Stand 46, the Art Furniture Manufacturing Company, of Henson-street, are exhibitors of some very well designed and well-made furniture. At Stand 48, Webb's Worcester Tileries Company, Limited, are exhibitors of Mosaic and encaustic tiles of good design and quality. Messrs. Rottmann, Strome, & Co. (Stand 53), of St. Mary Axe, have a good display of Japanese leather papers, concerning which products we are told in the catalogue that the average importation into England is estimated at nearly 2,000 rolls per month, equal to 24,000 square yards. Messrs. G. S. Lucraft & Son (Stand 55), of City-road, have some good chairs, cabinets, and tables, and a quantity of "meshrebiych," or Arabian lattice-work, imported from Cairo for application to furniture. Messrs. J. C. Webb & Co., of Worcester (Stand 65), show their patent diachromatised wood tiles, which are likely to be further heard of. Messrs. Capper, Sons, & Co., of Gracechurch-street and Fenchurch-street (Stand 71), are exhibitors of Turkey carpets, Persian rugs, bamboo furniture, and of a number of knick-knacks for the drawing-room and boudoir. Messrs. Perry & Co., of Holborn Viaduct (Stand 76), show specimens of McCaw, Stevenson, & Orr's patent "Glacier" window decorations, which are cheap, easily applied, and durable. For many situations, they appear to supply a want which has long been felt. It would be better, perhaps, if some of the designs were not so obviously copies of stained-glass work, leads and all. At Stand 80, Messrs. Frederick Walton & Co. show their Lincrusta-Walton, of the great merits of which we have often spoken. Messrs. W. A. & S. Smee, of Finsbury-pavement (Stand 82), exhibit some good cabinet work. At Stand 83 Mr. Harry Pearce, of Great Russell-street, shows a new and meritorious screw sash-lever, and has some good carved walnut mantelpieces and over-mantels, fitted with grates, tiled hearths, brass fenders, &c., complete. Messrs. Drew & Cadman, of High Holborn (Stand 102) have a good variety of bevelled glass mirrors, finger-plates, &c. Messrs. Model & Co. (Stand 103), of North-street, Fitzroy-square, exhibit bamboo furniture and Japanese screens. At Stand 105 Messrs. G. D. Peters & Co., of Moorfields, show, among other things, Prescott's patent door-hanger for sliding doors,—an American invention. Messrs. W. Woollams & Co. (Stand 108), of High-street, Manchester-square, exhibit their well-known artistic and non-arsenical wall and ceiling papers. These products appear to support the contention of of the exhibitors, that with the advancement of the art of paper-staining at home there is no longer any need to have recourse to foreign makers for fine goods, and that if papers are skilfully designed and well made in other respects, they do not suffer in the slightest degree by the sole use of colours free from arsenic. At Stand 125 Messrs. Blyth & Son, of Chiswell-street, exhibit a handsome pollard oak dining-room suite. At Stand 127 Messrs. Clark, Bunnett, & Co., of Rathbone-place, show dinner and other lifts, and metallic Venetian blinds. Stands 144, 145, are occupied by Mr. John Matthews, of Weston-super-Mare, with terra-cotta vases, &c., for the drawing-room and conservatory. At Stand 159 Messrs. Ewart & Son exhibit their Crown bath-boiler in action, and their "Empress" ventilator. Messrs. Messenger & Co., of Loughborough (Stand 160), show their excellent "Loughborough" boiler as adapted not only to horticultural purposes, but for use in halls and other prominent positions. Messrs. Newton, Chambers, & Co. (Stand 164), show their Thorncliffe cooking-range. At the east end of the hall, near the entrance to the Arcade, Mr. Hancock exhibits his patent "Paragon" automatic bolt for warehouse and other doors which have to be secured from the outside. This invention appears to be one of great merit. Of the remaining exhibits we can only mention those of Messrs. Barnard, Bishop, & Barnards, of Norwich, and of Messrs. Doulton, of Lambeth. The first-named firm (Stand 201, south-east corner of the gallery) have an excellent display of oak and other chimney-pieces and over-mantels of good design, shown in conjunction with their well-known specialities in grates. Messrs. Doulton & Co. have at the next stand an exceedingly good display, including, besides their radiating tile stoves in various forms, some oak chimney-pieces and over-mantels, with Doulton-ware columns and bosses. But the most noteworthy exhibit of this firm is the large terra-cotta chimney-piece and over-mantel modelled by Mr. George Tinworth.

An interesting part of the exhibition is that afforded by the Swiss wood-carvers who are to be seen at work in the western gallery. These workpeople have been sent to this country by the Institut de Sculpture sur Bois, which has been established at Brienz, in the Bernese Oberland. A factory has, we are told in the catalogue, been started at Interlachen, for making habitable châlets on a large scale. Parquetry is also, it seems, becoming an extensive manufacture in Switzerland, for we learn that the quantity turned out annually is 700,000 square feet. The value of the wood-carvings executed by the Oberland carvers is stated to reach a yearly total of 2,000,000 fr. The number of artisans, male and female, engaged in the trade, is given at 25,000, and their earnings range from 2 fr. to 5 fr. per day.

The catalogue is in most respects a creditable production, although not free from mistakes. It is an excellent specimen of typography, produced by the well-known firm of Blades, East, & Blades. It is printed on good paper, and contains three plans of the building and its annexes. But why, in this fourth quarter of the nineteenth century, should the cover, title-page, and preface be printed in what is called "Old Style" spelling? The catalogue is absurdly entitled "A Compleat Liste of ye divers Goodes displayed for your pleasaunce and astoniement by sundrie personnes at ye Third Annual Furniture Trades Exhibition." The sudden transition from ancient to modern spelling which is seen in this sentence is a ludicrous illustration of a wearisome conceit.

THE NEW STOCK EXCHANGE BUILDINGS.

ONE of the most costly buildings now in course of erection in the City is the new Stock Exchange, which has for some time past been in progress. The site upon which the new structure is being built is between Throgmorton-street and Old Broad-street, for which some of the most valuable property in the City has been purchased at an outlay, it is stated, of considerably more than 100,000*l*. The Exchange and the buildings which are being erected in connexion with it will cover a ground area of about 5,000 ft. In Old Broad-street the property purchased on the west side includes nearly the whole of the shops and offices from Threadneedle-street to the junction of Broad-street with Throgmorton-street, and these premises are now in course of demolition. The offices and other property in Throgmorton-street which have been acquired to clear the site for the new building, have a frontage to that thoroughfare of 100 ft. in length. The whole of this property, which extends eastward from the entrance to the existing Exchange, has been demolished, and for some time past the massive foundations for the intended new buildings have been in progress. The excavation of this large area, preparatory to getting in the foundations, has been a heavy portion of the preliminary work, the excavations having been carried to a depth of 36 ft. below the ground line, and passing several feet down into the London clay. The Exchange, or principal room in the building, for the meeting and business of the stock-brokers, will be octagonal in form, 68 ft. in diameter, and 100 ft. in height to the apex of a massive dome, from which it will be in the main lighted. Ornamental columns in polished Aberdeen granite, with varied coloured marble capitals, will surround the octagonal interior, being carried up to the coved cornice from which the dome will spring. These columns will rest upon massive piers in Staffordshire blue brick, 10 ft. in diameter, which have been built up from 36 ft. below the ground-line to which the excavations have been carried. The ground-floor will rest upon ponderous wrought-iron girders, of great strength. Beneath the ground-floor there will be a deep basement 20 ft. from floor to ceiling, which is intended to be occupied in connexion with the settling department of the business of the exchange. The present Stock Exchange, which immediately adjoins the building now in progress, will be retained and internally connected with it, thus more than doubling the area of the existing premises in Capel-court. The whole of the Throgmorton-street frontage is intended to be rebuilt uniform with the entrance to the present exchange, and occupied as offices exclusively in connexion with the business of the exchange, whilst the premises fronting Broad-street, after being rebuilt, will be let for general business purposes.

Mr. J. J. Cole, of Finsbury-crescent, is the architect, and Mr. G. Shaw, of Westminster, the builder, the amount of his contract being 83,000*l*. It will, therefore, be seen that, including the purchase of property, the cost of the undertaking will amount to upwards of 180,000*l*. Mr. Payne is clerk of the works.

Institute of Painters in Water-colours. In accordance with the new rule of the Institute of Painters in Water-colours, members will in future be elected solely on the ground of the excellence of their exhibited works. The first three artists elected under this rule were Messrs. Ludwig Passini, Thomas Huson, and G. F. Wetherbee.

DWELLINGS FOR THE WORKING CLASSES AT HOME AND ABROAD.

It is an important fact that a question of vital and ever-increasing importance affecting each country equally, is being brought forward simultaneously in France and England. With the French the erection of cheaper dwellings for the working classes, and with us the *improvement* of the dwellings. And most sorely is such improvement needed. In a recent article in the *Builder* (p. 534, *ante*), entitled "Work for Scotland to do," allusion was made to Mr. John Bright's speech when elected Lord Rector of the Glasgow University, stating that in Glasgow alone forty-one families out of every hundred families lived each in one room. If we would add to that statement the picture of how many persons can be crammed into one room, we have only to turn to the statistics given twenty or more years back by the editor of this paper, when he entered exhaustively into the question of the sanitary condition of London. Frequently nine, sometimes as many as fourteen, are in this city found sleeping in one room,—if one can call a room what is rather, figuratively speaking, in many cases a nursery merely of vice, disease, and death. If, as the *Athenæum* observed, when commenting on one of the books in which this condition was set forth, there is a mysterious but undeniable connexion between dirt, disease, and crime; and if, also, as Mr. Godwin boldly asserts, "Homes are the manufactories of men," it is in the interest of the Legislature to try as far as possible to provide homes that shall be manufactories of good men and trustworty citizens. Lord Beaconsfield was so alive to this fact and its importance that he insisted that every labourer's cottage should be provided with all requisites, including a porch, an oven, a tank. All the country needed was duly set forth in the Artisans' and Labourers' Dwellings and Improvement Act, which became law on the 29th of June, 1875; and a short time ago (Tuesday, April 17th), Sir W. Harcourt informed Sir R. Cross that, after two schemes had been sent in and considered unsatisfactory, on the 10th. ult. the Home Office had received a third scheme from the Commissioners of Sewers for the erection of buildings in accordance with the Artisans' Dwellings Act of 1882, on the grounds secured under the Act of 1875, that that scheme had been approved, and there was to be no further delay. This sounds cheering. But it ought to be impressed on the people that it is for them to help in the good work by themselves trying to keep clean and in order the better homes to be provided for them. The State though, so to say, "bound to protect as far as possible the aged, the helpless, the infirm, and the orphans," is not divinity on earth, and cannot do the *impossible* if the people in their turn will not help to make the good work *possible*. Nor could the means of any landlord stand the strain of keeping in constant and perfect order property that his tenants persistently let run to rack and ruin. If up to the present, as is admitted, the masses have *not* had a chance in the brighter era apparently opening for them, it is for them now to do their share. It seems impossible, had a body of gentlemen been delegated by the State to visit and report every three months on the state of the dwellings of the working classes, things could have remained so long in the condition they are. Mr. Bright says it strikes him not only with astonishment, but horror, "the visions of millions of families, mothers, fathers, children, passing, ghastly, orrow-stricken in endless procession from their radle to their grave." Each and all (now that a happier future seems opening to the "peoples") who can put their shoulder to the wheel it behoves to do so, and with the influence of their wealth, their pen, their moral influence, their example, see that the Act when passed remains not a dead letter, but, when once set in motion, *works*.

It may not be without interest to some readers of this journal to hear from what point of view our Gallic neighbours look at this subject, and to hear some of the projects mooted. The *Débats* remarks on the extraordinary augmentation of public expenses in Paris (the municipal expenses alone are fourteen times greater than they were half a century ago, whereas the population has only increased in the proportion of one to four). The burden of these expenses naturally falls on the ratepayers: every Parisian, minor or adult, masculine or feminine, pays the city about 119 f. 30 c., added to what he pays the State in the shape of contributions, direct or indirect. Generally, taxes get incorporated into the price of products, &c., and descend, step by step, on to the shoulders of the consumers. Food, clothes, dwellings,—the necessaries of life, without speaking of luxuries,—become consequently dearer in spite of industrial progress, which lowers continually the net cost. In fact, "living" becomes daily more expensive, and there is a never-ceasing storm of complaint which touches the official and non-official philanthropic heart, and gives rise to all sorts of projects intended to combat this rise in the necessaries of life as obstinate as inexplicable. But it is, above all, the question of house-rent, and more especially still of dwellings for the working classes, which is arousing the solicitude of the Government and the municipal administration. The working classes in Paris are exceedingly badly housed, and the rents for small dwellings and lodgings have gone on increasing for years. The question of remedying this evil has been largely discussed in public. Some are of opinion that the only efficacious means of putting a stop to the evil is recourse to the maximum. A petition, emanating from the Fédération du Centre, has been addressed to the Chamber of Deputies asking for the establishment of a legal maximum, lowering 50 per cent. rents above 400 francs (16*l.*), 40 per cent. rents of 400 francs to 1,000 francs (16*l.* to 40*l.*), 25 per cent. on little shops and industries that mount up to 120*l.* A lively, a very lively, little Republican journal, called *Equality*, and since "dead," expressed its approval of this plan in energetic terms, and said, "it would *do* until the time came when they would *take* from the proprietors what that class were pleased to consider their property." Without going so far as this, a Municipal Councillor, M. Manier, asked for the "*propriété urbaine*" to be re-purchased. A M. Fiaux demanded the demolition of the military zone, and houses for the working classes to be erected on its site. A project of agreement between the State and the Crédit Foncier is under consideration for the construction of small dwellings at a cheap rate. The Crédit Foncier would agree to advance, under guarantee from the State, the sum of twenty million francs to persons who would agree to build small habitations, costing about 3,000 to 9,000 francs (120*l.* to 360*l.*), and representing a rent of 200 to 500 francs (8*l.* to 20*l.*); secondly, to advance under the guarantee of the Departments and Communes, up to 65 per cent. of the value of the houses, of which half at least shall be appropriated to lodgings of 150 to 300 francs (6*l.* to 12*l.*); thirdly, the city of Paris should, from the present, be authorised to guarantee to the profit of the Crédit Foncier the repayment of an annuity corresponding to the lent capital of 50 millions, which would apply without distinction to these two kinds of loans. This project is, without doubt, infinitely more feasible than the establishment of the maximum, or the buying of the urban property. But would the result be to multiply small tenements and to lessen rents? This question, says the French writer, remains to be examined.

We will suppose that the State,—the Departments, the Communes, making use of that prudence which characterises them when the money of the ratepayers is in question, would only accord their guarantee with good reason, and would not be obliged to take on their own hands the houses built on this guarantee, to avoid the selling them or letting them at low prices. Were it otherwise, they would be compelled to have recourse to further taxation to make up the sum necessary to cover the deficit of the transaction, and to augment the rates on things taxable, which would gravitate fatally towards a new augmentation of the prices of the necessaries of life, small tenements included.

We will suppose the guarantee of the State, the Departments, &c, to remain purely nominal, but would the salutary results expected be obtained? The wish is above everything to multiply small dwellings, that laborious and economical workmen may purchase such out of their annual savings. The intention is excellent, only it does not answer to the habits or actual wants of workmen. It is very agreeable to have a little house and a bit of garden to onself, but it is on this condition, to be able to keep the house clean and in order, and to have time to cultivate one's garden, and also to be at not too great a distance from one's work. In most workmen's families, wife as well as children are engaged out at work during the daytime, and have not much time to give to the looking after their home and garden. Besides, in Paris, as in other great manufacturing centres, cheap ground for building separate houses is often at a very great distance from the shops or manufactories they work in,—a fatiguing one even for people who work ten or twelve hours a day. Frequently it occurs that, by a crisis, a stoppage of work, workmen have to shift their quarters, and seek employment elsewhere in some fresh part. From all this it results workmen actually find small benefit in seeking to become proprietors, those who have savings, preferring to invest them in the "Caisse d'Épargne" railway stock, or the Crédit Foncier,—in short, in stock easily realisable, either in case of necessity, or when from workmen they in their turn become masters. We may add, indeed, that in a superior class of society people care much less to inhabit their own houses than they did (in Paris). They buy a house that by letting gives them an increase to their income, and live elsewhere. Thus in giving a guarantee to encourage the construction of small tenements destined for the working classes, the State would not supply the actual want,—indeed, would not respond to some particular and exceptional ones.

Is it not necessary, then, to encourage the increasing of small lodgings at cheap rates in all industrial centres, especially Paris? Certainly most of the small lodging-houses where the great majority of the working-classes find shelter are insufficient as to accommodation,—incommodious, badly ventilated, and infectious,—and the sooner better and cheaper are built the better. But one must see if the proposed project will have the effect of multiplying what is wanted or discouraging their increase. What do they want to do? That the City of Paris should guarantee to a competition of 50,000,000 the loans consecrated to the construction of this class of tenement, and moreover (it is the complement to the project we have analysed), to exempt during twenty years from land tax, tax on doors and windows, &c., these privileged dwellings. The result of all this would be heavier taxation,—would weigh on other houses, not excepting those where workmen live and will continue to live. What would be the effect on the building of these tenements? It is possible that a certain number of builders, tempted by the allurement of a loan of sixty-five per cent. on the values of real estate guaranteed by the City of Paris, would undertake it. But amongst the articles is one calculated to lessen their ardour. It is this: "the rents which shall be stipulated in the contract are to be agreed on between the administration and the constructors." It is a paragraph which resembles singularly the maximum demanded by the *Fédération du Centre*, and gives food for reflection. Supposing they get over this and arrange matters with M. Manier and his colleagues, more or less socialistic, of the Municipal Council. On this delicate point,—supposing they construct buildings subject to the maximum until the completion of the amount of guarantee, say about eighty millions,—the half, forty millions, to be applicable for small tenements,—what would happen? That immediately the construction not guaranteed of small tenements would cease; that no builder would try to compete with those builders guaranteed by a municipality able to dispose of the purses of the ratepayers, and who would not fail to dip into them should the rents subject to the maximum not come in or not suffice to cover the guarantee and the rent: so no one would care to expose himself to such an unequal competition, and the result would be that fewer buildings would be constructed with the guarantee of the city than are constructed to-day without the guarantee.

It is the fashion to say builders disdain absolutely to build houses with small accommodation, devoting themselves exclusively to those for the richer classes. This is not quite in accordance with facts. There is a society called the "Société Immobilière de Montmartre" (to cite one), who have just constructed in the Eighteenth Arrondissement four little islands, comprising altogether eighty-eight houses, which contain 2,872 apartments or lodgings, and 198 shops, all especially intended for the working classes, clerks, people of modest fortunes, &c. This society has tried to introduce on a smaller scale improvements analogous to those which are enjoyed by the richer classes. These apartments consist some of one large room, with an alcove, &c.; others of two, three, or four rooms according to the size of the family; each apartment has a little ante-chamber, kitchen, separate lavatory,

a lumber-room, and a cellar. There are gas and water on every floor, and a bell to each door. The rents range from 14*l.* to 38*l.* a year; and for one room from 4*l.* to 6*l.* only per annum. These islands, consisting of 3,000 apartments, can accommodate about 10,000 people (the population of a good *sous-préfecture*). The "Société Immobilière de Montmartre" has ceded them to another company, who lets them and derives a net revenue estimated at 7 per cent.

It is with a twofold intention we cite these numerals to show to what the contract so pompously suggested reduces itself, and to show what private enterprise can do if left to itself, and how probable it would be more buildings of the same kind would spring up if found to yield a profit of 7 per cent., whereas the dwellings of the rich only give 6 per cent., or even 5½ per cent. Right in the heart of Paris exists this little town of 10,000 souls; it is merely a question of time, and not having to compete with the state and city as to how many more, sheltering even 50,000, might not be erected. Another project suggested by M. Pavillon was for a trimestrial lottery, giving in five years a capital of 20,000,000 francs, to be consecrated to buying ground for the erection of villages consisting of 1,500 houses, serving also as an asylum for those who should have inhabited these more than thirty years. The *Figaro* treats the Crédit Foncier scheme as Utopian; inclines to the lottery question; but says it is a pity not to do something, if even a little at a time, instead of as they have for the last twelve years, been constantly suggesting schemes which excite the imagination of the people and end in smoke. Let, it says, in words we re-echo, "Whatever is done be done well and done quickly." C.

THE MONEY VALUE OF A DIMINISHED DEATH-RATE.

CAPTAIN DOUGLAS GALTON, in the course of a very able paper on "Economy in Sanitation," read by him before the Society of Arts on the 25th ult., said:—

But let us dismiss all consideration of the moral advantages of properly housing the poor (who, in their present dwellings, only foster dangerous diseases in our midst), and look at the question solely in its commercial aspect. The removal of the insanitary dwellings, and the location of the poor in sanitary dwellings will diminish sickness, and increase the wage-earning power of the community. In order thoroughly to realise the value of the economy of sanitation, we must translate it into figures. Each death has been estimated to cost in funeral expenses about 5*l.*, and consequently, in the metropolis, which will soon have a population of 4,000,000, a diminution of the death-rate by 2 per 1,000 means, in the first place, a direct money saving of 40,000*l.* a year from this cause alone. There would also be the saving from sickness, because the amount of sickness follows in some proportion the number of deaths. We shall certainly err on the side of understating the question rather than overstating it if we take for this loss an assumed amount derived from life assurance tables. It appears from Mr. Neison's tables, derived from the records of the Ancient Order of Foresters, that a sum of 40*l.*, paid at twenty years of age, will ensure 1*l.* per week during sickness for the whole life. The annual interest on this sum at 5 per cent. is 1*l.* per annum.

The loss from sickness arises partly from the loss of earnings, and, in the younger members of a family, from the expense which the sickness causes, from loss of time and otherwise, to the other members of the family; and an average of 10s. a week would probably represent the average loss occasioned by sickness all round. If we assume the sickness to follow the death-rate, the diminution of 2 per 1,000 may be estimated to cause a saving of 1s. per head per annum of the population, as the measure of the loss during sickness, arising from preventible diseases, in the earnings of the heads of families, and in the extra expenses caused by the other members of a family. Thus the diminished sickness-rate on the population of 4,000,000 would afford a beneficiary advantage to the population of at least 200,000*l.* a-year; or the advantage to the population from a diminished death-rate of 2 per 1,000 would amount to nearly a quarter of a million a year.

If by abolishing the moral cesspools and foci of disease I have mentioned, we could reduce the death-rate to the level of that of some of the most favourable towns, the direct saving from diminished sickness and funerals would be nearly half a million. This would pay the interest at 4 per cent. on 12,500,000*l.*, which would afford ample funds for the erection of proper houses for the poor. The question may be considered in another way. The table following shows how the numbers living at each age would be increased, if the deaths from zymotic or preventible diseases could be excluded.

ENGLAND AND WALES.—Four Orders of Life Tables for Males (calculated from the Facts recorded during the Ten Years, 1861-70), showing the Effect of the Exclusion of Deaths from (1) the Principal Zymotic Diseases; 2) Phthisis; on the Probabilities of Living from Age to Age:—

Age *x*.	Living at Each Age *x*: To die of All Diseases.	Living at Each Age *x*: The principal Zymotic Diseases Excluded.	Living at Each Age *x*: Phthisis Excluded.	Dying in Each Interval of Age: Of all Diseases.	Dying in Each Interval of Age: The principal Zymotic Diseases Excluded.	Dying in Each Interval of Age: Phthisis Excluded.
0	510,622	510,622	510,622	142,805	99,272	140,277
5	367,817	411,350	369,645	14,688	7,479	13,997
10	353,129	403,871	355,648	7,788	5,934	6,738
15	345,341	397,937	348,850	10,474	6,553	6,857
20	334,867	388,404	341,850	13,854	14,566	7,755
25	321,013	374,838	334,268	30,258	31,164	18,808
35	290,755	343,674	315,400	36,617	39,107	28,010
45	254,138	304,567	287,390	44,313	48,836	40,738
55	209,825	255,731	246,592	68,881	67,133	64,367
65	150,944	188,598	182,225	73,445	87,112	87,279
75	77,499	101,146	95,946	39,583	76,092	73,895
85	17,826	25,144	22,231	17,037	23,918	21,305
95	789	1,196	946	780	1,187	937
105	9	9	9	9	9	9

The table may read thus:—Of 510,622 boys born alive, 321,013 attain the age of 25, of whom 30,258 die in the ten years following. Exempted from attack by miasmatic diseases, 374,838 would survive to the age of 25; 31,164 dying in the next ten years. Applying this table to the population of the metropolis, where the number of male births in 1880 was about 68,000, at the ages of 20 or 25, when a labouring man attains his full earning power, there would be about 3,670 more male persons living, out of the persons born in one year, if preventible diseases were abolished, than is now the case; and at the age of 45 there would be about 3,400 more males living; at the age of 55 there would be 6,133 more; and at the age of 65, when a man's working power may be assumed to be on the decline, there would still be above 2,500 more males alive who had been born in the same year. The community may thus be assumed to have had the benefit from the capacity for work of these extra persons during the 45 years. The money value of this may be roughly assumed from a calculation of Dr. Farr's in a paper published in the Statistical Society's Proceedings of 1853, on the equitable taxation of property. He there gives the value of high agricultural wages, and of moderate professional incomes. The value of the future wages of a labourer, at the age of 20, on high wages, is there stated at 637*l.*, and the value of the future income of a professional man, earning the moderate income of 288*l.* a year, is stated to be 5,329*l.* at the age of 25, and 6,038*l.* at the age of 40. If we assume that one-tenth of the males were of the class above that of labourers, the pecuniary advantage to the community from the abolition of zymotic diseases, arising from the earning power of the large number of males who would be kept alive out of those born in each year, who would otherwise have died, would be represented by about 4,500,000*l.*; and this would be repeated annually. These figures show that there is a direct money value to the community in preserving health, and extending the duration of healthy lives of those who live in the community, because it extends their power of labouring and of adding to the wealth of the community.

The Haberdashers' Company. The appointment of architect and surveyor to this company having become vacant by the death of Mr. Snooke, numerous applications have been received, and a committee of the court of assistants have selected three of the candidates for recommendation to the court, who will make the appointment at their next meeting. Alphabetically arranged, the names of the selected candidates are,—Mr. G. Cuthbert, Mr. Alexander Peebles, and Mr. Henry Stock.

ROYAL INSTITUTE OF BRITISH ARCHITECTS.

REPORT OF THE COUNCIL.

THE following passages are from the Report of the Council, to be submitted to the members at the annual meeting of the Institute on Monday, the 5th of May:—

The Council have the honour to present their Annual Report on the state of the property and affairs of the Institute, with the revenue accounts and balance-sheet, duly audited, of ordinary and trust funds, for the year ended December 30th, 1882, and the usual supplementary revenue account of ordinary funds made up to the 9th of April of the current year. The number of professional members is now 1,096, consisting of 406 Fellows and 690 Associates. There are also 108 Hon. Associates, giving a total of 1,204 subscribing members, less necessarily the 41 Fellows who under the old rule compounded for their subscriptions. The losses by death in the course of the official year, 1882-83, have been three Fellows, namely, David Mocatta, past vice-president, G. Somers Clarke, and R. Lacon Sibley; four Associates, namely, A. H. W. Bridges, B. W. Cumming, J. W. Forge, and T. E. C. Streatfeild; and two Hon. Associates, namely, W. G. Harrison, Q.C., and J. Gascoigne Lynde. Fifteen Fellows, twenty-two Associates, and two Hon. Associates have been elected. The election, as Hon. and Corresponding Members, of Herr von Dehn-Rotfelser and Herr Ende, of Berlin, has strengthened the distinguished roll of foreign architects and men of science who, since the foundation of the Institute, have rendered valuable services to it, more particularly by forwarding technical information concerning new buildings in their respective localities, and by enriching the library with their works.

A comparison of the estimate of ordinary income and expenditure printed in the last report, with the revenue account of ordinary funds, shows but slight variations. The receipts of ordinary income, estimated at 3,475*l.*, have attained the sum of 3,423*l.*; and the disbursements, estimated at 3,190*l.*, amount to 3,230*l.*

A reference to the past year's revenue account of trust funds, and to those of 1881 and 1880, will show how the Council have been enabled to increase the income derived from the Ashpitel Prize Fund to about 10*l.*, whereby they are now in a position to present annually, to a passed candidate in the Examination, the prize which was originally given as a biennial gift, value about 15*l.*, in the Voluntary Architectural Examination. The accumulated dividends of the Travelling Fund have also been invested in the purchase of Stock; while the Tite Fund has been increased to a sum of 1,100*l.* Stock in Three per Cent. Consols, by the investment of a part of the balance obtained from accumulated dividends. A sum of 36*l.*, being a further portion of such balance, has been expended during the year in the purchase of books on Italian architecture. The library has also received from the ordinary funds two grants amounting together to 91*l.* 3*s.* The Council have to add that, under the will of the late Mr. David Mocatta, the sum of 100*l.* is bequeathed to the Institute Charitable Fund, and payable on the decease of his widow. The capital of ordinary funds invested in Consols, which, at the close of 1881, amounted to 2,060*l.*, has been increased during 1882 to 3,150*l.*, and the Institute now holds 118 shares (exclusive of the 18 shares forming the Ashpitel Prize Fund) in the Architectural Union Company.

The estimate of ordinary income and expenditure for the current year, exclusive of trust funds, entrance fees, arrears of subscriptions, special receipts and disbursements, is as follows:—Income, 3,570*l.*; expenditure, 3,180*l.*

With a portion of the anticipated balance of 390*l.*, the Council propose to carry out some necessary works of painting and repairs.

The discussion of an important subject, which has been before the profession of architects for a good many years, has resulted in the adoption, at the special general meeting held on the 9th of April, 1883, of the paper of "Suggestions for the Conduct of Architectural Competitions." Nor has the decision been arrived at without careful and protracted consideration, for the first resolution on the subject of modifying and superseding the paper entitled "General Regulations for the Conduct of Architectural Competitions," adopted by the Conference of 1872, is more than three years old, while no less than three business meetings and two special general meetings have been held to consider the subject. The paper (re-issue, dated the 9th of April, 1883) is now at the disposal of members and others, and it will materially aid in putting into execution the objects of the memorial presented by the late Mr. Street on behalf of a large number of architects of the United Kingdom, to the effect that professional aid should always be sought by the promoters of competitions.

The conduct of the new Examination in Architecture under By-law 14 has occupied much time and attention. Since its commencement there have been accepted forty-two applications to be examined, eighteen of which were made during the official year, 1882-83; thirty candidates have passed, and ten have either not passed or have been relegated to their studies for one year. Mr. Thomas Purves Marwick was recommended for the Ashpitel Prize,

1882, and Mr. Charles Steward Smith for a Sanitary Prize, the special gift of Ernest Turner, Fellow, to whom the Council have to tender their warm thanks. Since the last annual election, the Board of Examiners in Architecture have held twelve meetings, during which they have conducted three examinations, have discussed proposals for the establishment of local examinations in Glasgow and Manchester, and have prepared a valuable report which has been adopted by the Council. It has consequently been decided to slightly modify the programme of the Examination in order that the candidates may be enabled to devote, instead of merely one sitting of a half a day, an entire day of two sittings to the subject of the Plan, Section, and Elevation. For this purpose the Examination will commence on a Monday at two p.m., thereby increasing its duration to three and a half instead of three days, and the whole of the subsequent Wednesday will be appropriated to drawing. A list of books drafted under the various heads of examination subjects has also been prepared; and in the new issue of the programme of the examination this list and the modifications and additions before mentioned will be embodied.

The Council desire more than ever to call the attention of members, as well as of students and candidates for the Examination in Architecture, to the advantages afforded by the Institute Library. Facilities are now freely given to non-members who may wish to consult books, &c., therein, and these privileges are not unappreciated, as the Librarian's report, approved and adopted by the Library Committee, satisfactorily shows.

Several communications from Members of the Institute, on the law of light and air as it affects buildings, have been printed in the Journal of Proceedings, and have assisted the Special Committee in their careful consideration of this difficult subject. The death of W. G. Harrison, Q.C., Hon. Associate, who, from the commencement of the inquiry, afforded the most valuable advice and assistance, has left a void difficult to fill; and, it having been decided to seek a successor from the same class of Members, an invitation to act on the Committee was addressed to E. S. Roscoe, Hon. Associate, which has been accepted.

A special committee, appointed in 1881 to inquire into the past history of the Royal Gold Medal, and to submit recommendations for the future proceedings of the Council in relation to its appropriation, reported in December last. In future, the intention of the Council to recommend a Royal Gold Medallist will be announced in the Journal of Proceedings eight weeks before the nomination. Any member desiring to make a suggestion thereon can then do so in writing to the Secretaries one month before such nomination, and such suggestions will be referred to a sub-committee appointed for the purpose. This year the official recommendation for the award has fallen upon Francis Cranmer Penrose, M.A. (Camb.), past vice-president, mainly for his mathematical investigations of the principles of Athenian architecture, which, remarkable for their minuteness and accuracy, have been supplemented at various times by communications to learned societies, whereby Mr. Penrose has given enhanced value and attracted fresh attention to his original work. The choice of the Council, confirmed by the general body of Fellows, was approved by her Majesty the Queen, and the approval was graciously notified in a letter which was published in the Journal of Proceedings.

The Pugin Travelling Studentship has been awarded this year to Mr. William Alfred Pite, whose drawings and sketches were adjudged by the Council to be the best among the fourteen applications submitted for the studentship. Mr. J. G. Sankey, the candidate placed second, has been awarded the Sharpe prize of books, for drawings and sketches of a high order of excellence. Two other candidates were selected for distinction, namely Mr. H. H. Kemp, who has been awarded a Certificate of Honour with five guineas, and Mr. C. A. Bassett-Smith, who has been awarded a Certificate of Honour.

Of the five gentlemen who applied to hold the Godwin Bursary this year the Council selected Hugh McLachlan, Associate, and he has undertaken to travel in North Germany.

The Council regret that they were unable to award the Tite prize, and they had to express a similar regret last year. They decided to present an honorarium of 10*l.* to each of the following gentlemen who submitted designs for the prize, namely, Messrs. J. Wallace, H. A. Gregg, and H. A. Paley, and they are glad to note that the last-named gentleman has gained the Grissell Gold Medal. The Soane Medallion has been awarded to R. A. Briggs, Associate, and in this prize two Medals of Merit have also been awarded.

Some of the measured drawings submitted this year were exceptionally good. Those of Moreton Hall, Cheshire, by Mr. James Strong, of Chester, were adjudged the best, and he has been awarded the Institute Silver Medal with ten guineas; but the drawings of St. Mary's Church, Leicester, by Mr. W. H. Bidlake, of Leicester, approached them so closely in artistic execution that the Council recommended the award to Mr. Bidlake of a second Institute Silver Medal, with five guineas, and the recommendation was accepted by the general body of Fellows.

A resolution of the last business meeting, requesting the Council to consider in what manner the claims of the Architects' Benevolent Society can be brought prominently and effectually before the profession, and to inquire into any other official sources of relief open to distressed architects, &c., has been discussed, and the Council have appointed a sub-committee to consider the matter, and offer recommendations thereon.

An examination under the Metropolitan Building Act, 1855, was held in July last, when two candidates received certificates of competency to act as district surveyor in London.

In August last the Manchester Society of Architects memorialised the Council on behalf of the Fellows not resident in London, and representatives of the Society, consisting of four Fellows, namely, the president, Mr. James Stevens; the vice-president, Mr. G. T. Redmayne; and the hon. secretary, Mr. John Holden, with Mr. James Murgatroyd, came to London for the purpose of discussing with a sub-committee appointed to receive them, certain suggestions for ascertaining the sense of the non-metropolitan Fellows, without compelling each one of them to travel up to London in order to record his vote at annual and special general meetings. The proposals made are too important to be hastily accepted or dismissed, and further consideration of them has been deferred until the comparative leisure afforded at the end of May and during June will permit the subject to receive the careful attention it deserves, for the Council are convinced that any measure which would afford opportunities, greater than the non-metropolitan Fellows now possess, of expressing an opinion upon the affairs of the corporate body would have the certain result of largely extending its influence and increasing its prosperity.

GENERAL SCOTT.

Sir,—Major-General H. Y. D. Scott, R.E., C.B., F.R.S., &c., has been removed by death, as you have already briefly mentioned, from his useful labours and sorrowing friends, at the comparatively early age of sixty-one. Allow me to add a few lines to your notice. Educated as a military engineer, he, nevertheless, acted at Chatham as instructor in surveying and in practical astronomy. He was also examiner of military topography for the Education Department at the War Office. In 1851 he became secretary to the Royal Commissioners of the Great Exhibition. In 1871 he retired from army service to become Director of Buildings at South Kensington, and was architect for the Albert Hall and Science Schools. Those who had the privilege and honour of a personal acquaintance with General Scott loved him as a friend, esteemed him as a man, and honoured him for his untiring zeal and rare abilities. The general public can only know the outside of the character of any man. If an artist, they may see his works, but can know nothing of the secret thought, labour, and drudgery, necessary to production, so that it may be said that the individual alone knows the place and presence of his skeleton. General Scott had the honour of designing, constructing, and completing the finest concert-room (the Royal Albert Hall) in the world,* and had the gratification of seeing it occupied by Royalty and crowded by the *élite* of society. He had also the pleasure of listening in it to the solemn, grand, soul-stirring solos of the "Messiah," and to the majestic choruses of "Israel in Egypt." The Royal Albert Hall, when crowded rank over rank with youth and beauty, is a sight not to be surpassed in Europe.

General Scott, like other of his professional brethren, did not escape without official opposition, and so wearing did this become at last that his family know that it prematurely killed him. The torture-chamber of past ages has been abolished, but a more subtle and equally fatal means of torture to a refined mind unfortunately remains, so that a delicate constitution fades and dies under the withering blight of officialism. C. B.

Southwick.—A Vestry meeting was held in the Green School-room, when the question of reseating the parish church with open benches in place of the existing high-backed pews, was discussed upon the report and plans presented by the architect, Mr. Arthur Loader, of Brighton, who submitted estimates of cost for the work to be executed in oak, in pitch pine or plain deal. The subject was ultimately deferred, pending the amount of subscriptions to be obtained, as was also the question of the lych gate designed by the same architect.

* This will scarcely be admitted by the descendants of the late Capt. Fowke, but we will leave the question aside at on of that question for another occasion.—Ed.

NOTES FROM BIRMINGHAM.

Sir,—There is sometimes a perversity in the official mind which is unaccountable. Plans are selected for adoption which are calculated to give the public the least accommodation at the greatest expense and inconvenience. The letter-boxes at the Birmingham General Post Office are a case in point. Placed in the middle of the side of the building down a steep side street, a distance of 24 yards from the main thoroughfare of Paradise-street, their position for the public accommodation could not well be more inconvenient. All persons going up the street who desire to purchase stamps at the office must pass the end of Hill-street,—in which the boxes are situated,—and proceed a distance of 20 yards to the entrance doorway. On coming out with their stamps they must walk a distance of 44 yards to the boxes, and if they are continuing to go up Paradise-street, 44 yards back again,—in all 88 yards, 48 of which are up and down a steep hill,—when the simple provision of a box at the side of the entrance-door would have saved their legs and, in very many cases, their tempers also. Every person, therefore, unless his (or her) business leads him down Hill-street, must walk at least 48 yards on a steep hill to post his letters there. Of course this very bad arrangement was remonstrated against at the time the office was built, thirteen years ago, from plans prepared in the Office of Works, and frequently since, but to no good effect; and some time ago the letter-box was divided into two compartments, and the public were invited to sort their own letters by placing in one box all addressed to Birmingham and district, and all others in the other box. This was looked upon as adding insult to injury. At the last meeting of the Birmingham Town Council the mayor brought up a resolution to memorialise the Postmaster-General to remove the letter-boxes to the Paradise-street front of the building, and it was carried unanimously. It is, however, quite on the cards that it will not be carried out as yet. The Office is apt to look upon all its arrangements as simply perfect.

Another instance of the same unaccountable perversity is seen in the flooring of the pay office of the new County Court here, the plans for which were prepared in the same office. Here the poor people who bring their money are, I am credibly informed, frequently kept waiting for two or three hours at a stretch, standing on a stone-flagged floor, 6 ft. wide, which has, in the front of the counter where they mostly stand, been substituted for the general wood flooring with which the rest of the room is laid. If the wearing of wood-soled clogs was general here, as in Lancashire, the matter would be of little consequence; but leather and paper are all the wear in and about Birmingham, and much suffering is likely to result from long standing on a stone floor in thin boots.

The building committee of the Old Meeting Chapel, now pulled down to enlarge New-street Station, invited plans, in a limited competition, for the new chapel they propose to build in the Bristol-road, and have recently selected those ent in by Mr. J. Cossins, who has been appointed to carry out the work. The ground is also being cleared at the corner of Congreve-street and Edmund-street for the new Liberal Club, to be built from the designs of the same gentleman, who is also the architect to the new Mason College adjoining.

After a lapse of exactly two calendar months from the 18th of February last, during which time no rain has fallen in the Birmingham district in any measurable quantity, we are again favoured by a visit from the watery god. The vegetation is a full month late, and green vegetables for the table are very scarce and dear.

The old brick bridge carrying the Bristol-road over the river Rea, which forms the borough boundary at Bournbrook, having become decayed, a new brick and stone bridge is being built in its place, and as the bed of the river has during a long time past become silted up, it is intended in the near future to deepen it, and enclose it in brick walls and bottom throughout its entire length in the borough, somewhat similar to the Aston Brook, now complete.

The wholesale fish-market, built and opened no longer ago than 1870, at the corner of Spiceal-street and Bell-street, and having an area of 715 square yards, being found inconveniently small, the Markets Committee some

time ago acquired the freehold of some of the adjoining property, and having now become possessed of every interest therein, presented plans to the Town Council at their last meeting to pull down the present market and build another, with an area of 1,624 square yards, at the same time widening Bell-street to 16 yards, and covering the same with an iron and glass roof the entire length of the new market, 240 ft. Lease-lane is also to be widened so as to give access to the basements for carts. These works are estimated to cost about 16,000*l.*, including fittings, and the Council have authorised the committee to proceed with the work.

The town of Birmingham was the first to put in force the Artisans' Dwellings Act of the late Government, and by acquiring the whole of the interests in the unsanitary area have been enabled to pull down and clear away a great deal of house property which had become unfit for human habitation. The vacant land thus acquired has been partly relet by private arrangement on leases, but as this is a very slow process it is now proposed to let it by auction. It is to be hoped a better success will attend the method here than was recently the case at Wolverhampton, when of many lots offered, only one provoked competitive bidding.

E. G.

NEW COUNCIL CHAMBER AT THE LONDON GUILDHALL.

ON Monday afternoon last Mr. T. Fricker (chairman of the Special Guildhall Improvement Committee) laid the corner-stone of the new Council-chamber at the Guildhall. The chamber is being erected at the northern side of the Guildhall, on the site of the old offices of the Town Clerk, Architect, &c., by Mr. B. E. Nightingale, the contractor, from the designs of Mr. Horace Jones, the City Architect, the contract sum being 33,249*l.* It is anticipated that the roof will be raised this year, although it is not expected that the chamber will be opened until this time next year. In form the chamber will be a duodecagon, the Architect having, after much deliberation, come to the conclusion that that is the most convenient arrangement for a debating assembly. The internal diameter of the chamber will be 54 ft., and the height 61 ft. 6 in. The external height to the vane will be 100 ft. The entrance for the Lord Mayor will be at the eastern end, in which position his lordship's chair will be placed. Ranged around the Lord Mayor's chair will be the seats of the aldermen and high officers of the Corporation, the Recorder being placed at the right hand of the Lord Mayor. Separate entrances will be provided for the aldermen, the members of the Court, and the public. The silver gilt trowel used on the occasion was made by Messrs. Edward & Sons, Poultry, from a design by Mr. Horace Jones.

COMPETITIONS ABROAD.

Berlin.—Eleven architects presented themselves at the preliminary competition, in connexion with the great State prize of 300*l.* This initial or test examination lasted for a week. Six of the candidates succeeded in passing, and were accordingly admitted to the competition proper. The principal task which has been proposed for solution is stated as follows:—"The interests of German fine art require the erection of an appropriate Exhibition building in the capital city of the empire." The competitors are accordingly required to prepare designs for a monumental edifice, suitable for erection in an eligible portion of the Thiergarten, the chief park of Berlin. The frontage is to be 250 mètres in length, and the depth of the building is to be 350 mètres.

Gas and Water.—The Society of Gas and Water Engineers and Experts of Germany is offering a prize of 500 marks (25*l.*) for the best popular short pamphlet on the employment of gas for cooking, heating, and various technical purposes.

Paving Stones, Enamel, &c.—The Prussian Society for the Promotion of Trade is offering three prizes for the best solution of the following problems:—1. The quarrying, preparing, carrying, and employment of paving stone in Germany, 150*l.*; 2. A chemical investigation of Italian enamels and majolica, 50*l.* and a silver medal; 3. An investigation of the laws of ductility, or the laws according to which a permanent ductile or plastic change of form is produced by a force acting simultaneously in different directions, 300*l.* and a gold medal.

The Stockholm Museum.—With regard to the competition already announced for the Northern Museum of Stockholm, notice is given that the date for sending in the competitive designs has been postponed to July 1st, 1883. An addition of 2,000 kronen, or about 110*l.*, is also to be made to the premiums that are offered. Dr. Hazelius, the Director of the Museum at Stockholm, is ready to supply further information.

FOREIGN NOTES.

Monument to General Chanzy.—A committee has been formed in Paris for the purpose of raising a national subscription to erect a monument to the memory of the popular General Chanzy, "the heroic leader of the Army of the Loire" in the great struggle of 1870-71, who died at the beginning of the present year. The committee appeals for support to all patriots without distinction of party. It is reported that some of the printed forms of appeal for subscriptions have found their way to the military authorities of Berlin,—a circumstance which the German papers speak of as evidently a bad joke.

The Will of Augustus Cæsar.—Among the additions which have been made through the labours of Herr Karl Humann, the excavator of the great altar of Pergamon, in Asia Minor, to the Berlin Museum, is a copy of an inscription which turns out to be the text of the last will and testament of the first Roman emperor, Augustus Cæsar. At the present time, the celebrated historian Professor Mommsen, assisted by Dr. von Domaszevski, is engaged in endeavouring completely to decipher this important inscription. The original is out on the face of a rock, and is of considerable length. It was copied in plaster of Paris on pieces of canvas, and the latter are fixed on about two hundred tablets, the whole of which now lie in the Berlin Museum. Additional copies are now being prepared from the original copies, and placed in the Assyrian department.

THE PROPOSED STATUARY FOR BLACKFRIARS BRIDGE.

AT the meeting of the Court of Common Council on the 26th ult., Mr. Deputy Crispe (chairman of the Bridge House Estates Committee) presented a report relative to the designs for statuary for the pedestals of Blackfriars Bridge, and stating that they had paid the undermentioned premiums to the authors of the following designs:—"Triumphs of the City of London," 250*l.*; "Queen Boadicea," 250*l.*; "India visits Britain," 150*l.*; "Progress," 150*l.*; "Queen Elizabeth," 100*l.*; "Emporium of the World," 100*l.* Such designs now remained the property of the Corporation. The committee had conferred with Sir F. Leighton, P.R.A., Mr. W. C. Marshall, R.A., and Mr. G. F. Watts, R.A., as to the best means to be adopted for carrying out the reference, and after much deliberation they arrived at the conclusion that equestrian statues would be the most appropriate for the purpose; but before deciding upon the subjects for such statues they thought it desirable that a model should be prepared and placed for inspection on one of the pedestals to guide them in their decision, and the Architect had submitted several sketches of equestrian statues, and amongst them that of Francis I. at the Crystal Palace, which, being in point of size most suitable, having regard to the height and size of the pedestals of the bridge, it occurred to them that the directors of the Crystal Palace Company might be willing to allow a cast of that statue to be taken at the expenses of the Corporation, upon the understanding that when done with the cast be handed over to the company, or broken up. The Committee asked permission to do this, at an estimated expense of 350*l.* This would, at all events, afford an opportunity of a thorough consideration as to the wisdom of placing that description of sculpture on the pedestals of the bridge. The report was adopted.

THE Harborne and Smethwick School Board is about to erect a new infant school at West Smethwick, and new Board-room and offices in High-street, Smethwick, from drawings by Messrs. J. R. Sharp & Co., architects to the Board.

THE SURVEYORS' INSTITUTION.

THE Council announce that the following candidates have passed the qualifying examinations, held at the Institution on the 2nd to the 7th ultimo:—

As Fellows.—W. E. Horne, London; G. F. North, Brecon; T. B. Silcock, Bath; W. Tarrant, Bath; A. Vernon, High Wycombe; W. L. Vernon, Hastings.

As Professional Associates.—C. H. Bedells, F. A. Bontor, H. Johnson, H. A. Jones, J. Pain, A. Paull, P. E. Pilditch, H. J. Treadwell, London; J. Crawter, Cheshunt; W. Day, Maidstone; L. G. Hasluck, New Barnet; H. E. Moore, Hastings; J. H. Moyes, Ely; W. G. S. Rolleston, Leicester; E. C. Rundle, Tavistock; C. Satchell, Newbury. The prizes awarded in connexion with the Associates' Examination will be presented at the annual general meeting on the 28th inst.

THE ROYAL MANCHESTER INSTITUTION.

THE report of the Council of the Royal Manchester Institution, presented at the annual general meeting of the governors, held on Monday last, stated that the sixty-second annual exhibition of pictures and drawings, by modern artists, was held in the autumn. As in the previous year's exhibition, the galleries were utilised to their fullest extent for the purpose of showing the collection of pictures, which, in the opinion of the council, was a most important and satisfactory gathering of works, but the council regret that, notwithstanding the excellence of the exhibition, the result was financially a considerable loss. The Heywood Gold Medal was awarded to Mr. Henry Clarence Whaite, for his water-colour drawing, "A Stronghold of Edward the First," No. 216 in the catalogue. An exhibition of works comprised in the permanent gallery, together with a loan collection, was held in the months of May, June, and July, and although this exhibition was considered to be of a most interesting character, a loss of 137*l.* 11s. 8d. was occasioned thereby. An action for damage to a picture, brought by Mr. Tourrier, an artist, against the institution, was decided in favour of the claimant. The council considered, on the evidence and legal advice on the case, that they were fully justified in defending the action; they were advised by counsel to apply for a new trial, but on full consideration decided not to carry the matter further. The result was a considerable loss. The council have received during the year, as additions to the permanent gallery, an oil painting, "Flowers," by H. Fantin, a bequest of the late Mr. Godfrey Gottschalck, and an oil painting, "St. Jérome," by Professor Alphonse Legros, the latter being an addition to the very valuable gift of Professor Legros announced to the governors in their report for 1880. Professor Legros has further shown his interest in the institution by allowing the council to take a series of twenty bronze medallions from casts made by him, and these are in preparation. All these will now form part of the permanent art gallery of the city of Manchester. The council have to report several changes during the last year in the list of honorary officials. Mr. G. H. Midwood having resigned his office as treasurer and member of the council, Mr. Philip Gillibrand was elected treasurer in his stead. Mr. Edward Salomons also resigned as honorary secretary, and Mr. George Falkner was unanimously appointed to the office. The council duly recorded their high appreciation of the manner in which Mr. Midwood and Mr. Salomons had performed the duties devolving upon them. The council further report, with the deepest regret, that Mr. Falkner only held office until the 31st of December, when he was suddenly removed by death, and thereupon the office of honorary secretary again became vacant. The transfer of the land and buildings of the institution, with its permanent gallery of pictures and the other works of art, &c., so fully set forth in the last annual report of the council, is now an accomplished fact. "The Manchester Corporation Act, 1882," received the royal assent on the 10th August, 1882. According to arrangement the council of the institution carried out the engagements previously entered into by them until the close of the autumn exhibition in January last, when the Corporation entered into full possession. The governors, in pursuance of the Act, nominated, previously to

November last, seven persons to be their representatives on the art gallery committee of the town council, viz.:—Messrs. Wm. Alfred Turner, Chas. J. Pooley, Thos. Ashton, Thos. Read Wilkinson, Richard Smith, Chas. J. Galloway, and Chas. P. Scott, who, with the fourteen nominees of the city council, form the Art Gallery Committee. The council hope and believe that under the management of the Corporation, the institution, now the art gallery of the city, may have a greater measure of usefulness and success in the future than it has had in the past, and that the governors will have no cause to regret the step taken by them in transferring their property to the city for the benefit and enjoyment of the citizens as well as themselves.

BIRKENHEAD NEW TOWN HALL AND SESSIONS HOUSE.

At the monthly meeting of the Birkenhead Town Council, on Wednesday last, the General Purposes Committee recommended that the tender of Mr. James Leslie, of Bootle, to erect and complete the new Town-hall for the sum of 40,497*l.*, be accepted.

With reference to this subject, the Deputy Town-clerk read a lengthy communication from Mr. Edmund Gabbutt, contractor, Liverpool, complaining that he had been unfairly dealt with by the committee, who had rejected his tender for one which was higher by about 300*l.* He alluded to a number of large contracts which he had successfully completed, as showing his fitness for the work in question. Mr. Gabbutt added that he had refused to send the architect a duplicate of the tender, because such a thing was most unusual, and also expressed an opinion that no part of the cost of the building should be under the control of the architect for ornamental work, but that the whole should be in the hands of the contractor.

Alderman Mills, chairman of the committee explained (we quote from the report in the *Liverpool Daily Post*) that in all public buildings of that kind there were certain special works reserved by the architect to be done by specialists, and, to meet the cost of these, special sums were set aside. The architect had taken tenders for that kind of work, and had sent a summary of the lowest to each contractor, so that he might add the amount to his tender, and thus make up the whole. That was the usual practice when special work was intended to be done, and was carried out with the view of securing the best possible workmanship. In their case a sum of 16,000*l.* had been reserved. In opening the tenders a note was found attached to that of Mr. Gabbutt, and the committee debated whether it was a tender that ought to be considered, and ultimately it was decided that Mr. Leslie's tender, which was the lowest based upon the form issued, should be recommended to the Council for acceptance. The committee had no wish to make the slightest reflection upon Mr. Gabbutt.

Mr. F. Smith asked whether the expenditure of the 16,000*l.* rested with the architect, and had not been a matter of public competition. Also, whether Mr. Gabbutt, as stated in his letter, had been invited to send in a duplicate tender to the architect as well as to the town clerk, and whether the committee approved of such a course.

Alderman Mills said that every care had been taken on the part of the architect to secure the best work for the 16,000*l.* He believed the architect received duplicate tenders, but thought they should have been opened by the committee first of all.

Mr. Delany asked whether one of the parties tendering had telegraphed reducing his tender several hundreds of pounds while the matter was under the consideration of the committee.

Alderman Mills acknowledged that a telegram had been received during the sitting of the committee from a contractor, reducing his tender by 500*l.*, on the ground that one of the tenders for the reserved work was lower than he had observed.

Mr. F. Smith moved that the matter be referred back, as it was highly improper that duplicate tenders should have been sent in.

Mr. Rawcliffe seconded.

The Mayor said he was aware, as a member of the committee, that the architect had received duplicate tenders from all the contractors except Mr. Gabbutt.

Mr. Walker said the matter was mentioned at the committee, and none of the professional gentlemen present found any fault with it.

Mr. Rigg asked the name of the contractor who had sent the telegram.

Alderman Mills.—Mr. James Leslie.

Mr. J. Laird said he was not aware at the committee meeting that the architect had received duplicate tenders, or he should certainly either have left the meeting or asked the committee not to deal with the matter. He had never heard, in the case of any transaction he had to deal with, of duplicate tenders being sent to anybody.

After some further discussion, the amendment that the matter be referred back was carried by a large majority; as was also an amendment referring back the recommendation to employ Messrs. C. O. Ellison & Son as architects for the work, at a commission of 5*l.* per cent. upon such outlay as may be sanctioned by the Council.

The New Sessions House.

The same committee recommended that the plans and designs of Messrs. Brattan & Son and Mr. Alex. Bleakley, jun., for the new Sessions House and Bridewell, to be erected on land in Closter-street, at the rear of the new Town-hall, be adopted, subject to the arrangements for prisoners and the police being satisfactory to the Government, and subject to tenders being obtained from builders satisfactory to the Council, to carry out the work for the estimated sum of 23,332*l.*

A letter was read from Mr. William Hesketh, architect, Liverpool, complaining that the committee had set aside his plans because they were twenty hours late in delivery. There was also a circular signed by seven of the competing architects suggesting that the services of a professional referee should be called in before plans were finally adopted.

Mr. Jackson moved the following motion, of which he had given notice:—"That the whole question of the selection of plans and designs for the new Sessions Court, &c., be reconsidered, and that it is desirable that the assistance of a professional referee should be called in to advise the committee as to the relative merits of the designs which were sent in not later than the 31st of March."

Mr. W. Laird seconded, and, the motion being carried, the recommendation of the committee as above was not put to the meeting.

Mr. Bloor then moved, and Mr. Little seconded, that all the plans received, of whatever date, be put before the professional referee.

The motion was rejected.

NEW SCOTTISH NATIONAL CHURCH FOR LONDON.

On Wednesday afternoon the Right Hon. the Earl of Aberdeen, Lord High Commissioner to the General Assembly of the Church of Scotland, laid the foundation stone of St. Andrew's Scottish National Church, Pont-street, Belgravia. The church is being erected for the purpose of worthily representing the Established Church of Scotland in the West-end of London, and will, it is expected, be opened early next year. It is intended for the congregation for so many years worshipping in the church in Crown-court, Covent-garden, made famous by the ministry of the late Dr. Cumming. The members of the congregation are for the most part resident in the locality of the new church, but it is intended, as we gathered from the speeches on Wednesday, to retain the old church in Crown-court for mission and Sunday school work.

The new church will accommodate 900 persons without side galleries, and will have a total internal length and width of 100 ft. and 50 ft. respectively. It will be built of red brick and Doulting stone externally, and internally of Corsham Down Bathstone. The pillars of the porch will be of dark grey Aberdeen granite, polished, with carved capitals. The columns of the nave arcade will be of Peterhead red granite, polished; and the shafts of the chancel arch and of the windows will be of Aberdeen grey granite, polished, with carved capitals. The end wall of the church will be decorated with an enriched arcading of stone, granite, and marble mosaic. The floor of the chancel will be laid with marble mosaic, and the aisles throughout with encaustic tiles. There is an organ-chamber on one side of the chancel, and a vestry, &c., on the other side. The building comprises a hall capable of seating 300 or 400 persons, for congregational meetings, &c.; also a session-room and vestry, and a house for a resident church officer. The tower, which will be at the angle of the building facing Pont-street, will rise to a height of 113 ft. The style of the architecture is Early English of the thirteenth century, and the church has been designed by and is being erected under the superintendence of Mr. J. Macvicar Anderson, F.R.I.B.A., of Stratton-street, Piccadilly, who not only gives his services as honorary architect, but has contributed 1,000*l.* to the building fund. The cost of the building will be about 12,000*l.*, and the cost of the site is about 8,000*l.*, making a total of 20,000*l.* Mr. E. Lawrance is the builder. It is hoped that by the liberality of Scotsmen in London the church will be completed and opened free from debt, and funds will be obtained for the erection of a manse for the pastor, and for the endowment of the church. The Rev. Dr. Macduff moved a vote of thanks to Mr. Macvicar Anderson, to whose indomitable energy he attributed the present forward condition of the work and the satisfactory arrangements which had been made for the comfort of the company who were invited to witness the ceremony.

BUILDING TRADES' EXHIBITION AT BIRMINGHAM.

The second annual Building Trades Exhibition at Birmingham was formally opened on Monday last by the Mayor of that town, who observed that the Great Exhibition of 1851,—with the exception of an exhibition that took place in Birmingham in 1849,—might be said to have been the parent of all the marvellous exhibitions of art and manufactures which had taken place. It was very obvious that with the enormous variety of manufactures in which this country took part it was a special advantage that exhibitions of this kind should be held from time to time. Such exhibitions brought together for ready inspection all the numerous kinds of industry that would otherwise never be seen,—very many of them exceedingly meritorious,—while the manufacturers were enabled to secure advantages they would not otherwise be able to achieve in intercourse with one another. Above all, such gatherings stimulated enterprise,—not in price, but in merit. Our nation had now to run a race with many other countries, and the benefits which our manufacturers and artisans received by intercourse and comparison would enable them better to win this race. He therefore looked upon exhibitions like this as of especial need and use to the artisan classes in enabling them to see, judge, and compare amongst the variety of articles shown, and benefit thereby. It seemed to him peculiarly fitting that Birmingham, the great centre of so many industries, should become the place in which to hold such an exhibition. In and round about the town were gathered nearly all the trades represented in the hall. He hoped the exhibition would prove most successful, and would abundantly satisfy those who had organised it.

The exhibition, which is under the management of Mr. Philip Shrapnel, secretary of the Building Trades Exhibition held in London a few weeks ago, appears to be larger and more representative than its Birmingham predecessor. Many of the exhibitors have evidently transferred their exhibits from London to Birmingham for the time being. Among the most notable of these we may name Messrs. Frederick Walton & Co., of Lincrusta-Walton celebrity; the Patent Waterproof Paper and Canvas Company, of Willesden, of whose remarkable products we lately spoke; Mr. George Jennings, of Stangate, London; Messrs. Jones & Willis, of London and Birmingham; Messrs. Hayward Bros. & Eckstein, of Union-street, Southwark; and Messrs. Burke & Co., of Regent-street. Mr. Jennings makes a good show of sanitary appliances. The combined lavatory, slop-sink, &c., fitted with patent catch and self-closing tap, is most convenient for offices where space is an object. In another new combination, without slop-sink, the opening of the door turns on the water supply. In the "concealed lavatory," which occupies very little space, the basin remains in its normal position tipped up against the wall in a kind of cupboard. The butler's sink is provided with a valve which forms it into a wash-tub at pleasure; while by an ingenious arrangement, a single pipe serves both for waste and overflow. Instead of the ordinary grating, which is so liable to become stopped, the sink and wash-tub has a slot running the whole width, which allows the waste-water to flow away freely, and at the same time prevents small articles from escaping into the drain. Messrs. Jones & Willis, of Great Russell-street and Euston-road, show artistic wrought ironwork, which they are endeavouring to popularise by producing it at at the lowest possible cost consistent with good workmanship. Some church furniture, including chancel chairs, brass eagle lectern, gas standards for sanctuary, stone font, and sculptured panel for

pulpit, are also on view. They also have some standards for the incandescent electric light, the whole being illuminated by some new lamps,—the "Hesperus,"—with three wicks for consuming crystal oil, and each giving a light equal to 45 candles. Messrs. Hayward Brothers & Eckstein exhibit their patent reflecting semi-prism lights. The reflection of the light from the face of a semi-prism is illustrated very strikingly in a dark box upon a card illuminated at the other end. Messrs. Burke & Co. show their "mosaique artistique" for floors in public buildings, churches, and dwellings. Parqueterie work, which is increasing in public favour, is shown by Mr. Henry Bassant, of the West London Works, Wells-street. The Worcester Royal Porcelain Company show many specimens of their very excellent productions, and they also lend a "thrower's wheel," which is shown at work. Amongst the ventilating appliances is a system of ventilating ridges, shown by Messrs. H. Thompson & Co., of Manchester. The ridge has air flues from all the rooms connected with it. There is also a stand devoted to Mr. Lawson Tait's thermic ventilator. Mr. J. E. Ellison, ventilating engineer, of Leeds, shows his ventilating specialities, suitable for all kinds of buildings. Messrs. Taunton & Hayward, of the Star Tube Works, Birmingham, have special apparatus for the heating and ventilating of rooms, but more especially adapted for bed chambers and offices. There are also interesting sanitary appliances shown by the Birmingham Sanitary Association, whose exhibits include Potts's air-chambered sewer and soil-pipe traps, Boyle's self-acting air-pump ventilators, Boyle's chimney cowls and smoke extractors, and vertical tubes for the admission of fresh air into buildings. Amongst other exhibits may be mentioned the greenhouses, poultry houses, &c., exhibited by Mr. E. H. Harris, of Upper Holloway; concrete for all purposes by the Eureka Concrete Company; safety hoists, by Mr. J. Stones, of Ulverston; sanitary stoneware, by Messrs. Stiff & Sons, of London; patent locks, by the Yale Lock Company, America; and specimens of paints, by the Silicate Paint Company.

The exhibition will remain open for the next three weeks.

WESTON-SUPER-MARE MASTER BUILDERS' ASSOCIATION.

THE annual dinner of the members and friends of the Master Builders' Association at Weston-super-Mare took place, on Tuesday, at the London Hotel, under the presidency of Mr. J. Smyth-Pigott, J.P. The duties of vice-chairman were discharged by Mr. Matthews, and a large company sat down to an excellent repast. After the usual loyal and patriotic toasts had been honoured, the chairman proposed "Success to the Weston-super-Mare Master Builders' Association," the main object of which, he explained, was to defend and protect its members from a combination of workmen who would wish to place a restriction on the building trade. Prior to the formation of the Master Builders' Association, employers were more in the hands of their workmen, and between these two things, if he temporised with the workmen it caused him serious loss, and, on the other hand, if he did not do so, it often caused complete ruin. With the formation of the Association a new state of affairs took place, and it was soon found that a combination of masters could hold out much longer than a combination of men. The result was that in cases of dispute the delegates of one party conferred with delegates from the other, and a harmonious arrangement was arrived at without violence or terrorism. A strike he could only designate as the gravest and most terrible thing that could happen, inasmuch as it was the murderer of trade and peace. He associated with the toast the name of Mr. Krauss, president of the Bristol Master Builders' Association.

Mr. Krauss, in response, spoke of the strength of unity, adding that he was one who believed in a fair day's pay for a fair day's work. He asserted that the builders' real enemies were not the artisans, but the architects and engineers, inasmuch as builders often signed contracts which they had no business to, and if anything went wrong the whole blame was not unfrequently unjustly thrown upon the builder. Having expressed it as his opinion that architects should bestow more time in giving information to contractors when inspecting plans, he urged all engaged in the building trade to at all times submit a contract to their solicitors before signing it, or they might find themselves ruined by some of the clauses.

Mr. W. Dyer, the president of the Weston-super-Mare Association, also responded.

The health of the chairman and the committee and officers of the Association having been drunk,

Mr. Ruscombe Poole next proposed "The Town Commissioners," and advocated that some of the restrictions of the Local Government Board should be removed so as to allow local boards to lay out money and make watering-places as attractive as those on the Continent, recouping themselves by making a small charge for admission to parks, &c.

WILSON'S GRAMMAR-SCHOOL, CAMBERWELL.

THIS school, which has been recently erected in Church-street, Camberwell, from the designs of Mr. Edward Robert Robson, F.S.A., of 41, Parliament-street, Westminster, was formally opened by Alderman Sir J. C. Lawrence, M.P., on Saturday last. The school has been built in place of an old one which was founded in the reign of James I. by the Rev. Edward Wilson, then Vicar of Camberwell, who left a messuage, schoolhouse, and seven acres of land for the education and instruction of youths in grammar. About forty years ago the school got into Chancery, and in 1845, the schoolhouse was pulled down. Since then the land behind the old schoolhouse had been let on lease for building purposes, and the ground-rents, now amounting to about 300*l.* a year, were allowed to accumulate until, the trustees having about 5,000*l.* in hand, it was determined to erect a new school. The school in its external appearance and internal arrangements is in every way unlike a Board school. The class-rooms are all planned for separate teachers, as in a German gymnasium, and there is a laboratory for Science Classes. The school will accommodate 250 boys, and the cost of the building is about 4,500*l.* exclusive of furnishing. The architectural style, although very simple, suggests the time of Edward VI.

BUILDING PATENT RECORD.*

APPLICATIONS FOR LETTERS PATENT.

2,029. C. E. Davis, Bath. Locking or "keying" together bricks employed for building purposes. April 21, 1883.

2,052. R. Hudson, Gildersome. Metallic roofing, &c. April 23, 1883.

2,063. D. Jones, London. Apparatus for improving draught in chimneys, &c. April 24, 1883.

2,078. D. S. Keith, Toronto, Canada. Water-closets, &c. April 24, 1883.

2,079. H. H. Lake, London. Apparatus for disinfecting water-closets, sewers, &c. (Com. by C. F. Pike, Philadelphia, and E. Z. Collings, Camden, U.S.A.) April 24, 1883.

2,099. J. Haigh and I. Haigh, West Bromwich. Apparatus for flushing water-closets and urinals. May 25, 1883.

NOTICES TO PROCEED

have been given by the following applicants on the dates named:—

April 24, 1883.

6,069. J. Williams, London. Safety-valve for kitchen boilers. Dec. 20, 1882.

6,078. L. A. Groth, London. Window-blind. (Com. by H. Olansen. Christiania, Norway.) Dec. 20, 1882.

387. G. F. Harrington, Ryde. Ventilating sewers. Jan. 24, 1883.

1,100. C. A. Wheeler, Swindon. Weather-bar, for the exclusion of rain at the foot of doors and casements. Mar. 1, 1883.

1,457. E. H. Harris, London. Portable or removable conservatories, greenhouses, &c. Mar. 20, 1883.

1,506. E. Verity and J. M. Verity, Leeds. Holding in position swing windows, ventilators, &c. Mar. 22, 1883.

1,567. W. Lord, Middlesbrough. Apparatus for preventing down-draughts in chimneys, &c. Mar. 28, 1883.

* Compiled by Hart & Co., Patent Agents, 186, Fleet-street.

April 27, 1883.

6,172. H. Knowles, Woodville. Kilns for burning bricks, &c. Dec. 27, 1882.

1,426. G. Gore, Balsall-heath. Domestic stoves, &c. Mar. 17, 1883.

1,570. R. A. Hunter, Dublin. Ventilators, &c. March 28, 1883.

1,574. A. F. Morrison, Manchester. Construction of lavatories, baths, water-closets, &c. Mar. 28, 1883.

ABRIDGMENTS OF SPECIFICATIONS.

Published during the Week ending April 28, 1883.

4,077. J. F. Wright and G. E. Wright, Birmingham. Gas-stoves for heating, &c. August 25, 1882. Price 2d.

At the bottom of a chamber is the gas-burner, and the products of combustion pass up this chamber and into the top of a second chamber parallel thereto, and then pass out through the bottom of the latter. Each of these chambers contains tubes, through which the air passes to be heated, and thence into the room. (*Pro. Pro.*)

4,142. H. J. Haddan, London. Door-locks. (Com. by O. Belger and F. Preller, Hanover.) August 30, 1882. Price 2d.

The latch is combined with operating levers fixed to a tube, which projects on both sides of the lock, and carries the door-handles. (*Pro. Pro.*)

4,153. E. Edwards, London. Carpet-fastener. (Com. by J. A. Wilmot, Riverside, New Brunswick.) August 31, 1882. Price 6d.

A lower jaw is secured to the floor, and an upper jaw is hinged thereto, and held against the same by springs. The carpet is held between the two jaws.

4,219. J. B. Shaw, Tunstall. Decorating bricks, tiles, &c. September 5, 1882. Price 4d.

Metallic colours are fixed on the brick, &c., by a size of gum tragacanth.

4,232. J. Hudson, Bolton. Apparatus for holding and releasing cords for Venetian and roller blinds. September 6, 1882. Price 6d.

A "kedge" is used for this purpose, which consists of a cylindrical barrel secured on a plate fixed on the wooden frame. There are two holes provided both on the top and bottom of the barrel. Inside the barrel is a piston-like ram, through which are two corresponding holes, and a spiral spring is attached to the ram. The cords pass through these holes, and by pressing a stop the spring is allowed to act, and partly revolve the ram, thereby jamming the cords between the ram and the barrel ends.

4,297. C. Hinksman, London. Joining lead and other pipes. September 9, 1882. Price 2d.

Brass union joints are fitted over the ends of the pipes, and the metal is spread outwards and riveted over the inner edge of the flange of the joint. (*Pro. Pro.*)

PARLIAMENTARY JOTTINGS.

The Indian Public Works Department.—In the House of Commons on the 26th ult., Mr. Carbutt asked the Under-Secretary of State for India whether, considering that Sir Edward Clarke's minute, on the re-organisation of the Public Works Department, of June, 1877, was in the hands of nearly all officials in India, and also in a public library in London, he would lay a copy of it upon the table.—Mr. J. K. Cross, in reply, said,—It cannot be admitted as a reason for laying a paper on the table of the House that it has already been published, through what certainly seems to be some breach of confidence. If Sir E. Clarke's minute were officially published, it would have been accompanied by other minutes on the re-organisation of the Indian Public Works Department, the production of which is not desirable, as the subject is still under consideration.—Mr. Carbutt thereupon gave notice that he should take the earliest opportunity of moving for the papers.

The Ashburnham Collection.—Mr. O'Donnell asked the First Lord of the Treasury whether Government would purchase the Irish manuscripts in the Ashburnham Collection, and cause them to be placed in some fit locality in Ireland for the use of scholars and students; whether it was the intention of the Government to carry out the provisions of the Irish University Education Act of 1879, which provided that, within twelve months after the first appointment of the Senate of the Royal University, a scheme should be prepared for the erection of buildings, which should include a library; and whether the Government would consider the propriety of beginning the realisation of such library by placing the Irish manuscripts of the Ashburnham Collection at the disposal of the Senate of the Royal University of Ireland for the use of scholars and students.—Mr. Gladstone replied that if the collection were acquired, the Government would consider the propriety of making Ireland the depository of, at least, some of the Irish manuscripts.

The Changes at Hyde Park Corner.—In the House of Lords on the 27th ult., Earl Fortescue called attention to the inadequacy of the great alterations now being made at Hyde Park Corner to do more than mitigate for a time the inconvenience which must still result from the two streams of yearly-increasing traffic from north and south, east and west, crossing each other there on the same level. He said that the traffic at that point proceeding from north to south would go on increasing in the future, and notwithstanding the great additional space and multiplication of communications under the present scheme they would be found inadequate. He feared, however, the streams of traffic would continue to interfere with one another if no further openings were made to relieve its passage through the park. In asking Her Majesty's Government whether an additional carriage-way in and out of the park could not be made, opening into the wide space opposite Sloane-street, to supplement the enlarged vent for north and south traffic at Hyde Park Corner, and the small and cramped vent for it at Albert Gate, he might point out that the site was at present unoccupied by houses, and therefore could now be more cheaply purchased than at any other time. Lord Sudeley, on behalf of the Government, said it was quite impossible to form any accurate opinion as to the results of the alteration until the additional roadways were opened for traffic. It was possible that in course of time the increased traffic might necessitate further steps being taken, but it was premature, within four days of the opening of these additional roadways, to give any decided opinion on the matter. The First Commissioner of Works had taken great interest in the working out of the scheme, and proposed to watch the result very carefully, to see whether any further steps were necessary. As regarded the noble earl's suggested improvement from Sloane-street into the park, the question had not been under consideration. It was, however, very doubtful whether an additional gateway into the park so near Albert Gate would not seriously interfere with police arrangements.

SEWERAGE AND DRAINAGE NOTES.

Southport.—Major Tulloch, R.E., on the 27th ult. concluded an inquiry opened by him at the Town Hall with reference to an application of the Southport Corporation to the Local Government Board for powers to borrow the sum of 20,000*l.* for the purpose of enabling them to complete the sewerage system of the borough. On behalf of the opponents of the proposal, Mr. Shone, C.E., of Wrexham, was called, and said that the cost of applying his system to the sewers which the Corporation proposed to relay would be about 23,000*l.*, as against the 20,000*l.* provided in the estimate of the Corporation. In cross-examination by the Town Clerk, Mr. Shone admitted that he was not prepared to say what amount he had allowed for the land whereon the buildings and engines would be erected, nor the cost of the buildings and engines themselves, or the ejectors. Mr. Carver said the committee had thought by having Mr. Shone's system adopted the smells from the grids might be removed. Of course, it would cost a very large amount of money to deal with the whole of the sewage of Southport on his system, and they had simply proposed, as far as possible, that the system should be applied in lieu of gravitating sewers. The Town Clerk observed that the Corporation had had two reports on Mr. Shone's system laid before them, and, after examining them carefully, they had come to the conclusion that it was not adapted to Southport on financial and other grounds, and they, therefore, objected altogether to have it thrust upon them. The Corporation wished to perfect the scheme which Parliament had sanctioned, and which the Local Government Board had confirmed. Major Tulloch said he understood and had expected that a new scheme of sewerage for the whole of Southport was going to be proposed by the opposition, but it had transpired that they would make use of the existing main sewers, and simply carry out a scheme with reference to the same sewers which the Corporation proposed to relay.

York.—Mr. S. W. North, Medical Officer of Health for the City of York, in a lecture delivered before a local society, on the 28th ult., on the sanitary construction and maintenance of dwellings, referring to the necessity for good drainage, said that many builders in York did not even know the difference between agricultural drainage and sewerage, and they would say it was folly to cement the joints of drain-pipes! It was most undesirable to have drains under houses, unless the pipes were constructed of cast iron. He did not believe that earthenware pipes, even if accompanied by the best workmanship, would long be safe, because heavy traffic would shake the joints loose or break the pipes; or, on the other hand, decay took place. This, however, was not the fault of the builder or architect, but was sometimes due to the downward pressure of the building. In conclusion, Mr. North spoke strongly on the subject of the duty of citizens in regard to sanitation.

WHO IS RESPONSIBLE?

Sir,—I reside in a retired "genteel" suburb in the south of London. The house which I occupy is what is styled a well-built one of its class, and contains seven rooms and bath-room. I entered into possession some two years since, the house being then quite new. Not long afterwards I detected a faint earthy kind of smell, which at times found its way up from the cellar, but this I heeded little, thinking that the newness of the building was the cause. Some few weeks since, however, the smell became so bad that I imagined the drains were at fault; so the workpeople came, and on taking up the floors we found that a 4-in. stack-pipe, leading from the water-closet, situate on the first-floor, had been turned into a 6-in. stoneware bend, just under the floor of the drawing-room, the joint of which had been but filled in with common clay, and then covered over with a thin layer of brick-rubbish. The clay had in course of time dropped from this joint, and had therefore left an opening of 1 in. all round the bend, thus admitting an uninterrupted flow of sewer-gas into the building, and this, too, in close proximity to the domestic fireside. I am thankful that, so far, myself and family have escaped the horrors of an outbreak of typhoid fever.

What I would like to know is, who is responsible for this disgraceful state of things, and why builders and others are allowed openly to scamp such important work as the proper laying of the house-drains when erecting new dwellings? Surely, sir, the Legislature should make this class of offence against the community a criminal one. I am informed that mine is not the only case of its kind in the neighbourhood in which I reside. Before taking the house I was assured by the builder that the drainage was perfect.

A City Man.

Miscellanea.

The Employment of Women.—The annual meeting of the Society for Promoting the Employment of Women was held on the 26th ult., at the premises of the Society, 22, Berners-street, Oxford-street, the Earl of Shaftesbury presiding. The twenty-fourth annual report, read by Miss King, the secretary, recognised with gratitude the work of the City and Guilds of London Institute for the Advancement of Technical Education. The Council of this Institute granted 100*l.* annually to that Society for paying apprentices' fees in certain trades for girls (recommended by the Society) whose parents were unable to supply the requisite funds. The report showed that females had found remunerative employment in decorative art, plan tracing, wood-engraving, in the use of the telephone, as clerks and bookkeepers, compositors, hairdressers, and waitresses. Mr. W. Woodall, M.P., in moving the adoption of the report, stated that the commission of inquiry into technical education on the Continent, with which he was connected, stated that the attention of the commission had been devoted to the subject of technical education as it affected women equally as much as it affected men. The motion was adopted unanimously, and a cordial vote of thanks having been accorded to Lord Shaftesbury for presiding, his lordship, in acknowledging the compliment paid him, said there were 800,000 women in this country who must depend upon their own exertions for their livelihood, and it was very desirable that a variety of employment should be opened to them. He was convinced that female labour merited better pay, and to this end the efforts of that Society were directed.

The Chantrey Bequest.—"F. R. S.," writing to the *Times*, says:—"Under the present conditions, the Chantrey collection is a collection of those pictures which private purchasers are not extremely anxious to buy. I have to suggest what seems to me to be a very simple and easy remedy. It is to the highest interests of artists that there should be a collection of their best pictures, collected and endorsed as such by the highest authorities among them, and for that reason open to absolutely no question. If this be so, why can they not have a simple arrangement among themselves that when they sell a picture they sell it under the reservation that, if the Chantrey Bequest Committee shall ultimately wish to purchase it, they shall be at liberty to do so? A private purchaser who desires to possess a particular picture which is exhibited by the Academy will know that the betting is something like 3,000 to 3 that the picture will not be chosen by the Chantrey Committee; and he has also this further consolation, that if the committee does elect to buy the picture he wished to have for his own gallery, he has gained a precious endorsement of his own taste in art. It is probable, therefore, that if the artists were to make such an arrangement among themselves, private purchasers would at once cheerfully, if, indeed, not eagerly, see the justice and desirability of such a course; and were this state of things brought about, the Chantrey Committee would have the whole field of the Academy Exhibition to select from each year, instead of finding their progress barred at every step."

The Old Palace at Croydon.—A special general meeting of the Surrey Archæological Society was held on Saturday last in the old Archiepiscopal Palace at Croydon, under the presidency of Mr. Granville Leveson-Gower, with a view to the preservation of the interesting remains of that venerable structure and their devotion in the future to some useful purpose. The meeting was held in the chapel, which is now used as a school, and several papers were read. The first, by Mr. J. Corbet Anderson, was on the history of the palace itself and of the structure which it superseded, including some notes on its site before the Conquest. The second, by the Rev. J. Cave-Browne, treated of its architecture and heraldry as illustrative of its earlier history. The third, by the president, gave a brief account of the Archbishops of Canterbury and their several places. The fourth, by Mr. S. W. Kershaw, recorded several ancient documents connected with the town of Croydon and the Archbishopric; while Dr. Alfred Carpenter entered into the meaning and derivation of the name of Croydon, which he ascribed to one of the ancient forms of the word "croix," or cross. It was announced that next year the existing lease of the premises will expire, and that it is hoped by the local committee as well as by the archæologists to take advantage of that fact to secure the building as the nucleus of some educational institution.

Canonbury Tower.—The Marquis of Northampton has offered to lease this edifice, at a nominal sum, to the Islington Vestry, on condition that it shall be utilised as a free library and reading-room for the parishioners, and the vestry have instructed their General Purposes Committee to consider and report upon the proposal. The tower is a relic of an ancient priory, built by Prior Bolton, of the Order of St. John of Jerusalem, and, although it is of more modern date than the structure of which it formerly formed part, it dates further back than the time of Queen Elizabeth, who is reported to have visited it when "Canonbury-place" was the favourite hunting-lodge of the Comptons. The tower contains a very fine carved-oak room. It is beyond doubt the most ancient building in Islington. It is hoped in the parish that the Islington Vestry will avail themselves of the favourable opportunity which now offers, through the considerate kindness of the Marquis of Northampton, to adopt the Free Libraries Act, which is now so extensively and beneficially operating in many provincial towns.

Westminster Hall.—The First Commissioner of Works has, we understand, appointed Mr. J. L. Pearson, R.A., as architect for the intended restoration of the west side of Westminster Hall, exposed to view by the demolition of the old Law Courts.

The Sunday Society.—The eighth public annual meeting of supporters will be held at the Princes' Hall, Piccadilly, on Saturday, May 5th, 1883, chair to be taken at four o'clock by the president, Sir Coutts Lindsay, bart.

The Ordnance Survey.—The report of the progress of the Ordnance Survey to the 31st of December, 1882, has been issued in the form of a Parliamentary Blue Book. It is divided into seventeen sections, and gives a detailed account of the proceedings in connexion with the Survey, which are further shown on a series of shaded index maps. The following statement by the Director-General is prefixed to the report:—

"This report is in many respects much fuller than any which has been submitted in previous years, and the following are the reasons which have led me to think it desirable that such should be the case. In the first place, the year 1882 marks a very definite stage in the operations of the Ordnance Survey, inasmuch as the survey of Scotland has been brought to a conclusion, the last man having left Scotland in November last. The publication of some of the 1-in. maps is still incomplete, but this branch of the work is carried on at Southampton. The survey of the whole of Great Britain and Ireland, as originally contemplated, may, therefore, be said to be completed, the work now in progress being the re-survey on the 25-in. scale of that portion of England to the south of Yorkshire and Lancashire, which had previously only been published on the 1 in. scale, and the revision of the 6-in. map of Ireland. In the second place, a strong wish has been expressed, both in the debates which took place when the last annual estimates for the Ordnance Survey were introduced, and on other occasions, by members of Parliament, that some detailed information should be given as to the steps which have been taken for completing the operations of the Survey and their results, and also as to the processes adopted in the production of the maps, and this seemed the most favourable opportunity for furnishing such information. It will be seen by Section II. that the operations of the Survey will be certainly completed in 1890, and probably somewhat earlier."

The Chilians in Peru.—Admiral Garcia, late Secretary to the Peruvian Government, gives a harrowing account of the havoc wrought by the Chilians in Peru. He writes:—"The work of ruin carried on by the Chilians in Peru, in accordance with the policy of their Government, is continuous and most monstrous. The National Library, the best in South America, containing more than 300,000 volumes, and that of the University of St. Mark, in its different branches of jurisprudence, medicine, political economy, mineralogy, chemistry, and belles lettres, have all been pillaged by Chilian officials to such an extent that not a single book remains, while the bookcases have been broken up for packing-cases. They also stole and shipped off for Chili the instruments belonging to the astronomical observatory; the machinery, laboratories, and apparatus of the Medical College, and those for teaching arts and industries; and, as if these disgraceful acts were not sufficiently scandalous, the buildings of the university, of the library, and of the colleges are used for barracks and stables. But this is not all; there are other deeds which rival, if they do not surpass, the devastations of Alaric and of Tamerlane. The national archives contained numerous documents, some of them dating from the conquest of Peru and the foundation of Lima by Pizarro. They have been pillaged, and these inestimable records have been sold by weight as waste paper. The gallery of portraits of distinguished historical personages, of the Incas, and of all the Spanish viceroys, from Pizarro to Pezuela, has been destroyed. The pictures were torn down and served as material of which the soldiers made tents in the barrack yards. The promenades, public offices, museums, have been despoiled of all objects of art, and of every article intended for use or for amusement. Pictures, statues, bronzes, marble seats, fountains,—in a word, whatever was movable, has been stolen and carried off to Chili."

Fire at a Builder's.—On Sunday morning last a fire broke out at Walnut Tree-walk, Kennington-road, upon the premises of Messrs. J. Ford & Sons, builders. The workshops, which consisted of buildings of two floors, covering an area of some 60 ft. by 25 ft., caught fire from an unknown cause, and the flames spread to the slaughterhouse of Mr. Eaton, butcher. The stables of Messrs. Ford also became involved, and a horse was burnt to death. Ultimately the workshops were nearly all burned out and the roofs were destroyed.

Lancaster.—The management of the waterworks which have been carried out by Mr. James Mansergh, M.I.C.E., of Westminster, has been placed under the Borough Surveyor, Mr. Alfred Creer, whose salary has been advanced to 350*l*.

The New Art Galleries, Piccadilly.—We may add to the notice of these buildings, which appeared on p. 568 of our last number, that the basement and corridors are lighted by means of Messrs. Hayward, Bros., & Eckstein's semi-prism reflecting lights.

TENDERS.

For alterations and repairs to Park Lodge, Streatham, for Mr. John Smith. Messrs. Notley & Trollope, architects:—

Burford, London	£239 0 0
Colls & Son, London	218 0 0
Godden, London	203 0 0
Walker, Streatham	198 0 0
Harrison & Wood, London	197 0 0
Mason, Streatham	197 0 0
Le Gassick, Streatham	140 0 0

For the erection of new oil stores, Merton, for Messrs. R. Harland & Son. Messrs. Notley & Trollope, architects:—

Mason, Streatham	£1,050 0 0
Townsend & Son, Wimbledon	1,033 0 0
Guile, Wimbledon	916 0 0
Scott, London	885 0 0

For new sewage works, Brentwood, Essex. Mr. C. Jones, engineer:—

W. Wood	£2,250 0 0
J. Bell	2,045 0 0
W. Hardy	1,989 0 0
W. J. Botterill	1,915 0 0

For the building of new vestry, and alterations to existing vestry, St. John's Church, East Dulwich. Mr. A. Birt, architect:—

Goad	£265 0 0
Stevens	263 0 0
Mansfield	240 0 0
Canning & Mullens (accepted)	219 0 0
Harvey	198 10 0

For alterations to the Durell Arms, Fulham-road. Mr. J. Miller, architect:—

Fleming	£1,860 0 0
Dodds & Robb	1,507 0 0
Bailey	1,496 10 0
Jackson & Todd	1,495 0 0
Spencer & Co.	1,435 0 0
Gibbs & Flew	1,300 0 0
Beale	1,150 0 0

For building drill-hall at St. John's Wood, for the 5th Middlesex Volunteers. Mr. Walter Graves, architect. Quantities by Mr. Wm. Allen:—

Langridge & Son	£3,290 0 0
Cross & Son	2,930 0 0
Ward & Lamble	2,893 0 0
Titmas	2,748 0 0
Maxwell	2,700 0 0
Nightingale	2,682 0 0
Spencer & Co.	2,535 0 0

For five houses and shops, Bermondsey New-road, for Mr. John House. Mr. Alfred Wright, Belgrave House, Brompton-road, architect:—

Canning & Mullens	£2,197 0 0
Johnson	2,130 0 0
Holliday & Greenwood	2,359 0 0
Rice	2,347 0 0
Burman & Son	2,333 0 0
Marsland	2,295 0 0
Tarrant & Son	2,120 0 0
Cook	2,033 0 0

For alterations and additions at the Royal Standard Hotel, Robertson-street, Hastings, for Mr. H. Kipping. Mr. H. Ward, Hastings, architect:—

Elliott & Warman	£1,850 0 0
John Howard & Son	1,510 0 0
George Vigor	1,450 0 0
Henry Mills	1,390 0 0

For chancel screen at St. John's Church, St. Leonard's-on-Sea, for Mr. A. W. Blomfield:—

	All Wrought Iron.	If Collars, &c., in Cast-Iron.
Lindsay & Co.	£365 0 0	—
Johnson, Bros., & Co.	310 0 0	—
Singer	276 0 0	£250 0 0
Crittall	195 0 0	—
Shrivell	195 0 0	187 0 0
Jones & Willis	194 15 6	189 12 6
Hart, Son, Peard, & Co.	176 0 0	166 0 0

For new warehouse, &c, Hampstead-road, for Messrs Oetzmann & Co. Messrs. Eales & Sons, architects:—

Patman & Fotheringham	£4,144 0 0
Adamson	4,177 0 0
Holland & Hannen	3,923 0 0
Lawrence	3,715 0 0
Simpson & Son	3,672 7 0
Downs	3,668 0 0
Scrivener & Co.	3,563 0 0
Mark (accepted)	3,540 0 0

For rebuilding Nos. 25 and 27, Great Richfield-street. Mr. Walter J. Miller, architect:—

Watson, Bros	£2,005 0 0
G. Foxley & Co.	1,994 0 0
Longmire & Burge	1,993 0 0
E. Fairchild & Co.	1,979 0 0
J. Adams	1,953 0 0

For the erection of country residence, lodge, and double cottage at Stokesby, near Great Yarmouth. Messrs. Bottle & Olley, architects:—

Cornish & Gaymer, North Walsham	£4,968 8 8
James Leggett, Great Yarmouth	4,474 0 0
Thomas Howes, Great Yarmouth	4,401 15 10
Riches & Evans, Postwick and South Walsham	4,392 16 9
Edward Howes, Great Yarmouth	4,210 0 0

For repairs and alterations to the Green Dragon, Winchmore Hill, for Mr. G. Bonner. Mr. J. G. Needham, architect:—

Lancaster	£609 0 0
Marr	520 0 0
Hawkins	480 0 0

For rebuilding the Story's Gate Tavern, Westminster, for Mr. J. S. Manley. Quantities supplied. Mr. H. L. Newton, architect, 27, Great George-street:—

Conder	£3,960 0 0
Merrutt & Ashby	3,933 0 0
Cook	3,831 0 0
Lamble	3,827 0 0
Treeweeke & Co.	3,700 0 0
Ward & Lamble	3,659 0 0
Langmead & Way	3,650 0 0
Beal	3,300 0 0
Burman & Son	3,273 0 0
Pickersgill Bros.	3,250 0 0
Shurmur	3,240 0 0
Walker	2,912 0 0
Wood (accepted)	2,891 0 0

For two blocks of six houses each on the Bridge House Estate, Brockley, for the Land Development Association, Limited. Mr. W. Charles Evans, 8A, Poet's-corner, Westminster, architect:—

W. Cawson & Son, Camberwell £5,600 0 0

For tavern and shops at Clapton. Mr. Paice, architect, 9, Hart-street:—

H. Vine (accepted.)

For alterations and repairs to Montague House, Clapham-road. Messrs. Searle & Searle, 12, Southwark-street, architects:—

Andrew & Nanson	£694 0 0
Higgs & Hill	594 0 0
Maxwell Bros. (accepted)	491 0 0

For works in rebuilding premises No. 125, Southampton-street, Camberwell, for Mr. W. Dicker. Mr. T. W Willis, 34, Ely-place, Holborn-circus, architect:—

Adamson & Sons	£1,860 0 0
Boyce	1,734 0 0
Smith	1,697 0 0
Fisher	1,659 0 0
F. Payne	1,610 0 0
Good	1,565 0 0
Taylor (accepted)	1,499 0 0

For alterations and additions to the Norwich Union Fire Office, Norwich, for the directors. Mr. Edward Boardman, Norwich, architect:—

Wegg	£3,515 0 0
Downing & Sons	3,450 0 0
Wilkin & Wilkins	3,200 0 0
Hawes	3,030 0 0
Youngs (accepted)	2,988 0 0

For proposed new house at Nether-street, Finchley, for Mr. J. Collinson. Mr. F. Newell, architect. Mr. Sidney Young, surveyor:—

Burman	£1,897 0 0
E. Lawrence	1,896 0 0
W. Goodman	1,892 0 0
Plowman, Finchley	1,860 0 0
Staines & Son, Great Eastern-street	1,846 0 0
C. F. Kearley, Uxbridge	1,834 0 0

For the erection of two semi-detached residences in Frances-road, Windsor, Berks. Quantities supplied. Mr. T. V. H. Davison, Albert Chambers, architect:—

Kemp, Aldershot	£1,230 1 5
Kelly, Windsor	1,168 0 0
Woodbridge, Maidenhead	1,136 0 0
Hann & Co., Windsor	1,117 0 0
Bishop, Windsor	1,095 0 0
Willis, Windsor	1,040 0 0
Reavell, Windsor	1,010 0 0
Ashfold, Slough	986 3 6
Akery, Windsor	960 3 9

For making up, metalling, kerbing, and draining the following roads in the Hamlet of Wallington, for the Croydon Union Rural Sanitary Authority. Mr. R. M Chart, surveyor:—

For Alcester, Clifton, Bridge, Clarendon, Belmont, Elgin, Maldon, Park, Melbourne, Ross, and St. Michael's roads:—

J. G. B. Marshall, Brighton	£3,689 0 0
A. Bullock, Croydon	3,555 0 9
E. & W. Iles, Wimbledon	3,459 0 0
J. H. Etheridge, Croydon	3,249 0 0
Woodham & Fry, Greenwich	3,228 0 0
H. Lake, Croydon	3,218 0 0
W. Langridge, Croydon	2,994 0 0
T. Free, High Wycombe (accepted)	2,863 0 0

For the Clifton, Bridge, Belmont, Park, and Melbourne roads only:—

J. Quittenton, Warlingham £2,790 0 0

For the Clarendon, Elgin, Melbourne, Ross, and St. Michael's roads only:—

J. Brown, Wallington £1,207 0 0

For the Clifton, Park, and Maldon roads only:—

D. Stewart, Wallington £1,255 0 0

For pulling down and rebuilding Nos. 131 and 133, High-street, Stoke Newington, for Mr. H. Rowley. Messrs. Crickmay & Son, architects. Quantities by Messrs. Nixon & Raven:—

McLachlan	£3,148 0 0
W. Bangs & Co.	2,950 0 0
Hicks	2,816 0 0
Limas	2,640 0 0
Gould & Brand (accepted)	2,392 0 0

For alterations and repairs to 7, Cumberland-terrace, Regent's Park. Mr. H. C. Boyes, architect:—

Gould & Brand (accepted.)

*For building new mission-house, and alterations to school buildings, Lancing-street, Somers-town. Mr. William Mitford Teulon, architect:—

	Mission-house.	Schools.
Lathey, Bros.	£2,190	£230
Smith & Co.	2,162	243
H. Lovett	1,970	227
Spencer & Co.	1,977	210
Langmead & Way	1,944	205
Wilson & Exton	1,935	205

For new Schools, Bett street, Tower Hamlets Division, for the School Board for London. Mr. E. R. Robson, architect. Quantities by Mr. F. Thornton Green :-

F. & F. J. Wood	£11,883	0	0
W. V. Hook	11,787	0	0
W. Brass	10,676	0	0
Harris & Wardrop	10,563	0	0
J. Outhwaite & Son	10,552	0	0
T. Boyce	10,527	0	0
Atherton & Latta	10,400	0	0
J. R Hunt	10,356	0	0
Perry & Co.	10,331	0	0
J. Grover	10,287	0	0
S. J. Jerrard	10,242	0	0
C Cox	10,193	0	0
W. Shurmur	9,990	0	0

For additions to schools, Wirtemberg-street, for the School Board for London. Mr. E. R. Robson, architect :—

W. Oldrey	£1,222	0	0
J. Marsland	1,218	0	0
Lathey, Bros.	1,190	0	0
Holloway, Bros.	1,175	0	0
F. Higgs	1,151	0	0
B. E. Nightingale	1,113	0	0
J. R. Hunt	1,072	0	0

For the erection of London and County Bank, Beckenham, Kent. Mr. W. G. Bartlett, architect :—

Cooper	£3,561	0	0
W. Shurmur	3,330	0	0
Perry	3,295	0	0
Boyce	3,280	0	0
Ashby	3,264	0	0
Rider	3,258	0	0
Higgs & Hill	3,244	0	0
Arnold	3,225	0	0
Halliday	3,177	0	0
Burrows	3,175	0	0
Cox	2,998	0	0

For repairs to the Marlborough Arms, St. John's Wood, for the City of London Brewery. Mr. W. G. Jewhurst, architect :—

Marden	£170	0	0
Everett	170	0	0
Coome & Son	157	0	0
Batley	130	0	0
W. Shurmur	126	0	0
Canning & Mullens	125	0	0
Spencer	115	0	0
Knowles	106	0	0
B. T. Wood	95	0	0
Harris	89	0	0

For alterations to No. 154 and 156, The Grove, Stratford. Mr. Arthur H. Newman, architect :—

Mansfield & Son	£1,140	0	0
J. H. Hoskins	967	0	0
F. & F. J. Wood	960	0	0
Bangs & Co.	947	0	0
Balsam Bros.	900	0	0
W. Shurmur	891	0	0
B. Wells	860	0	0

For alterations to the Bricklayers' Arms, Hassard-street, Hackney-road, for Messrs. Truman, Hanbury, & Co. Mr. Edward Brown, architect :—

C. Marr	£540	0	0
W. Shurmur	497	0	0
Jackson & Todd	470	0	0
J. A. Taylor	449	0	0

For fittings to London and County Bank, Hammersmith. Mr. E. Evans Cronk, architect :—

Lascelles	£398	0	0
Adamson	395	0	0
Drew	370	0	0
W. Shurmur (accepted)	333	0	0

For new wing to the London Homœopathic Hospital, Great Ormond-street. Mr. Alfred R. Pite, 44, Bloomsbury-square, architect. Quantities by Mr. J. Rookwood :—

Jacklin	£3,460	0	0
Patman & Fotheringham	3,373	0	0
Tongue	3,354	0	0
Cowland	3,263	0	0
Smith & Son	3,139	0	0
Falkner (accepted)	3,125	0	0

For the completion of thirteen houses at Winchmore Hill for Mr. T. D. Thompson, The Oaks, Woodside Park, architect :—

G. L. Life	£1,880	0	0
F. Voller	1,774	0	0
D. D. & A. Brown, 123, Bishopsgate-street	1,755	0	0

For the erection of enclosing walls, formation of roads and drainage, of new cemetery at Hanwell, for the Burial Board of St. George's, Hanover-square :—

Gaisford	£4,763	0	0
Garrud	3,945	0	0
Forster	3,795	0	0
George Parker	3,700	0	0
Seward	3,616	0	0
Gibson	3,587	0	0
Aldridge & Jenvey	3,530	0	0
Richens & Mount	3,494	0	0
Booth, Bros.	3,180	0	0
Brown	2,985	0	0
Macfarlane	2,930	0	0
Hanson Bros.	2,891	0	0

For painting, whitewashing, &c., at the Dispensary in East-street, for the Guardians of the Poor of the Parish of St. Marylebone. Messrs. H. Saxon Snell & Sons, architects :—

Bamford	£218	0	0 !
Batchelder	207	0	0
Howard	194	0	0
Everett Bros.	192	0	0
Clarke & Mannooch	190	0	0
Abrahams Bros.	189	0	0
Rawlins	174	0	0
Moir & Wallis	169	0	0
Stewart	168	0	0
Wall Bros.	163	0	0
Woolman	156	0	0
Kearley	156	0	0
Sheerman & Son (accepted)	147	12	0
Proctor	80	0	0 !

For dwelling-house and business premises, Streatham High-road, for Mr. C. J. Robinson, pharmaceutical chemist. Mr. F. Wheeler, 119, Cheapside, architect :—

Hill Bros. (accepted)	£1,515	0	0

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The Builder.

Vol. XLIV. No. 2101. Saturday, May 12, 1883.

ILLUSTRATIONS.

New Picture Gallery and Billiard-room, Broome Hall, Surrey —Mr. John Birch, Architect 638
New Schools for the Precinct of the Savoy, London, for her Majesty the Queen.—Messrs. Perry & Reed, Architects 640
The Exhibition in Rome: Galleries of the Fine Arts (Double-page Engraving) 642, 643
Congregational Church, Shanklin, Isle of Wight 645
Design for an Academy of Music 647

CONTENTS.

Coming Changes at Hampstead 625
The Royal Academy 626
Architecture among the Poets 628
Our Future Supplies of Timber 629
Amateurs and Amateurs 631
Ebeu! Deleta 631
Looking Back 632
The Amsterdam Exhibition 632
Museums 632
The Late Mr David Rhind 633
Competitions Abroad 635
House-Building in Paris 635
Demolition of Old Buildings in Fleet-street 636
Schools for the Precinct of the Savoy 636
New Picture Gallery and Billiard room, Broome Hall, Surrey 636
The Exhibition in Rome: Palace of the Fine Arts 636
New Congregational Church, Shanklin, Isle of Wight 636
Design for an Academy of Music 636
Royal Institute of British Architects 649
Edinburgh 649
Identical Town Names 649
Notes from the West 649
Architectural Association 650
Liverpool Architectural Society 651
Building Operations in Brooklyn, United States 651
The London Joint Stock Bank Buildings in Chancery-lane 651
The Gray's Inn-road Improvement 652
The New Approaches to the Thames Embankment: Laying out the New Streets 652
Building on the Sion College Estate 652
The Indian Institute, Oxford 652
The German Archæological Institute of Rome 652
The Bower Barff Process of Preserving and Ornamenting Iron and Steel Surfaces 653
The London and Brighton Company's New Station at Forest-hill 653
St. William's Hospital, Rochester 653
Foreign Notes 653
Exhibitions 654
The Edinburgh Architectural Association 654
The International Fisheries Exhibition 654
The Proposed Sculptures on Blackfriars Bridge 655
Proposed Additions to the National Gallery 655
Railway Rates for Carriage of Long Timber: London and North-Western Railway Company v. Ivens 655
Liabilities of House Owners: Cook v. Elvin 655
Building Patent Record 655
Church of the Redeemer, Eighston 656
New Church of St. John Baptist at Norwich 656
The Grosvenor Gallery 656
Killing Worms on Lawns 656
Marbles 656
Wrought-iron Bars, &c 656
Books: Proctor's Light Science for Leisure Hours (Longmans) 656
The New Central Fish Market for London 656
The International Electric Exhibition, Vienna 656
Miscellanea 656

COMING CHANGES AT HAMPSTEAD.

"Or when, Apollo like, thou'rt pleased to lead,
Thy sons to feast on Hampstead's airy head;
Hampstead, that tow'ring in superior sky,
Now with Parnassus does in honour vie."
Kit-Cat, a Poem, by Sir Rd. Blackmore, Knt.



MONGST the various proposals embodied in the pending Bill of the Metropolitan Board of Works is one for further improvements in a locality where their previous efforts should ever be remembered with gratitude. They purpose to widen High-street and Church-place, and to make a new street from the corner of East-street, with an approach therefrom to High-street, as widened, in a line with Wells-buildings. On the other hand, we notice that the premises with fine old garden of the once "Upper Flask,"—to which house we shall presently advert with the measure it deserves,—are about to be laid out in yet another of the "residential estates" which have lately sprung up in this justly favourite quarter.

A volume, indeed, would scarcely suffice to tell the countless memories, connected with art and letters alike, that cling around the old taverns and houses scattered about its many ascents, or forming prominent features in the view as one traverses the roads to West End, Hendon, and Highgate. The pretty cluster of Scotch firs at the further end of the Heath by "The Spaniards" recalls the trees which stand out in the foreground of some of Turner's earlier drawings. Thomson, Goldsmith, and Cowper sang its praises; our great landscape painters made their sketching-ground where it is said, by whose authority we know not, Cuyp and Vandervelde had not disdained to seek inspiration for their pencils. Beneath the shadow of the firs (planted by one Turner, a tobacconist of Fleet-street) stands Erskine House. Here Burke often called on the great Lord Chancellor who had exchanged the motto "Judge not" of his forefathers, the Earls of Buchan, for "Trial by Jury" as his own. Here Lord Erskine would cultivate his taste for planting and gardening; the work of his own hands survives in shape of the thick holly hedge along the right-hand side of the road, under which a passage led from the one garden to the other. The neighbouring Caen Wood was laid out by his no less celebrated predecessor, Lord Mansfield; the Spaniards Inn* marks the ancient gateway to the preserves of the bishops of London who gave their name to the wood in the valley below by the footpath to Finchley. Hampstead had a particular charm for Gainsborough and Old Crome; Constable (who lived in Well-walk, between the old assembly-rooms and the tavern) declared he loved every stile and stump and lane in the village, and as long as his hand could hold a brush should never cease to paint them. It were needless to dwell upon the themes it supplied for Morland, Creswick and Clarkson Stanfield, Linnell and Cecil Lawson.

Originally a hamlet of Hendon, Hamestede is computed at four hides in the book of Domesday. The grant of the manor (A.D. 986) to the monks of West Minster by Æthelred was confirmed by St. Eadward the Confessor. The monks subsequently acquired, *temp.* Henry I., a grant from Godwine, the hermit, of the cell which he had built near the little rivulet of Coldbourne, a source of the Aye, on the south-western confines of the parish. The cell was hereupon converted into a nunnery for Emma, Christina, and Gunilda, the Queen Matilda's maids of honour, the anchorite Godwine being appointed warden and guardian for life of the devotees. At the dissolution the "nonre of Kilbourne," together with the manor, devolved to the Crown; the latter, settled upon the one bishop of Westminster, was again surrendered to the king in 1550. That same year it was granted to Sir Thomas Wroth, in whose family it continued until 1620, and then passed to Sir Baptist Hicks, a mercer of Chepe, afterwards created Viscount Campden. Vested in the Noels until 1707, it went by a marriage to the Wilsons, the late baronet of which line unsuccessfully asserted his rights to all of the Heath as against the public. Rescuing the land from further encroachments on the part of the freeholders, the Board of Works eventually secured one half of the original 500 acres in perpetuity. At the close of the seventeenth century the Hon. Susanna Noel, mother of Baptist, first Earl of Gainsborough, devised the "well of medicinal waters," and six acres of heath ground encompassing it, to the Hampstead poor. The dealings with this estate a few years ago by the Wells Charity Trustees occasioned no small stir among the inhabitants anxious to preserve it in its pristine integrity.* In 1317 Sir Roger de Brabazon gave the Belses, or Bellasis, estate (Belsize and now covered with houses), consisting of a messuage and fifty-seven acres, to the monks at West Minster, as an endowment for a chantry at the altar of St. John the Baptist for the souls of Edmund, first Earl of Lancaster, and Blanche his wife,—their monuments the chiefest glory of the sacrarium there,—and of himself. The estate was shortly afterwards assigned to prior Reginald de Hadham to hold by lease under the monastery. At a later period it belonged to Sir Armigal Waad, clerk of the Council to Kings Henry VIII. and Edward VI., the first Englishman to explore the American continent.* Norden speaks of his alabaster monument in the chancel of the old church where he was buried, as well as his son, Queen Elizabeth's ambassador to Spain and Lieutenant of the Tower. Subsequently occupied by Lords Wotton and Chesterfield, Howell, the "Welsh Ambassador," opened it as a place of amusement in 1720. His advertisement appears in Mist's "Journal" for the 16th of April of that year, with a notice that "twelve stout fellows compleatly armed patrol between Belsize and London" for his patrons' protection. The stately avenue of trees that led to the manor-house from Haverstock Hill and traces of old England-lane still exist.

"I am at a solitude, an house between Hampstead and London, wherein Sir Charles Sedley died," writes Steele to Pope under date 1st June, 1712, from the cottage† where he sought retirement and freedom from arrest during the summer months of the same year. Here he employed his time in contributing to the *Spectator*, and in going with Pope, who would call for him in his carriage to meet the members of the Kit-cat Club and others at the "Upper Flask," returning generally at night to his wife Prue's lodgings in Bury-street, St. James's. In the letter we have cited, Steele goes on to quote some stanzas in praise of Sedley's "prevailing gentle art," one whom he somewhat resembled in laxity of principles, but immeasurably surpassed in singleness and goodness of heart. At another cottage close by lived Gay during his temporary derangement induced by the failure of the South Sea scheme, and Nancy Dawson famous for, amongst other things, her dancing of the hornpipe. Mounting Haverstock Hill, we pass on the left Rosslyn, formerly a seat of Lord Loughborough, and on the right John-street, leading to Downshire Hill, memorable for the sojourn here of Fanny Brawn, and, at Lawn Bank, the adjacent villa, of Keats, who in the winter of 1817-18, here completed "Endymion," and wrote "Isabella, or the Pot of Basil." Touching is Hone's reference to him:—"Winding southwardly from the Heath, there is a charming little grove in Well-walk with a bench at the end, whereon I last saw poor Keats, the poet of the 'Pot of Basil,' sitting and sobbing his dying breath into a handkerchief, glancing parting looks towards the quiet landscape he had delighted in,—musing, as in his 'Ode to a Nightingale.'"‡ Well-walk and the landscape are sorely altered; but one may still rest on the bench "where but to think is to be

* So called from some uncertain connexion with the embassy to King James I. from Spain.

* See, *inter alia*, the vigorous protest of Mr. G. G. Scott, dated from Church-row, January, 1879; printed, with other papers *ad hoc*, by J. Hewetson, 11 and 12, High-street, Hampstead.

* For an account of of his voyage see Hackluyt's Collection.

† The site of the cottage and garden is now that of the studios and the Sir Richard Steele tavern on Haverstock-hill, opposite the old Load of Hay. The cottage is seen in the background of Hogarth's "March of the Guards to Finchley."

‡ The Table Book, iii., part 1, col. 810.

full of sorrow" for him who, had he lived to fourscore, could not, in the words of W. M. Rossetti, win upon us more, could not leave us a more lovely memory or so priceless a treasure of regret. A little northwards of John-street and to the rear of the main thoroughfare stood the Chicken House, the last remains of which were taken down some months since. In this, a reputed hunting-seat of the Queen Elizabeth and her successor on the throne, once lived Gale, the antiquary, and Lord Mansfield, before his occupation of Caen Wood. The Chicken House possessed some painted glass, well executed, representing in one window our Saviour in the arms of Simeon, and in another the respective arms and likenesses of King James I. and the Duke of Buckingham.* Below the former window was the inscription, "Icy dans cette chambre coucha nostre Roy Jaques premier de nom le 25me Aoust, 1619." The glass was removed to Branch Hill Lodge, near the Grove, overlooking the cottage to the rear of "Holly Bush Tavern" where Romney lived, and the now residence of that artist whose drawings adorn our leading comic journal. At Vane House, lived Sir Henry Vane (Ludlow's "Memoirs," vol. iii.), and, after him, Bishop Butler, when Dean of St. Paul's, who wrote the "Analogy." Church-row, leading westwards to the parish church of St. John, constitutes a charming relic of contemporary street architecture. The church rebuilt in 1745 from the designs of Flitcroft, then residing in Montague-grove, has a tower and belfry at the eastern, and the choir (recently extended) in the western, end. In the old churchyard by the southern wall is the tomb of John Harrison, inventor of the chronometer and gridiron pendulum, who died on the 24th day of March, 1776. This has been renovated in execrable taste by the Clockmakers' Company. The stone over Incledon's grave was lately removed. The once fair view from this spot southwards across the Conduit Fields is shut in by Fitzjohn's-avenue and numerous new roads and villas. At Frognal House, by the descent from the church, yet blocked by a toll-bar, lived Isaac Ware, a prolific author on architecture and of some beautifully-executed designs after Palladio. In his wife's lodgings at Frognal† Dr. Johnson composed his "Vanity of Human Wishes," of which another poet has declared "it is a grand poem,—and so true!" and which when once in later life, his fame and prosperity assured, he attempted to read aloud the passage descriptive of his own early struggles, caused him to burst into a passion of tears. In the garden of Conduit House, at the top of Fitzjohn's-avenue, is the Shepherd's Well, renowned for the purity of its spring, upon which the inhabitants used to depend for their supply of water. There was no roadway to the Conduit, and the present writer can well recollect the water-carriers who used to come every day to fill their buckets and take them to the houses on the hill above. In these fields Keats would meet Leigh Hunt from his cottage (since rebuilt as South Villa) in the Vale of Health, and Shelley from his lodgings in Pond-street. Here, on one occasion, Shelley terrified some good lady out of her senses by throwing himself into an heroic attitude and declaiming,—

"Come, brothers, let us sit upon the ground,
And tell sad stories of the deaths of kings."

At the Hill, near "Jack Straw's Castle," Samuel Hoare, the banker, was visited by Crabbe, Rogers, Wordsworth, Coleridge, Campbell, and Lucy Aikin; with the sisters Joanna and Agnes Baillie, then living at Bolton, behind "Holly Bush" Tavern. On the slope below "Jack Straw's Castle," the horse-races were held, and there on the morning of the 17th of February, 1856, they found the dead body of Sadleir, whose career Charles Dickens reproduces in the character of Merdle in his "Little Dorrit." Addison often resorted to the "Bull and Bush" in the valley stretching towards Hendon; Akenside lived at Golders Hall, North End; and at Wildwood, then North End, House Chatham spent his gloomy retirement during the year 1767.

Ascending Heath Mount there lies along the right hand the massive garden-wall of "Upper Bowling Green House," the house itself distinguished by the row of trees which flank the pathway as it opens upon Belmont. The house, latterly known as the "Upper Flask," * and greatly modernised since, constitutes one of the most interesting in Hampstead. A highly popular resort with politer circles in the former half of last century, it was the summer rendezvous of the Kit-cat Club. Many a time have the prospects and glories of the Protestant Succession been celebrated within its walls; the wittiest, the most elegant, the most learned of their time have trodden its garden-walks and thronged beneath the mulberry-trees upon the lawn. It was in turn the home of George Stevens, friend of Dr. Johnson and commentator on Shakspeare, and of Coleridge. But chiefest of all,—and though less real no whit the less dear,—are its associations with a story to which neither ancient nor modern literature presents a parallel. Repeated pilgrimages have been made to this house by the countrymen of Diderot, who pronounced an *éloge* upon its author at his death; of Rousseau, who followed it in his "Nouvelle Héloïse"; of Alfred de Musset, who called it *le premier roman du monde*. To those of us who have read her history the whole place is redolent alone of one sanctified name,—Clarissa.† There still stand in London the churches where she worshipped and prayed for her destroyer, the street in which she closed her life; but the scene of the second great crisis in her fate will shortly disappear for ever. At Hampstead she was free for but a few short hours from her pursuer. We see her hurrying from Mrs. Sinclair's,—the pen almost refuses to inscribe that odious name. We hear her bid a coachman to drive "fast! very fast!"—she cares not whither. We follow the coach to the "Upper Flask," whither Lovelace had taken her more than once before. There she enters and asks if she can have a dish of tea and a room to herself for a little while. Spiritless and fatigued she gives way to a violent burst of grief, and then after wandering on the Heath finds a lodging at Mrs. Moore's cottage. Lovelace followed her into the very room she occupied at the "Upper Flask"; "she sat" he writes to Belford "at the very table I now write upon, and I believe the chair I sit in was hers." In three days Lovelace, by another of his diabolical artifices, induces her to leave Goody Moore's with him and the pretended Miss Montague and Lady Betty; that same night the dreadful tragedy is fulfilled. The story is fictitious, but every line justifies the eulogy of Dr. Johnson, who, whilst not greatly loving its author, declared it to be the first book in the world for the knowledge it displays of the human heart.

In his charming prose tale Oliver Goldsmith reconciles us to the foibles of our nature; it was left to his quondam employer, the homely self-satisfied printer of Salisbury-court, in painting the triumph of mental chastity, to turn our rage and pity into awe and worship, to draw her character whom no pagan author could possibly have imagined, no Christian writer had ventured to portray, and who rises solitary, supreme, the most beautiful, the most sublime creation of uninspired fiction.

* See the plate in Park's Hampstead, 1818.

† Mrs. Desmoulin, who before her marriage stayed for some time with Mrs. Johnson at Hampstead, told Boswell that Mrs. Johnson indulged herself with country air and unsuitable expenditure, whilst her husband was drudging in the smoke of London.

* To distinguish it from the Flask,—a meaner place of entertainment lower down in the town. Flask Walk formed the scene of Hampstead Fair. Here is one of the Fleet river springs.

† Noteworthy is the universal mistake as to the title of the book, which correctly runs: "Clarissa; or, the History of a Young Lady. Comprehending the most important Concerns of Private Life, and particularly showing the Distresses that may attend the Misconduct both of Parents and Children in Relation to Marriage. Published by the Editor of 'Pamela.' London: Printed for S. Richardson. MDCCXLVIII."

THE ROYAL ACADEMY.

It is perhaps with a side glance at the Impressionists that the Council of the Royal Academy have adopted for their title-page motto this year the sentence from Seneca, "Non est ars, quæ ad effectum casu venit": that is not to be called *art* which arrives at its effect by chance. The maxim is capable of a tolerably wide and various application, and is certainly a very good banner for an academy of arts to fight under, provided they will not forget that there is another side to the matter, and that correctness and finish do not include the whole of what we look for from art. This limitation of the maxim is suggested by the works of the president as much as by others of much inferior power. Nothing that Sir F. Leighton paints is done by chance,—"*casu*"; no works of the present day evince more care, study, and finish in regard to drawing, composition, and colour. The foreshortening and colouring of the arm of the figure represented in "Memories" (332) is an exquisitely-complete and delicate piece of artistic workmanship. But then the face, which from the title should suggest thought and emotion, tells us little or nothing; it is "faultily faultless, icily regular," with just the faint suspicion of a harmless shade of melancholy, which might even be taken for ill-temper. "The Vestal" (20), a profile of a pale face under a hood, is even more deficient in expression, and "Kittens" (330), the work placed centrally in the large room, is one in which the figure seems almost lifeless,—an effect the more felt inasmuch as the title gives the idea of something rather lively and playful. The figure is that of a child, a girl, but there is nothing childlike about it but the proportions. The drawing of the figure is fine, the combination of colour unusual, rich, and striking; but the breath of life is not in it.

Mr. Long's "Merab" and "Michal" (91, 97), the latter the daughter of Saul who loved David, the former another daughter introduced into Handel's oratorio "Saul" as a contrasting figure to Michal, may take rank as among the most successful examples in the Academy of the balance of execution and feeling. These figures will not interest many people so much as the larger subjects the artist has painted, but he has done nothing better,—perhaps nothing so good. The flesh painting, in the Michal especially, is perfect in colour, reflections, and texture, the drawing unimpeachable, and the expression of the two heads,—the one proud, the other humble and affectionate,—is very finely contrasted. The same Gallery, No. 1, contains several figure-subjects of varied interest, predominant among which is Mr. Millais's splendid portrait of Mr. J. C. Hook (29), one of the most manly, dignified, unaffected portrait works that have ever been seen in the Academy. The eminent sea-painter is simply dressed in a working costume; the earnest face, marked with strong lines from the work and weather exposure of many years (for no one can paint sea as Mr. Hook does without having been out in all weathers for a considerable part of his life), is painted with uncompromising force and fidelity; the large palette, with its array of pigments, brings some spots of light colour into the picture, relieving the otherwise rather heavy mass of browns. This is a noble work. Mr. Marcus Stone's "An Offer of Marriage" (5) repeats the tones and style, and the character of scene, of his picture of last year, which hung in the same place; it is what we call "pretty" art, and certainly not done "by chance," for it is rather too obviously a made effect, especially in the treatment of the masses of foliage behind, which are worked up into a smooth, enamel-painting kind of effect, far removed from the light and freedom of nature. Mr. Millais's "Une Grande Dame" (37) is a very forcible portrait of a little girl in very rich costume and in a mock-magnificent attitude with a green parrot on her wrist; it has much humour as well as great force and richness of colour, but in this and in another portrait entitled "Forget-me-not" (323) there is to be seen that rather overloaded painting of the face which, despite its force, the painter seems to carry too far at times; in No. 323 the reflections of light on the face are so strong and white as to look almost disagreeable, and spoil the effect of an exceedingly pretty countenance. Mr. Macbeth takes a good place in Gallery I., with a very pretty and interesting painting, "A Sacrifice" (42), the parting with her beautiful auburn (or red?) hair by a young woman at a barber's, apparently for commericial purposes: the scene is effectively composed, but how many heads tall is the barber? Mr. Macbeth is always running his figures too tall in this way. A contrast to this is afforded by Mr. Maynard Brown's "The Last Look" (70), a funeral scene in a cottage, painfully dingy in colour, but marked by real pathos. Mr. Storey's "The Connoisseur" (19) shows that leaning to Dutch taste which he seems always to have had; it is an incident in the life of Teniers, and seems to be an attempt to give the figures which Teniers habitually saw around him with the touch and style of the modern painter: the result is interesting and characteristic; the old Frau looking contemptuously at the picture which Teniers triumphantly recommends, as a really good thing, is a very cleverly-imagined personage. Other works to be noted in this gallery are Sir John Gilbert's "Don Quixote" (20); Mr. Marks's

"Where is it?" (43), a picture with scarcely any subject, but a most masterly bit of clear clean painting; "The Stray Kitten" (69), by Mr. Hugh Cameron, a charming little bit rather *à la* Mr. E. Frere; "An Impromptu Toilet" (111), by Mr. Sant, a very clever and lively portrait of a lively child who has dressed herself up in cloak and hat certainly not meant for her; "The Waefu' Heart" (92), by Mr. Faed, but not the best of his works in the exhibition; "Piccadilly: Drawing-room Day" (112), by Mr. E. J. Gregory, a capital painting of the thoroughfare and its passengers and vehicles; and a clever though rather grotesque work by Mr. Barnard, who has attempted to realise "The Jury" in "Pilgrim's Progress" who tried Faithful, "Mr. Highmind, Mr. Enmity, Mr. Liar," &c.: this is an original idea worked out with considerable ability, the characters implied in the various names being very pointedly represented in most of the figures, though in one or two cases trenching a little on caricature. The landscapes we are intentionally deferring for the present.

The central portion in Gallery II. is occupied by Mr. Frith's painting of "the private view" of the Academy, 1881 (163), in which a large number of likenesses of persons well known in Art and Society are cleverly brought together, and which represents the artist at his best in his present style of painting. Mr. Arthur Hughes has made what may be called an æsthetic portrait group out of "The Home Quartett" (170), the portraits of a well-known lady amateur and her children; the latter, playing on violins and violoncello, are all in green dresses, which form a foil to the delicately-treated flesh tints; there is great individuality about the picture, but it is rather self-conscious and over-studied to fulfil the best ends of portraiture. A masterly portrait of a lady seated before an easel preparing to paint some flowers placed in a glass beside, by M. Fantin, occupies a corner of the room; a painting in which the background is left little more than a grey priming with the canvas grain showing through it, and the figure built on in masses of colour almost in relief. This powerful work has the additional merit of the refinement of feeling and expression which M. Fantin's portraits have sometimes lacked. Two classic or ideal heads are in this room, Mr. Calderon's "Dymphna" (182), a very pretty head, which, however, by no means comes up to the feeling of the line quoted beneath it:—

"Thy rapt soul sitting in thine eyes";

and Mr. Poynter's "Psyche" (191), also an entirely prosaic, rather hard painting of the head and torso of a not very beautiful young woman, with the interior of a temple as a background. A butterfly which she is regarding gives (as being an emblem of the soul) the only possible excuse for the title. This is the same shortcoming which we find in so much of the more ambitious works of our contemporary painters,—a picture, which is really nothing but an ordinarily pretty and well-painted figure, is dignified with a title, in comparison with the pretension of which the performance intellectually sinks into almost absurd inadequacy. If this one of Mr. Poynter's had been called "A Greek Maiden," well and good; it had been accepted as a very agreeable and ably-executed work: regarded as "Psyche," it is a failure. Mr. E. Crofts has done more ambitious, but no more successful, things than "At the Sign of the Blue Boar, Holborn" (201), where it is said occurred the famous incident of Cromwell and Ireton intercepting Charles I.'s letter that was sewn into a saddle-flap. The discovery has just been made, and Cromwell is reading the despatch in high dudgeon, scowling round at the bearer, who is pinioned by two of the Puritan soldiers. All the figures are admirably characteristic, and all help out the action; as a contrast in which respect look at the picture on the other side of the door, by another Associate, "Preparations for the First Communion" (179), where a number of figures are huddled up together in so illogical a manner that no meaning is to be made out of them or their action. Mr. John R. Reid's "Darby and Joan" (213), is an effective interior, also with no clear story; Mr. C. van Haanen's "A Mask Shop in Venice" (224), is an interesting bit of local character, and Professor de Blaas's "Flirtation" (208) exhibits, in the figure of the woman standing in the doorway, a mastery of colour, arrangement of dress, pose of the figure, and drawing of the arms and hands, which claim for it much praise. Sir F. Leighton's decorative frieze, "The Dance," should have been hung at the height for which it was obviously painted; it is too low down.

Gallery III. is conspicuous for the possession of Mr. Tadema's two contributions, one of which, "An Oleander" (343), is one of the finest things he has ever painted. The oleander grows from a large bronze tub standing on the inlaid marble floor of a court with deep red walls, through the door of which we look across a terrace on which glittering sunlight falls, on to the expanse of blue sea, and catch a glimpse of figures retreating down some steps towards the sea, and of the white corner of a temple sparkling in the sunlight below. The tree itself is beautifully painted, and a figure somewhat more attractive than the painter's female figures generally are sits in the foreground. The look of light air and sunshine through the open door is something extraordinary, and almost cheats the eye into the belief that it is real. The artist letters this work, on the top of one of the red pilasters, "Op. ccxlv.," after the musician's way of cataloguing compositions. In the other picture, "The Way to the Temple" (296), which is the painter's diploma work, we seem to see, through the door of another abode lower down the hill, the same party who are disappearing down the steps in No. 343. We are now in what is apparently the priestess's house, at the top of the last flight of stairs giving access to the temple, and through the door we see two or three of the gay party, dancing on tip-toe, and preparing to go down the last flight of steps, beyond the top of which rises the frieze and cornice of the great temple, one of the massive abaci of which is also just visible. The cornice is painted in red and blue. We see the soffit, with its rows of guttæ in sharp perspective, and one triglyph below, also painted blue. A deep red Doric column on a smaller scale, belonging to the architecture of the priestess's home, intervenes between the eye and the entablature of the great temple, throwing it back into its proper place, and enhancing its massive proportions. One of the bronze folding-doors of the house is closed, and enables us to see its decorative treatment, with a figure in bas-relief on the lower panel, and a figure of semi-Egyptian cast arranged *en silhouette* in the otherwise void space in the upper panel. We do not know whether this is a fancy of Mr. Tadema's, or whether he has any authority for it. It is a curious and piquant incident; but as to the rest of the architectural details, every architect should look at this picture, in which the details of Doric architecture are so vividly brought before us, as they must have appeared when new in the eyes of the men who moulded and built them up.

There is no other such execution as this in the gallery, but in spirit and vivacity of human interest there is nothing this year, perhaps, equal to Mr. Orchardson's "Voltaire" (271), certainly the best thing he has ever painted, illustrating the scene when Voltaire called on the Duc de Sulli and the other guests where he had been dining for vengeance on the Duke de Rohan for the outrageous assault he had just suffered from the hands of that nobleman's servants, at the very threshold of the Duc de Sulli's house. Voltaire, who has rushed up again to the dining-room, stands white with rage, his countenance distorted, his dress ruffled, his left hand convulsively clenched, appealing to the host, who replies with a polite gesture of deprecation, while a guest on his right turns round with an insolent stare at the fuss Voltaire is making; the others exhibit various phases of similar nonchalance, except a young man opposite, who listens with frowning face and apparently half incredulous of a story so scandalous to his order. Few things in the way of the illustration of historical incident, more real and vivacious than this, have been seen on the walls of the Academy: it is a picture that must leave a mark behind it, though still a little weighted by the painter's strongly-marked peculiarity of manner. On the same wall is one of the best works by Mr. Faed that we have ever seen, "They had been Boys together" (262), an appeal from a man unfortunate in the world to his rich and fortunate old playfellow. The latter, a dignified and kindly old gentleman, looking doubtfully and considerately at the card as if unable to put together the old name and the present condition of the bearer, is a very fine study, well contrasted with the impudent look of one of his clerks, and the business-like officialism of the other; the details are thoroughly studied. The extreme poverty and wretchedness of the visitor are rather painfully and unnecessarily exaggerated, perhaps. Mr. Poynter's "The Ides of March" (260) is a very fine scenic effect for a grand performance of "Julius Cæsar," act ii., sc. 2; the effect of lamplight indoors on the polished floor and columns, and star and comet light in the sky to which Calphurnia points, is admirably given; the bust of Brutus, shown in the strong light of a lamp, with an inscription representing him as the special friend of the emperor, and which seems to sneer at the figure of Cæsar, gives additional point to the scene; but it does not impress as other than a stage effect. Still less adequate to the subject is Mr. Dickse's "Too late, too late: ye cannot enter now," a large composition in which one of the foolish virgins sits facing the spectator with her lamp overturned on the floor, the others move slowly off into the night; the drapery is very odd, being evidently very thin in texture, but transmitting no light; the movement and construction of the figures are well indicated, but there is not a particle of real passion or despair in it,—nothing but posturing. Mr. Pettie seems to have been amusing himself recently with combination of yellow tones; apparently intended to bring out the sparkle and glint of the armour which is introduced into both his "yellow" pictures, one of which "The Ransom" (341) hangs in Gallery III., and shows a robber's cave with yellow sandstone rock, cloths hung over the front of it of the same colour, and one robber with a yellow leg. The blue steel of the helmets and swords does glitter, certainly, but the game seems hardly worth the candle. The same scheme is carried out in "The Jester's Merry Thought" (471), where the yellow rocks culminate into a "high" yellow in the jacket of the jester. A different key is adopted in No. 261, "Dost know this Waterfly?" a painting of a young court fop of the Osric type, delightfully simpering and conceited, but with not much to be proud about in his legs, which are not very good ones, nor in his silk trunk hose, which are not like silk. Mr. Calderon's "Joyous Summer" (241) is pleasant in its combination of cool draperies and cool green grass and shades with flesh tints, but it is an exceedingly nondescript scene with no point in the action of the figures, who can only at best, claim the praise awarded by Mr. Gilbert to the House of Peers, that they "did nothing, and did it very well." Mr. Gow's subject from the war between the Dutch Republics and Spain and her allies, "Trophies of Victory" (239), represents with sufficient spirit a scene described by Motley, when the Austrian Standards taken by the States General were brought in after dinner, and the conquerors amused themselves by reading the mottoes on them, one of which, "*Fama nostra implet orbem*," is just being unrolled by a soldier. Mr. Hodgson's scene from modern warfare, "Egypt, 1882" (288), depends for its main point on the contrast between the clean, orderly-looking, imperturbable English man-of-war's man, standing sentry before a door, and the inquisitorial inspection of him by a row of Arabs and Egyptians. No one paints "Jack" with such spirit and truth as Mr. Hodgson; he has a study of him again "Off Duty" (424), lighting his pipe. Mr. Leslie's "Daughter of Eve" (305) is a pretty group of girls gathering apples, in print frocks of delicately harmonising tertiary hues; it is a good deal like many other things he has painted, of course, but unlike some recent ones (such as "Hen and Chickens") in the fact that the painter has recognised the necessity for some shadow cast by his figures, an incident which he occasionally dispensed with latterly, to the great weakening of the total effect of his work. Mr. Marks's admirably-executed work, "The Old Clock" (344), in the same room, may be cited as an example of a painting slight in subject, but perfectly finished in every accessory; it is merely the lobby of a house, where an old gentleman, probably the clockmaker, is setting the clock right by his watch; his drab overcoat forms a pleasant harmony with the dark grey dado and the lighter wall surface above; the mahogany hall-chairs, of old-fashioned type, the clock-case of an inferior grained and varnished wood, the carpet, and all the other accessories, are painted with a truth of tone and texture which could hardly be surpassed; and in this class of subject, where there is no pretence of higher meaning, one can afford to give full value to this kind of minor truth.

It may be convenient here, before passing to

a detailed consideration of the other rooms, to notice the principal portraits in the exhibition generally. The most important by Mr. Millais we have already touched upon, with the exception of the "Marquis of Salisbury" (270), one of the artist's pieces of pure portraiture, with no attempt at pictorial effect: this is a highly characteristic portrait in pose and expression, and confirms what we have before expressed as to Mr. Millais's power of treating the portraits of public men with such a keen insight into their character, so that his portraits seem to sum up the typical qualities which have made their career. He did this to perfection in the case of the Earl of Shaftesbury and Mr. Bright, and has been no less successful with Lord Salisbury, in whose figure as depicted here we can at once recognise the strong will and the somewhat ponderous and slowly-moving intellect which stamp him as the type of English Conservatism. Mr. Frank Holl's portraits seem to improve every year, and in his work this year he has lost a certain stiffness and occasional oddity of manner imparted to many of his previous portraits (especially when the sitter had any oddity to begin with, which Mr. Holl sometimes unfairly exaggerated), and has risen to a freer, bolder, and broader style, characterised, among other qualities, by a very effective manner of massing the light on the features so as to bring them out vividly and forcibly. This is apparent, especially in the portraits of Mr. John Bright (278) and of Lord Winmarleigh (514); the latter is a masterly and most pleasing example of expressive portraiture, both in regard to the features and the easy and natural attitude. His portrait of Lord Wolseley (240), somewhat different in style and treatment, is an exceedingly fine specimen of a military portrait; the dress, which is very effective, is one rather for the field than for show, and better for treatment in a picture than the gaudy scarlet and gold-lace of a show uniform, and the whole bearing of the figure conveys the idea of the true military character,—of courage and determination without affectation; there is a touch of the truly heroic about it, and any soldier may well be pleased to be represented in so fine and manly a style of portraiture. "General Simmons" (885) is another good specimen of Mr. Holl's portraits, of which there are eight in all. Mr. Ouless has six portraits, of which "the late Bishop of Llandaff" (280) is the finest; the head is painted with great power, and the portrait has the same kind of character-painting which we remarked upon in Mr. Millais's political and other portraits; the bishop here is every inch a bishop. Mr. Long contributes one of the best portraits of the simply realistic class in the exhibition,—that of "Mr. Cousins," the eminent engraver (470), burin in hand, before a steel plate; the finish and expression of the countenance is exceedingly fine, and the clever manner in which the pattern and texture of the dark grey checked coat is just given sufficiently without being unduly obtruded, should also be noticed. Mr. Watts's one contribution is a portrait of a little girl, "Katie" (286), which might be called a study in reds, there being five or six different varieties or shades of red in the dress, the wall and skirting, and the floor, and the child's complexion is rather highly coloured in unison with the general scheme, but keeps its due place among the warmer surroundings; a piece of dull green porcelain forms the only break in the scheme of colour. Mr. Prinsep's "Mrs. Kendal" (143), as she dressed in Tennyson's pretty little piece, "The Falcon," is a very effective portrait, and the face very carefully finished and delicate in colour. Among other good portraits may be named Mr. Herkomer's "Sir Richard Cross" (523); Mr. Sant's "Mrs. Anstruther Thompson" (545), a charmingly bright and expressive face, conveyed in Mr. Sant's best manner; Mr. Hicks's "Mrs. Arthur Hazlerigg & Son" (628), and the same painter's "Jack and Dorothy, children of Col. George Arbuthnot" (897), a most effectively-grouped portrait of two charming children, the boy in dark dress and rather in the shade, the little sister in a white frock, dancing out into the light: we have seldom seen a prettier portrait group of children. Further remarks we must defer.

The Inventors' Institute.—On May 10 a paper on "Valves, Cocks, and Taps, with special reference to some Recent Improvements," was read here.

ARCHITECTURE AMONG THE POETS.

One English dramatic poet, unjustly forgotten at this moment, Joanna Baillie, presents a long array of dramatic poetry, which, like most truly dramatic poetry, is entirely taken up with the actors, not with the scenes amid which they act. The scenic directions, however, of Joanna Baillie's plays, are very elaborate, and are frequently occupied to a great extent with directions for the architectural portion of the scenes; but to quote these would lead us rather out of the real scope of these articles. In her miscellaneous poems, however, Joanna Baillie, like a good many other English poets, has found the architectural aspect of London, or her impression of it, worth recording in verse, which is done in a short but graphic poem entitled simply "London." She comments on the comprehensive view from Hampstead, whence one sees

"England's vast capital in fair expanse,"

but, like Byron, she is especially struck with the grand point which Wren's dome makes in the scene; and her description, while reminding one somewhat of Byron's in "Don Juan," is in a far more serious as well as perhaps more truly picturesque vein. She gives us two aspects of the famous cathedral:—

"St. Paul's high dome amid her vassal bands
Of neighbouring spires, a regal chieftain stands;
And over fields of ridgy roofs appear
With distance softly tinted, side by side,
In kindred grace, like twain of sisters dear,
The towers of Westminster, her abbey's pride,
While far beyond, the hills of Surrey shine,
Through thin soft haze, and show their wavy line."

It is to be feared Joanna had not studied Gothic detail, or she would have known better than to have regarded the Westminster towers as the special glory of the Abbey; though she is, as it were, instinctively right in suggesting that it is to distance they owe their enchantment. But she goes on in a really good style:—

"View'd thus, a goodly sight; but when survey'd
Through the dense air when moisten'd winds prevail,"

London fog to wit,—

"In her grand panoply of smoke array'd,
While clouds aloft in heavy volumes sail,
She is sublime. She seems a curtain'd gloom
Connecting Heaven and earth, a threatening sign of doom.
With more than natural height, rear'd in the sky,
'Tis then St. Paul's arrests the wondering eye,
The lower parts in swathing mist conceal'd,
The higher through some half-spent shower reveal'd,
So far from earth removed that well I trow,
Did not its form man's artful structure show,
It might some lofty Alpine peak be deem'd,
The eagle's haunt, with cave and crevice seam'd.
Stretch'd wide on either hand, a rugged screen,
In lurid dimness nearer streets are seen,
Like shoreward billows of a troubled sea
Arrested in their rage."

Well done, Joanna Baillie! In spite of the Smoke Abatement Society, the poetess has something to say for the effects to be got out of London smoke.

In the works of Scott we at first seem to have lighted on an *embarras de richesses* of architectural sketches, but the richness of the collection is somewhat impaired by the amount of repetition of very similar images and descriptions. Scott has an eye for architectural effect pervading all his poems; but he is so enamoured of the ruins of feudal architecture that he repeats the effect rather too often. His best efforts at architectural painting are, however, first-rate, and are hackneyed only because they are so good and so graphic that every educated person must needs know them. We cannot here, therefore, quote such a passage as the famous one about Melrose by moonlight; one might as well quote the alphabet. We know not, however, whether all readers are equally familiar with the amusing sequel to the description appended by Scott to a transcription of the passage, which an admirer had begged to have in his own handwriting:—

"There go, and muse with deepest awe
On what the writer *never saw*,
Who would not wander 'neath the moon
To see what could be seen at noon!"

Other descriptions in the "Last Minstrel" are equally good and equally familiar; but other passages in Scott one may pause over. In "Marmion" it is remarkable how fully he gives the idea of Norham Castle as seen in the light of sunset, with a very few perfectly simple words:—

"Day set on Norham's castled steep;
The battled towers, the donjon keep,
The loophole grates where captives weep,
In yellow lustre shone."

To us this is a poetic picture; to the builders of the said tower the aspect would probably have been no more "poetic" than that of a modern railway viaduct is to a modern engineer: so much are we the slaves of time and old association in these matters. There is a longer passage in "Marmion" that is less familiar, and may be worth recalling to recollection here, showing, as it does, Scott's familiarity with details of style; the description of the buildings on Holy Isle, where the hapless Constance was immured:—

"The castle with its battled walls,
The ancient monastery's halls;
A solemn, huge, and dark red pile,
Placed on the margin of the isle.
In Saxon strength that abbey frown'd,
With massive arches broad and round,
That rose alternate, row on row,
On ponderous columns, short and low,
Built ere the art was known,
By pointed sisle and shafted stalk
The arcades of an alley'd walk
To emulate in stone.
On the deep walls the heathen Dane
Had pour'd his impious rage in vain.
* * * *
Not but that portions of the pile,
Rebuilded in a later style,
Show'd where the spoiler's hand had been;
Not but the wasting sea-breeze keen
Had worn the pillar's carving quaint,
And *moulded* in his niche the saint,
And rounded with consuming power
The pointed angles of each tower;
Yet still entire the abbey stood,
Like veteran worn, but unsubdued."

The idea of the later Gothic imitating "the arcades of an alley'd walk," false as it is in the light of modern architectural criticism, was in Scott's day an accepted theory, and must be excused; but notice the admirably-chosen expression "moulded," to convey the change worked by weather on the carved statues, and which seems almost to indicate an intuitive perception of the qualities implied in "moulded" work as opposed to the sharp and precise expression of carved work. In describing landscape generally, too, Scott has always an eye to the architectural incidents of the scene, as in the "Lady of the Lake," for instance:—

"On this bold brow a lordly tower,
In that soft vale a lady's bower,
On yonder meadow far away
The turrets of a cloister grey."

Each class of building here is exactly suited to its site, with a recognition of the connexion between architecture and landscape; and so again in the "Last Minstrel":—

"High over Borthwick's mountain flood
His wood-embosom'd mansion stood,"

and in the beautiful song in "Rokeby":—

"And as I rode by Dalton Hall
Beneath the turrets high,
A maiden on the castle wall
Was singing merrily."

A passage which again, like the preceding couplet, shows Scott's remarkable power of painting fully in a few simple words,—a power shown by him in regard to many other incidents in his landscape besides those connected with architecture, but certainly never better than in the architectural passages.

From Scott to Shelley is a progress from practical architecture to castles in the air. Of architectural art Shelley knew and perhaps cared little. Even when he does introduce references to earthly architecture in his poems, it is rather as a part of nature, a portion of the scenery, than as architecture viewed in a separate sense. He blends and fuses it with the whole landscape in a manner very Turneresque. Indeed, Shelley's description of Venice in the "Lines written among the Enganean Hills," reminds one of nothing so much as one of Turner's Venetian pictures, with its shimmer of light and colour, of buildings and their reflections, all mingled together:—

"Underneath day's azure eyes,
Ocean's nursling, Venice lies,
A peopled labyrinth of walls,
Amphitrite's destined halls,
Which her hoary sire now paves
With his blue and beaming waves.
Lo! the sun upsprings behind,
Broad, red, radiant, half-reclined
On the level, quivering line
Of the water's crystalline;
And before that dream of light,
As within a furnace bright,
Column, tower, and dome, and spire
Shine like obelisks of fire,
Panting with inconstant motion
From the altar of dark ocean
To the sapphire-tinted skies."

What is most remarkable in this description is the idea of the quivering movement of the whole scene, movement derived from the water, but seeming to affect the buildings rising above it, as, to the eye, it really seems often to affect them. In contrast to this may be taken Rogers's

one good architectural touch in his "Italy," the three lines about Venice that have been so often quoted:—

"The sea is in the broad, the narrow streets,
Ebbing and flowing, and the salt seaweed
Clings to the marble of her palaces."

This is very prosaic compared with Shelley's glowing picture, but it is redeemed from commonplace by the characteristic contrast between the seaweed and the marble, a bit of realistic detail which remains in the mind. The combination of buildings with water seems to have had a peculiar attraction for Shelley's eye. We come on the same kind of feeling in a passage in the "Witch of Atlas":—

"And where within the surface of the river
The shadows of the massy temples lie,
And never are erased, but tremble ever
Like things which every cloud can doom to die;
Through lotus-paven canals, and wherescever
The works of man pierced that serenest sky
With tombs, and towers, and fanes, 'twas her delight
To wander in the shadows of the night."

A curious passage in the "Ode to the West Wind," where again the combination of water and buildings comes in, appears to represent the buildings as actually seen (in dream) under the water,—

"And saw in sleep old palaces and towers
Quivering within the wave's intenser day."

The passage refers to the Mediterranean, and it is difficult to say whether it means the reflection of buildings quivering in the water, or whether Shelley was imagining the existence of submerged cities. In the latter case his idea is the same as Moore's in the "Irish Melodies,"

"On Lough Neagh's bank as the fisherman strays,
When the clear cold eve's declining,
He sees the round towers of other days
In the wave beneath him shining;"

though Moore's image is vague and quiescent indeed in comparison with the vivid glitter of Shelley's language, "intenser," like the light in the water. But Shelley always combines his architecture or architectural remains with the whole feeling of the scene; they are not dwelt on so much for their own sake as for the sake of the picturesque additional associations which they afford; as again in "The Revolt of Islam,"—

"Around me broken tombs and columns riven
Look'd vast in twilight, and the sorrowing gale
Waked in those ruins grey its everlasting wail."

Or else the interest of the architectural remains is connected with history, as in "Alastor,"—

"His wandering step
Obedient to high thoughts, has visited
The awful ruins of the realms of old;
Athens and Tyre and Balbec, and the waste
Where stood Jerusalem, the fallen towers
Of Babylon, the eternal pyramids,
Memphis and Thebes, and whatsoe'er of strange,
Sculptured on alabaster obelisk,
Or jasper tomb, or mutilated sphinx,
Dark Ethiopia in her desert wilds
Conceals. Among the ruin'd temples there,
Stupendous columns, and wild images
Of more than man, where marble demons watch
The zodiac's brazen mystery, and dead men
Hang their mute thoughts on the mute walls around,
He linger'd, poring on memorials
Of the world's youth."

That again illustrates the radical distinction between Scott and Shelley in relation to architecture: the former cared for the architecture itself, the latter only for what it suggested; so long at least as he was dealing with earthly and material architectural remains. Shelley, however, was one of the few poets who have taken to creating an ideal architecture of their own, and he does it, at all events, much better than Pope. The description of "Queen Mab's" palace is perhaps hardly to be classed even as ideal architecture; it is a vague compound of spheres and spaces of no tangible substance and with no constructive features; it is worth quoting as a glowing bit of "fairy" effect, however:—

"Likest evening's vault that fairy hall;
A heaven low resting on the wave, it spread
Its floors of flashing light,
Its vast and azure dome,
And, on the verge of that obscure abyss
Where crystal battlements o'erhang the gulf
Of the dark world, ten thousand spheres diffuse
Their lustre through its adamantine gates."

This, however, suggests no distinct idea to the mind's eye: it would be impossible to paint a picture of it. But the temple in the "Revolt of Islam," purely ideal and impossible as it is, has nevertheless a certain architectural character, and is at least gorgeously conceived:—

"We disembark'd, and through a portal wide
We pass'd, whose roof, of moonstone carved, did keep
A glimmering o'er the forms on either side,
Sculptures like life and thought, immovable, deep-eyed.

We came to a vast hall whose glorious roof
Was diamond, which had drunk the lightning's sheen
In darkness, and now pour'd it through the woof
Of spell-inwoven clouds hung there to screen
Its blinding splendour. Through such veil was seen
That work of subtler power, divine and rare,
Orb above orb, with starry shapes between,
And horned moons, and meteors strange and fair,
On night-black columns poised,—one hollow hemisphere.

Ten thousand columns, in that quivering light
Distinct,—between those shafts wound far away
The long and labyrinthine aisles, more bright
With their own radiance than the heaven of day,
And on the jasper walls around there lay
Paintings, the poesy of mightiest thought,
Which did the spirit's history display,
A tale of passionate change, divinely taught,
Which in their winged dance unconscious genii wrought."

There is a piece of ideal architectural splendour for some "conscious genius" to realise on canvas! The description of the dome in the second stanza quoted, with its "horned moons" and "meteors," resembles an incident in Tennyson's gorgeous description of the "Palace of Art," and may even have suggested it,—how the mystic inhabitant of that mystic palace—

"Lit light in wreaths and anadems,
And pure quintessences of precious oils
In hollow'd moons of gems,
To mimic heaven."

The name of Byron occurs naturally in connexion with that of Shelley, but with him we are almost in the same predicament as with Scott; his best passages, including those bearing on our present subject, are so familiar that it is superfluous to quote them. The description of the ruins of Newstead Abbey, in "Don Juan," is known to every one as one of the most highly-wrought poetic rhapsodies which the contemplation of Mediæval remains has ever given rise to; even Scott's famous Melrose passage is cold in comparison; and the stanzas suggested by the Coliseum, in "Harold," are even more widely known, though it has not been so generally noticed that he repeated the Coliseum reflections, in a somewhat similar strain, but in weaker language, in the last act of "Manfred." Byron did not attempt to create ideal architecture like Shelley, nor had he Scott's eye for architectural style and detail; his interest in architecture is rather for its associations than for its own sake, though he touches upon architectural objects as incidents in the landscape occasionally, as in "Childe Harold," who saw:—

"Like meteors in the sky,
The glittering minarets of Tepalen,
Whose walls o'erlook the stream;"

and in the description of the Rhine scenery the castles, of course, are not forgotten:—

"The forest's growth, and Gothic walls between,
The wild rocks shaped as they had turrets been,
In mockery of man's art."

Byron's touches of Rome and her relics, besides the famous Coliseum passages, have passed into almost proverbial use; even that most prosaic of writers about Rome, Mr. Parker, has thought it worth while to state that Byron had called the column of Phocas "the nameless column," as if Byron had entered it in that way in a catalogue of the ruins. Byron's want of historical knowledge and of critical judgment comes out, however, occasionally in his Roman reflections, as well as elsewhere in his poems. His reflection in regard to the interior effect to St. Peter's:

"Enter: its grandeur overpowers thee not,
And why? It is not lessen'd; but thy mind
Expanded by the genius of the spot,
Has grown colossal,"

is only an inverted form of the often-repeated fallacy about St. Peter's looking small "because it is so well proportioned"; that it did not look so large as it should, Byron felt, but gave a fanciful reason for it instead of the more simple and true one. Again, in reference to the mausoleum, then called the "Mole of Hadrian," he is quite at sea in his architectural genealogies when he calls Hadrian

"Imperial mimic of old Egypt's piles,
Colossal copyist of deformity,
Whose travell'd phantasy from the far Nile's
Enormous model, doom'd the artist's toils
To build for giants, and for his vain earth
His shrunken ashes, raise this dome!"

It is difficult to understand how any one could have connected Hadrian's building with the idea of the Egyptian pyramid as a model, or imagined that the building in its pristine state could ever have deserved to be called a "copy of deformity"; but Byron evidently had no eye to read the reality of an architectural design from its despoiled remains, or reconstruct it in his imagination. But if Byron has treated actual architecture with rather more zeal than knowledge in his poetry, it must be noted, on the other hand, that he is one of the very few poets who have thought it worth while to draw upon architecture for similes to heighten the poetic expression of his thoughts; and he has paid architecture this compliment in two of the finest passages in his poetry, and in dealing with very great subjects. The one is in the famous passage in which he muses, like Hamlet, over a skull—

"Look on its broken arch, its ruin'd wall,
Its chambers desolate, and portals foul;
Yes, this was once ambition's airy hall,
The dome of thought, the palace of the soul."

The passage has been so often quoted that people hardly remark upon the imagery employed, or the fact that it is all drawn from architecture. The same use is made of architectural images in describing the Alps:—

"The palaces of Nature, whose vast walls
Have pinnacled in clouds their snowy scalps,
And throned eternity in icy halls
Of cold sublimity."

To use architectural imagery to illustrate two such subjects indicates certainly a tacit conviction of the essential grandeur of the art. Whether Byron thought as much of architects as of architecture may be doubted. He has told us plainly that while loving sculpture (antique at least), he hated the sculptor; probably some member of the craft had bored him with sculptural "shop"; and a lively verse in "Don Juan" metes out nearly as hard measure to the architect who wanted to rebuild Sir Henry Amundeville's "place":—

"There was a modern Goth, I mean a Gothic
Bricklayer of Babel, call'd an architect,
Brought to survey these grey walls, which, though so thick,
Might have from time acquired some slight defect,
Who after rummaging the abbey through thick
And thin, produced a plan whereby to erect
New buildings of correcter conformation,
And throw down old, which he called *restoration*."

Probably this also was a personal reminiscence of some one who had wanted to restore Newstead. It may be recommended to the attention of a well-known Society, as an effective quotation for a public meeting.

OUR FUTURE SUPPLIES OF TIMBER.

PARLIAMENT is shortly to have its attention drawn to an interesting and practical question in the proposal to be brought before it by Dr. Lyons and Sir John Lubbock on the subject of re-afforesting Ireland, and thus by the aid of the arboriculturist rendering many of the now unproductive portions of the island sources of wealth to the population. The question from its nature, will, we are afraid, meet with but small sympathy from the general public; yet, in a measure, it may be said to affect almost every section of society and every branch of trade.

It is now considerably over two hundred years since Evelyn,—that most worthy member of the Royal Society in the earliest days of its existence,—wrote, in the quiet of his home at Say's Court, the delightful volume of "Sylva: a Discourse [as he quaintly termed the book] of Forest Trees and the Propagation of Timber." As far back as that time an experienced eye such as Evelyn's foresaw the possibility of our country one day possessing no fine timber, and in his dedication to the king, Evelyn did not hesitate to draw his Majesty's attention to the absolute importance of the subject as one connected with the continuance of England's greatness, and to urge on him "the encouragement of an industry and worthy labour too much in our days neglected, and haply esteemed a consideration of too sordid and vulgar a nature for noble persons and gentlemen to busy themselves withal, and who oftener find ways to fell down and destroy their trees and plantations than either to repair or improve them." Terrible as was the injury done to the timber of England during the Civil Wars, when so many families were ruined,—injury which Evelyn bitterly bewails,—how many a noble forest has, since those days, been stripped of its grandest trees, and but small consideration given either to our wants or those of our immediate successors. This rapid decrease of fine trees which so alarmed Evelyn two centuries back in England now, however, threatens in every country to reach a point which requires stern consideration.

Though there are few industries which may be said to be independent of the question, scarcely any are more directly interested than the building and kindred trades,* and while

* A century before Evelyn, another earnest Protestant, Bernard Palissy, the great potter, in bewailing almost in similar strains the destruction of the forest trees in France,

iron has, of course, of late years stepped in to fill a want which probably would never otherwise have been supplied, yet so large is the yearly consumption of timber in the world,—and that of a quality which time alone can produce, — that among experts the fear is not unnaturally expressed as to the period being within something more or rather less than a measurable distance when the supply will fail almost completely. That the subject is one which can with due consideration be settled satisfactorily,—at least for the coming generations,—is dependent on the fact that timber, unlike the very unequally-distributed and eventually-exhaustible reserves of coal and iron which man, once having used, can never replace, requires, however largely consumed, only time and proper management to afford a continued supply.

This beautiful science of arboriculture, or, as our French neighbours more prettily term it, *sylviculture*, is one of comparatively recent creation, but the results of its researches and labours have already entitled it to the warm gratitude, not alone of the most rabid utilitarian, but of the most sentimental lover of the picturesque and the beautiful. Of all sciences the benefits of its efforts may be said perhaps to be the most directly easy to trace, for while it fills that work-a-day world of ours which *Rosalind* plaintifully bewailed as so full of briars, with all the beauty which nature never tires of producing, even amidst the most trying uglinesses of mortal invention, the science of the arboriculturist distinctly adds an easily calculable increment to the wealth both of the present and of the immediate future.

All readers of Scott, and their number is ever on the increase, will remember the shrewd and touching death-bed advice of the dying Dumbiedykes to his son to be "aye sticking in a tree, for it will be growing while you're sleeping." Happily for us, that has been the sentiment which has stirred many an honest landowner in the past; but we of the present day are too apt, in our hurried desire for immediate gain, to throw over some of those good old precepts which so wisely regulated, in many instances, the conduct of our forefathers. Science, however, with its inexorable reason fortunately steps in to chasten our errors, and we listen with interest and reverence to its teachings as they are fascinatingly propounded, either at the Royal Institution, the Royal Society, the Society of Arts, or some of the many scientific congresses now so popularly attended. Scientific students are not easily daunted, and in the face of the indifference with which they too often meet, they pursue during happy hours the study from which they derive such deep and genuine pleasure.

Science, then, shows us that unless immediate steps are taken to consider the question of the timber supply of the coming generation, not they alone, but we also shall soon find ourselves "out of stock." England has long since ceased to be able to supply her enormous consumption of timber; France, Belgium, Holland, and Germany are in the same position. Italy, Spain, and Greece have generations gone by been almost stripped of their once luxuriant forests. What remains now of the once famous groves of chestnuts that encircled the brows of Etna, the *nemorosa* of classic days? If Norway, Sweden, and Finland are apparently able to supply, for the time being, all demands, the forests of Scandinavia are not inexhaustible. More than ten years ago the Norwegian Government recognised that the exploitation of their forests had reached the limits of the possible, and probably had even overstepped the mark. In Sweden, as long ago as 1867, fears were expressed as to the future supply in the face of the daily increasing exportation.* In those cold northern latitudes the growth of timber cannot be rapid, and the home consumption for fuel alone is no inconsiderable item, while the export trade has of late years reached to extraordinary figures.

America, which at one time seemed to promise an unbounded field, can scarcely be looked to for the future; the States will fully require all the timber they produce, while the wholesale manner in which forest after forest has been swept away before the advance of civilisation westwards has more than once met with expressions of regret and warning on the part of experts. The axe of the lumberman has been busier far than the hands of the re-planter, and well indeed can we understand the policy of the admirable institution now known in the West as "Arbor Day," when premiums are offered to the persons who succeed in planting on that day the largest number of trees on an allotted space.

Scientific management has but to be introduced into the treatment of the woods and forests of the world to insure an ample supply of every kind of timber which science, art, and industry may require; but this management must be of the most intelligent nature, and in the youth of the science there still remains much to be learned. The forester's art is able to convert many a barren heath, many a rocky waste, many a marshy tract, into most profitable timber-land. In France the arid plains of Sologne, and the wide and once desolate district known as "La Champagne pouilleuse," have, by the aid of the arboriculturist become fertile, and been made capable of rendering a return which otherwise the soil was unable to supply. It was by the planting of masses of pines that Bremontier succeeded in reclaiming from the condition of waste land the sandy dunes of Gascony, whose ever-shifting sands threatened to invade every district within miles. The action of trees, not alone on the climate, but on the soil, is a fact which has been abundantly proved since arboriculture has become a recognised science. There are soils apparently so useless that the planting of trees can alone render them fertile. In the rocky Vosges mountains, where the soil is but a few inches deep, science has been able to plant pines with signal success, and by the skilful introduction and acclimatisation of foreign trees from America and other parts of the world, many a barren acre of the Continent has within this generation been reclaimed to fertility.

All these are facts familiar to many, but which cannot too often be repeated, and in no country should they be more constantly brought before the public than in England, where the science of arboriculture still remains much in arrears, and where the question is far from being considered by the Government with sufficient earnestness. Some years since one of the "quarterlies," *—in the days when a "quarterly" article was listened to with an attention that was often productive of positive good, -in an admirable review of Dr. Brown's studies on the forester's art, concluded a brilliant and interesting article on the subject of forestry, by a very serious string of accusations against the action of the Commissioners of Woods and Forests, in the matter of the management of the Crown Forests, and in reproducing a portion of the by no means complimentary report of Lord Nelson as far back as 1803, did not hesitate to state that the general incompetency and mismanagement of that day was probably no worse than at the time of writing, and this was in 1855. It is unpleasant, if not sometimes a little risky to make direct statements, but it would be curious to know how far the ill-selected nursery-grounds, the ignorant pruning and wasteful destruction of fine timber, with various other evils brought against the Commissioners, have been corrected, for interference with the routine of the department on the part of innovating officials has only too usually been met with sturdy resistance.

On the Continent the question of arboriculture, the management of the Crown forests and the forests generally, the reclaiming of waste lands by planting trees, is in the hands of a Government Department. In France, the École Forestière, founded now sixty years ago (1824), has done much to advance the science. Admission to the school, which is established at Nancy, is no easy matter for the young aspirant, who must, in the first place, be a Bachelor of Science, and possess an annual private income of at least 1,500 francs (60*l.*). A series of severe examinations ensure only the most competent pupils, some twenty to thirty of whom are yearly eligible. These, after two years' study at the school,—directed by a conservator and five professors,—are drafted off as *gardes généraux* to one or another of the numerous *cantonnements* into which the country is divided.† The services rendered by this excellent institution are innumerable, and much do we wish that we in England had a similar system, such as Belgium and Germany have possessed for many years. For Ireland at this moment the foundation of such a school would, we feel sure, serve in no small measure to relieve much of the distress which in that unhappy island is so largely connected with the unscientific manner in which the resources, not of civilisation, but of nature, are left unproductive. There exists probably no soil in the world which the science of the arboriculturist cannot turn to some account. Where agriculture brings in but a small return, arboriculture will ensure a source of wealth to the inhabitants of the district; while in the long winter months of forced idleness, those weeks the minor labours of which Virgil has so poetically sung, a source of no small revenue could be given to the industrious by the operations connected with the management and felling of timber.

How fatal are the results which attend careless indifference on this point is singularly shown by what has followed in Italy on the disforesting of the once well-wooded peninsula. Not alone have the recent terrible inundations in the north of Italy been directly traced to this cause, but the fatal *aria cattiva*, the poisonous breath of the marsh lands which has within twenty years or so invaded almost every province of the peninsula, now reigns supreme, driving from the once fertile plains thousands of the unhappy inhabitants.* Here we see the direct influence of false economy in this one direction. When we consider in addition that Italy could undoubtedly, by proper management, grow a large portion of the timber which at present she has to import, we see another direction in which a false economy has impoverished and impoverishes an already poor nation. England, without having reached this sad position, cannot be said to be beyond blame. There exists in our country many a broad stretch of land which, by the action of science, might be rendered productive, and at the same time beautiful. The growth of timber is not of a nature to tempt the speculative demands of modern private initiative; it is for this reason that it behoves Government, or, at least, local authorities, to take up the question. They, at least, standing virtually independent of the consideration of immediate gain, are the only fit instruments by which such work can be done; but the system once set in order, the returns, it is evident, will be no less regular, even more so than from the ordinary sources of profit. A close study of the matter,—an inquiry into the admirable methods adopted on the Continent, in France, in Belgium, and in Germany, where the system of dividing estates into fractions, and felling the timber and replanting it at regularly-defined intervals, is rigorously carried out under the most competent authorities,—would form an interesting subject of inquiry either for some Government commission or for some privately-appointed body. The question is one of something more than passing interest. Whence are we to obtain our supply of timber? Nature unaided will soon cease to be able to satisfy our demands, but we have here another of the many instances where science intelligently directed can solve the difficulty, and thus once again be of the utmost service to the world, not alone practically, but æsthetically.

Royal Victoria Coffee Hall, Waterloo-road.—The ballad concerts for the month of May at the above Hall will be under the direction of Madame Osborne Williams, Mr. Clement Hoey, Signor D'Havit Zuccardi, and Mr. J. Greenhill. The last-named gentleman is arranging a concert to illustrate the vocal music of Shakspeare, arranged chronologically, with biographical sketches and anecdotes of the various composers. On the 22nd Mr. W. Carter's choir, of 300 voices, will give a performance of "Placida," under Royal and distinguished patronage. We understand that in consequence of the large audiences that have attended the Wednesday and Friday penny nights' entertainments, Tuesday evenings will be added as a third penny night, and from the 12th inst. the prices for Mondays, Thursdays, and Saturdays will be lowered for the summer season. The committee seem determined that this hall shall stand unrivalled for the cheapness of the entertainments as well as for their excellence.

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relates how, in endeavouring to enumerate the trades dependent upon the supply of wood and timber, he found his list so lengthy as eventually to be obliged to desist from his attempted task.

* See *Revue des Deux Mondes* for 1871. *La réserve des chênes d'avenir.*

* *Edinburgh Review* (1855).

† According to the Woods and Forests Department, there are some 417 of these *cantonnements*.

* There are, according to a recent statement, only six out of the sixty-nine provinces of Italy free from the influence of the dreaded malaria.

AMATEURS AND AMATEURS.

WHEN and how was introduced into our language the term "amateur" in the sense, if not exactly according to the pronunciation, which is generally given to the word in England, it would, we think, be somewhat difficult to determine. Doubtless Walpole, the anecdotal historian of our art, with his artistic knowledge and culture derived so largely from French sources, had something to do with introducing the word into the society of his day; yet it is strange to see how singularly the original word, while retaining its French mode of spelling,—if not, as we have hinted, its pronunciation,—has ceased to be understood in the same sense on both sides of the Channel.

There has been no small hubbub of late in theatrical circles anent the burning question of professionals and "amateurs," — *amytures*, as we grieve to state they are too often termed. Not long since a similar dispute disturbed the dignified world of cricketers. We all in England thoroughly understand what we mean by the term, as applied to one who practises his art, literally "for love" and not for remuneration; but how came it about that this is by no means the sense in which the word is accepted by our neighbours? A curious instance of this divergence of views is afforded in a piece recently produced at the Haymarket Theatre, and very faithfully adapted from the French,—we refer to M. Sardou's "Fedora,"—in which a passage translated literally from the French original introduces very pertinently this difference of acceptation of the term "amateur" in France and in England. The heroine of M. Sardou's piece, a Russian princess wears, like most Russian ladies of rank, a talismanic piece of jewelry, a curious specimen of Byzantine workmanship. This, at one point of the play, one of the characters asks to inspect "*as an amateur.*" This is exactly as it stands in French, in which language the word *amateur* in this case is intended to imply that the person being a lover of works of art, is curious to examine the above-mentioned cross; but translated literally into English (as it has been) this passage, it will be admitted, has rather a singular sound, and must, we have no hesitation in saying, have puzzled many persons.

Here we see exactly how different is the meaning of the two identical terms in French and in English. To the Frenchman the *amateur* is literally "the lover,"—the *dilettante* of Italy, —whether he be "lover" of works of art, of music, of fishing, sport, or what not. Unquestionably it stands to reason that, even in our acceptation of the word, the person who will so venture to bring himself into competition with the professional, as often eventually to throw himself entirely into his career, must be an *amateur*, but none the less it is curious to see how a word introduced into our language has lost, to a great extent, the true meaning attached to it in the country of its origin.

With us it cannot be denied there seems to be a kind of discredit attached to the work of the "amateur." Many readers will, doubtless, recall one of John Leech's ever enjoyable sketches in *Punch* in which the rustic critic of a painter studying in the open air, finding some deficiencies in the work, remarks to his neighbour standing by his side behind the artist, "amature seeming-ly." This is, we are afraid, the British view generally, and once again shows the divergence of English and French views as to the meaning of the word "amateur."

What the French bibliophile understands by a *reliure d'amateur* is a very different matter to what an unskilled translator of the expression might imagine. The volume which in the bookseller's or auctioneer's catalogue was thus marked *reliure d'amateur* is far from being the "binding of an amateur"; this simple announcement will be found sufficient to immediately attract the attention of the book-lover to the volume, as he knows it is a specimen of the finest binding, fit for the lover of books,—the true *amateur*.

The word, however, we suppose, is now thoroughly acclimatised in our country; we hear it used at the recent Academy Dinner in the mouth of so accomplished a French scholar as our present genial Foreign Secretary; we hear it in every direction,—we hear of "amateur lady artists," we hear of "amateur dramatic clubs,"—presided over by apparently ungrateful professionals,—and we understand what is meant. It is now too late, of course, to stem the current of public opinion, but as in the case of the thoughtlessly-used expression of "mutual friend," the improper use of which by Dickens brought upon the great novelist such a shower of criticism from our more correct cousins on the other side of the Atlantic,—criticism which, if we are not much mistaken, led Dickens to greatly alter the original treatment of his familiar novel, as in that case, if we use the word "amateur" in its English acceptation, let us not forget the real meaning of the term, even though custom has already naturalised it, after the manner adopted by some foreigners who, on adopting our nationality, think it necessary to Anglicise their names.

EHEU! DELETA.

IT is impossible to walk through any of the London suburbs outside the radius of four miles from Charing-cross without being struck by the rapidity with which the few remaining houses of the last century are being demolished to make way for their modern substitutes, and it is no less impossible to look with complacency either on the "removal" of the older structures, or on the design and construction of the vast majority of the newer ones.

The houses of our well-to-do forefathers of a hundred years ago had, perhaps, but few claims to be considered in any high sense as works of art; but they had their merits, notwithstanding,—merits neither few nor small. They reflected with much fidelity the idiosyncrasies of their time, and carry us back in imagination to the days of a sturdy race of Britons. We conceive of their first owner as of a man of simple life,—of a studiously unostentatious exterior, but having, for all that, a good balance at his banker's. And his house resembled him. It is marked by a certain gravity, a sense of decorum, and its simple lines and unadorned front have a dignity which is now brought into strong prominence by contrast with its flashy and pretentious rivals.

Let us, while there is yet time, examine an old house of the type adverted to. Its approach is sheltered by a low serviceable portico: a few Tuscan or Doric columns supporting a lead-flat, or perhaps a hemispherical, dome. Once across the threshold, and we see immediately how thoughtfully the interior has been designed. The hall is either elliptical or polygonal on plan, and floored with black and white marble; a couple of Ionic columns, with voluted capitals of exact workmanship; the proportions and details scrupulously reproduced from the antique, separate the hall from the staircase and corridor beyond.

The ceiling is pretty sure to be enriched by graceful lines of garlands, modelled in low relief sternly conventionalised, and adapted from some Classic original. The mantel will be of marble, surmounted by an oval mirror; the vertical lines of the jambs adroitly blended by flanking scrolls; the whole crowned by a miniature pediment. Above, in a lunette, stood a white marble bust of the owner, welcoming every visitor. The walls are panelled in wainscot, and in convenient spaces there are niches accommodating careful reproductions of famous Greek or Roman statues.

The staircase is sure to be well designed; it was a pet study with English architects a hundred years ago. The "going" will be easy, and the flights carefully broken by landings. The whole will be lighted by a lantern, and the spandrels decorated in low relief by the hand which adorned the hall ceiling. There is about the whole a sense of amplitude and ease. Nothing wasted, but nothing cramped or distorted. The absence of bay windows,—of which many millions must have been constructed during the last quarter of a century, —will be noted; unless we may claim under this title the wide flat sweep of the end of the dining-room. To tell the truth, our forefathers were not careful to arrange their rooms with a view of seeing round the corner. They were anxious to make the interiors of their houses comfortable and satisfying rather than to provide escapes for the victims of that *ennui* to which they were comparative strangers. They spent what we spend on showy "façades" in thick walls and ample timbers,—"material" comforts, the first necessities of satisfactory architecture. The handsome thickness of the interior cross walls is specially noticeable, and nothing gives a house so satisfactory a look as a solid internal wall with panelled jamb-linings and soffits. The slamming of a bedroom door in a modern house sends a quiver through it from attic to basement.

Stout shutters closed the windows, keeping out both cold and thieves. A quiet breadth of reposeful colour gave the needful rest to the eye, and the panel moulds, architraves, &c., were relieved with margins of refined and sparkling enrichments.

We shall be sure to find some dainty work in the drawing-room and the boudoir; a white statuary mantel with a frieze of Cupids and Graces,—Oberon and Titania, perhaps; or a garlanded bridal procession of Amorini; or it will be raised to the region of high art by Flaxman's illustrations of heroic fable or Wedgwood's incomparable plaques.

The bedrooms will be no less solidly constructed and carefully designed; less ornate, but not less appropriate, and all in due order of importance. The house will probably have lateral wings of lower elevation, forming, with the centre a pyrimidal group, and aiming at least to satisfy the eye by its general balance, stiff with a prudish formality though it be. Over all there is apparent an effort at refinement, and if this sometimes declined into feebleness, it was at any rate less offensive to taste than the obtrusive vulgarity of much of the work which now usurps its place.

There would be ample lawns and terrace walks, and trim old-fashioned gardens, and here and there, half-hidden in some bosky nook, —a little domed temple or thatched "arbour," whence the City merchant, — secure from prying neighbours, after an anxious day on 'Change or in his counting-house,—could watch the shadows steal across the lawn, and listen to the songs of birds, "the world forgetting, by the world forgot." A shrubbery or fir plantation on either side of him, and a green paddock or two beyond, complete the picture. Retreats such as this could, until to-day, have been counted by scores fringing at decent intervals our wide stretches of London common, and breezy wastes; bringing back to us the England of Addison and Fielding, of Squire Allworthy and Sir Roger de Coverley.

A black board of preposterous dimensions,— with staring white letters, seen all across the common,—now mounts guard in the neglected forecourt of these deserted dwellings. We need not approach to read the familiar legend, —"This desirable Freehold Property, ——— Sold, ——— Building Plots," — we know the formula.

The house disposed of, down it comes: the towering elms, and the spreading cedar, which took a century to grow to its present beauty, are all cut down: the rooks, which lulled the whole neighbourhood by their dreamy chatter, bringing back the charm of our early years spent in far-off hamlets, are dispersed. Roads are driven longitudinally through the heart of the property, the strips of land on each side are cut into narrow sections, just deep enough for a house and a sort of open back court, called a "garden," and lo! the typical nineteenth-century suburban villa springs up as if by magic. The lots facing the common are a little wider and a little deeper than the rest, and the houses built thereon are expressed to be of "superior elevation"; that is, their fronts will be crowned by a cement balustrade, and garnished with terra-cotta pots, which will some day fall down and add to the emoluments of the coroner.

The modern buildings have not a trace of the reserve and quiet aristocratic bearing of the old.

First, the bricks and pointing are as fresh as paint and putty can make them. The doors are grained walnut, or painted the fashionable sickly green, and are ornamented by what appear to be large golden bars to serve as handles. The letter-box has a gold flap and margin. The mouldings round the lower panels of the door are of gold. The upper panels and fanlight are filled in with leaded glazing, and the outside of the lead is gilded. The lower portions of the front windows have similar blinds, similarly gilded, and to complete the imposing scene, the massive knocker is of fine gold. All gold,—and all on the outside,— that is to say, on that portion of the outside which is seen of men. The old house had four "fronts," but no back. We will not enter upon a description of the backs of the new houses,— their nakedness and their shame!

Of the interior, it is enough to say that it is meagre and starved to a degree to pay for the "superior" elevations, or vulgar with a sickly, sticky, indescribable vulgarity.

And this is no fancy sketch. The writer has the "fortune,"—good or ill, as the reader's taste may determine,—to live in a district where the whole process can be seen. The forlorn old houses calmly awaiting their inevitable doom, in process of destruction, and in ruins; and their smug, unabashed successors in every stage of development (and one might almost say of decay), and too literally,—

"Dancing o'er the grave of Time."

A great deal of abuse has been levelled at the Philistinism of the works of our great-grandfathers. The scribe would like to know whether a contributor to this journal (*esto perpetua*) will, in the year of grace, 1983, be moved to record his regrets at the destruction of our speculating builders' various "parks" (!) as sincerely as we now regret the destruction of these modest, convenient, comfortable, solid, and (for the word shall be written), in many ways, *artistic* houses of a hundred years ago.

LOOKING BACK.

"The search after the great is the dream of youth."
EMERSON.

Those amongst us who, having passed the meridian of life, still hope there may be in store for us some years of useful labour,—looking back upon the accomplished portion of our journey, and forward into the possibilities of the unrevealed future,—cannot conceal, at least from ourselves, a certain sense of melancholy which gathers round both the retrospect and the prospect.

We remember the flush of hope with which we set out upon our life's endeavour,—the clear ideal,—the steady faith,—the conscious strength,—the determination to do battle to the death with untruth in all its shapes,—the splendid assurance that with the revival of our "national" art the shadows of the past would flee away, and the imbecilities, the unveracities, and the thousand abominations of the preceding century would be for ever "in the deep bosom of the ocean buried."

Where is the vision now? It is, indeed, something to have shared the transport of so inspiriting a dream; but now we look around only to note the wreck of our desires. We had then a creed. What has become of it? And what is to take its place, to stimulate and to sustain? The old order has passed away. The prophets are dead or discredited. Stuart and Revett, Taylor and Cressy, Puginism, Ruskinism, all have had their day, and are gone, and there is none to reign in their stead.

It is, perhaps, only natural that one who has outlived the enthusiam of youth should think and write thus. Our illusions fall away from us one by one, and year by year the text of "the weary king Ecclesiastes" comes home to us with ever-accumulating force.

Apathy is the accompaniment of age. The older representative body has succumbed to the inevitable. The gods of the profession "sit apart in careless ease" drinking the nectar of worldly success, wholly given over to the business side of their vocation. But if in their case this is no more than natural, it is not natural that our young men should be equally apathetic,—without their dream—their ideal; and it is the absence of any such *motif* which at the present moment startles and perplexes us. What do they in this year of grace set before themselves as the goal of their artistic endeavour? We go to their meetings and listen to their speeches. They have a distinctively practical turn, and so far this is well. But remembering the "fine frenzy" of our young days, we are shocked at the cynicism which differentiates their treatment of all questions of art. To an outsider they would appear to be without any guiding principle. They have neither likes nor dislikes, neither sympathies nor antipathies. They look upon every phase of art with the same chilling unconcern, and have not even the negative virtue of being good haters.

At no previous time during perhaps the present century could this have been said. The varying fashions which have run their course were devoutly believed in for the time, and were pursued with ingenuous ardour. But the leaders of the latest fashion are at no pains to disguise their contempt for it. They speak slightingly of it as an unsatisfying *réchauffé* of what was at the best but very poor fare.

It is disappointing to find that after all the efforts which have been successively made to get at the spirit of each of the ancient methods in turn our accumulated experience should land us almost where we began; for standing, so to speak, upon the shoulders of the architects of all time, we are but little able to turn their teaching and example to account.

From the Greek we learned the beauty which lives in carefully-studied line and proportion, and the value of a self-imposed restraint. Can it be said that our works show that we have laid the lesson to heart? From the Roman we learned to appreciate the power which dwells in noble masses. Yet our works are marked, for the most part, by an impertinent frivolity. From the Teuton and the Celt we learned the possibility of fusing these qualities into an artistic whole; from modern Italy the charm which follows the union of the highest technical skill with graceful and varied detail; and from the English architects of the sixteenth century the compatibility of a gracious picturesqueness with the homeliness prized by all our race. It is true that in our ecclesiastical, civil, and domestic work we have achieved some success, and the names of Harvey Lonsdale Elmes, of Barry and Pennethorne, Scott and Street, have won for themselves a permanent place in the history of art. But these were each and all, in their several ways, enthusiasts, and it is the lack of any enthusiasm now which forbids us to expect works of equal ability to theirs. It is for the younger men now to initiate an eclectic style which shall combine all the lessons of antiquity. The intellectual beauty of the Greek, —the daring of the Roman,—the technical excellence of the Renaissance,—and the masculine grace and integrity of the Goth,—and to bring to the service of these all those mechanical and scientific aids which the present century has laid at our feet.

This end cannot, however, be accomplished without the *vis viva* of enthusiasm. There must be a creed,—the strength which comes from union,—and, above all, a leader; and, judging from analogy and experience, his influence must be exercised mainly by means of the most powerful of modern implements,—the pen.

We have still to look for the approach of the strong man,—who shall make these dry bones live again,—who shall organise and combine the now disunited elements, and arouse to a noble energy in a common cause the spirits which are now lapped in an unprofitable lethargy.

THE AMSTERDAM EXHIBITION.

Though the Holland of to-day is very different from what it was twenty years ago, it still retains much of its idyllic simplicity, and the express from Paris seems in a short time to whirl one into quite another world; past verdant plains, mills, canals, boats; over the most marvellously audacious bridge in Europe, thrown across the Biesbosch, a little interior sea, in which were engulfed, in 1472, seventy-two villages; then on to Rotterdam; and, finally, Amsterdam.

We avail ourselves of some Paris contemporaries to give additional particulars of the Exhibition now open here.

Amsterdam has become much enlarged during the last twenty years, and the population increased 50,000. Squares have been built, canals filled in to make roads for trams, of which mode of conveyance the inhabitants are passionately fond, and frequently take rides in the cars with no other motive than for the pleasure of doing so. The shares have consequently attained an enormous value.

The Exhibition is in the new town (behind the magnificent museum now being built, and with the object of lodging more worthily the works of the great Dutch painters). It is built in wood and iron, on piles,—as, indeed, the city itself is. Two mètres below the sandy soil there is water. The canals pass underneath the edifice, which rests on 360,000 stakes planted in the water. The idea of the Exhibition came from France, and the building is erected by a Belgian contractor, on the plans of a French architect, M. Fouquian, who brought his workmen with him from Paris, and the façade, in numbered cases in 210 cars, ready to put up, was taken out by them, piece by piece, and with the help of the French Marines on special service for the exhibits of the Marine Française, adjusted to the wooden framework.

The front of the Exhibition is symbolical of the trade of Holland with the Indies, and resembles the palace of a rajah. The two towers which flank it appear to be built on the backs of gigantic elephants (the latter in plaster, and came from Paris). These two towers and all the façade are painted "marble" on canvas. Serpents twine round the cupolas, from the top of which, on the roofing, kneeling Indians seem contemplating the city. A "velarium," in imitation of Indian stuffs, unites the two towers, and thus conceals the modern construction of the Exhibition. It was curious to see the thousands of mètres of white "marble," elephants' trunks, serpents' heads, Indian faces, &c., being brought out of their cases, and laid on the beams as easily as a decorator does up a ball-room.

Notwithstanding that the Exhibition is far from being completed, the king and queen arrived in Amsterdam, which is full to overflowing, to open it on the 1st of May. The laws of the constitution oblige the king to reside five days in every year in the capital, though he is said to infinitely prefer the simpler life he leads in his residence at the Hague. Facing the Exhibition, but with back towards the new museum, two great estrades had been erected, the one on the right hand for royalty, the one on the left for the musicians and singers. The king and queen took their places on the throne, covered by an immense canopy. The king wore a military uniform and the order of the lion. The day was extremely fine, and lighted up the brilliant group of ministers, ambassadors, officials, &c., who surrounded the king and queen. The costumes of the English sheriff and alderman attracted especial attention, as also those of the Chinese Embassy; and the professors of the University, who, with their square velvet caps, looked an animated picture by Van der Elst.

As soon as the king was seated, a cantata was sung by a choir of a thousand voices. After the cantata Mr. Cordès, president of the Chamber of Commerce of Amsterdam, and president of the Executive Committee of the Exhibition, gave an historical sketch of the vast enterprise, the success of which promises to be great. The king declared the Exhibition open, and the official inspection commenced.

The king, the queen, their suite, the ambassadors and consuls, escorted by the members of the executive committee, walked about over "roads" of wooden planks or carpets. Everywhere in the gardens detachments of infantry and marines; on all sides one heard the national anthem; and all went "merry as a marriage-bell."

The Exhibition is not nearly complete; but Mr. Tasson, delegate of the executive committee, has worked like a Titan to bring this project through all obstacles; and so has Mr. Edouard Agostini, the Commissary-General. It is probable that soon the Amsterdam Exhibition will be one of the most interesting and curious of the kind.

We will take a hasty glance at its present condition, and commence by the gardens, passing rapidly before the *replica* of the monument in Sumatra commemorative of the war of the Atjela, rushing rapidly through a conservatory full of lovely tropical plants, and stopping for a few moments before the Japanese "gamelan," a sort of open-air theatre where Japanese musicians and Japanese dancers are giving a real Japanese entertainment. Opposite the gamelan is the rice-house, where you can eat rice *à la mode de* Japan whilst looking at the dancers. An important pavilion is that at the entrance to which they have placed the statue of Jan Pieterszoon Kœrr, the first governor of Dutch India, which contains a very interesting colonial exhibit. The arms, the furniture, the household,—objects necessary and of luxury in use by the natives of the splendid Dutch colonies. Mosques, marionettes, tiger and panther skins, musical and fishing instruments, a tobacco plantation, and a floating house such as the Indians of Palembang (islands of Sumatra) construct on bamboo rafts, &c.

Leaving the colonial pavilion, you have to traverse a regular little Japanese village, with bamboo houses covered with dried grasses, bamboo bridges, and the inhabitants dispersed about. Thence one passes into the interior of the Exhibition by the grand entrance. The imposing façade, in the Indian style, quite white, copings of pagodas, and an immense scarlet scarf with cashmere fringes, which seems flung from one tower to the other, give it a great air of originality.

In the interior itself the Exhibition is very like all others one has seen. A vast nave in the centre, into which on the right and left galleries open. France will be well and worthily represented. All the great manufacturers are exhi-

biting, and "Alsace" has also her little corner in the French section. There is also in the interior of the building the exhibit of British India with the reproduction of a bazaar at Bombay. Austria, China, and Japan have also sections here.

The arrival of the Chinese Embassy at Amsterdam created quite a sensation for several days: the dignitaries forming the suite could not put foot in the streets without being followed by a crowd of extremely naughty little Dutch boys, who hung with great irreverence on to the long pig-tails which are the Chinaman's pride and glory. There had positively to be a proclamation from the Burgomaster of Amsterdam reminding them of the respect due to strangers ere this ill-timed pleasantry ceased. Back then again to the garden, to a rotunda, in which is exhibited a village of Dutch East India, with its dark-complexioned inhabitants; then on to the gallery of fine arts; then the Algerine Pavilion, whose contents were brought from Algiers, on the State vessel *La Caravane*; then, if you enter a "Dutch bakehouse," you will find a specimen of every kind of bread made since 200 years up to the present day,—"A Museum of Crusts," in fact. The Tunisian Pavilion floats the French flag. Then the pavilion of the diamond merchants, which will be one of the great curiosities of the Exhibition. There is 160,000*l.* worth of diamonds, cut and uncut, exposed in a very curious way in fifty-two glass cases. A most ingenious piece of mechanism guarantees these stones against every attempt of plunder. The case in which the diamonds are placed is on a spring, and covered by a very thick glass. To break in the glass there must be greater strength than that which the spring can bear. Were thieves to try and break the glass, immediately the spring would yield, turn upside down, and the diamonds be driven into a strong box, which would then close on the treasures. Of course, the amusing part is not forgotten, there are to be *café* concerts, open-air theatres, *cafés*, &c.

After the ceremony of the day there was a night fête. Mr. Humbert, the intelligent manager to whom Brussels owed the first production of "La Fille de Madame Angot," has erected, with the aid of financial co-operation, an "Eden," which has been christened Park-Schouwberg,—Park Theatre. It will not be entirely finished before a month, but as it is the largest and handsomest in Amsterdam, the Municipal Council wished to use it for the ball offered to their majesties and the chief people of the city. This "Eden" is in the Indian style, and with exceedingly fine and delicate colouring. As it is (and covering a superficies of 2,500 mètres), it has only cost, everything included, 800,000 francs; ballets, pantomimes, concerts, and parts of operas will be given there. Mr. Humbert is negotiating with Lassalle, Vergnet, Mdlle. Krauss, and Mdlle. Richard to give twelve representations in July.

At the same moment a fête was given in the Exhibition itself,—concert, ball, and supper,—by the organisers of the Exhibition to the workmen of every nation who had worked and were working in this vast international bazaar. The fêtes continue. The Commissary General, Mr. Agostini, is going to give a ball to the foreign Commissaries and personages of note in Amsterdam.

Left to herself, Holland would hardly have accomplished her task. She is commercial rather than industrial, and her sources of wealth are drawn from her commerce with India, her marine transport, her cattle breeding; the country itself furnishes brick; the wood comes on immense rafts from the Black Forest by the Rhine, or by sea from Scandinavia. Thus, not organised for large industry, the country must have recourse to foreign lands for important constructions, to Germany for railways, &c. The Dutch are a most generous people when any national work is on hand. The king's late brother, Prince Henry, gave three millions of florins out of his private purse to help establish a line of steamers taking a short route between England and Holland, and when the delegates came to thank him, he simply said, "Gentlemen, you owe me no thanks. A rich man who will not sacrifice his superfluity to the public good is not worthy to live."

Institute of Painters in Water Colours. At a meeting of the members on Monday evening, Mr. James D. Linton was elected Vice-president, in the place of the late Mr. W. L. Leitch.

MUSEUMS.*

DURING many years' attendance at these meetings, I do not remember listening to a discussion upon the subject of museums, apart from sundry references from time to time to the well-known depository of architectural relics in Westminster. Having had opportunities during the last few years of watching the internal workings of one of the most recent large buildings of this description, I have thought a few remarks upon this rather interesting class of buildings might not be out of place in this room.

The primary considerations to be borne in mind in designing a museum, whether large or small, are:—

1. The classification of the objects to be exhibited.

2. The conditions necessary to ensure that the various sections may be well defined, and the individual items may be exhibited under the most advantageous conditions as regards convenience of access, light, and security.

3. The maintenance of an equable temperature within the building, with good ventilation and the exclusion of dust.

In museums of any pretensions to completeness there should be, in addition to provision for the proper exhibition of objects,—

1. Rooms specially set apart for the examination and study of special objects.

2. Storage accommodation for duplicate specimens, casts, or objects awaiting examination prior to exhibition.

3. Preparation rooms for the necessary work incidental to preparing specimens for exhibition.

4. Lecture-rooms (large and small) for general and sectional lectures to students.

5. Accommodation for a controlling or executive department.

When the space required under these various heads has been as satisfactorily disposed of as the size and financial limit usually imposed would allow, there remain to consider the problems of lighting, warming, and ventilating the numerous divisions of internal space appropriated to so many varied purposes, and the arrangement and construction of the fittings for preserving and protecting the objects exhibited.

The classification of the objects to be exhibited, and the space they will require for exhibition, must obviously vary, and be dependent upon their nature, number, and size. Full particulars will not only be required of the actual space to be occupied by certain classes of objects, but the principle upon which their final arrangement will be based should be made known to the architect.

The system of subdivision by which, in large museums, certain galleries or rooms are kept solely for certain kinds of exhibits, although very desirable, is not always practicable in smaller buildings. On this ground it has been urged by competent authorities that in the smaller museums,—which will undoubtedly become more numerous in large towns and districts than at present,—the typical arrangement of certain classes of objects should be adopted, and all superfluous specimens not specially representative of particular types should be carefully excluded with the view of placing clearly before an ordinary observer or student the materials for obtaining a good general grasp of the various branches of science and art, without trespassing upon the space which should be devoted to the local objects of interest which, in the smaller local museums, would always occupy a prominent place. These will also require, and should receive, attention, so far as circumstances will admit, to ensure their due separation and classification in separate rooms or galleries. While the larger national museums should be designed to illustrate, as fully as possible in detail, the vast stores of knowledge accumulated from time to time in all departments of science, art, and history, the smaller museums should be treated as epitomes of information on general subjects, wherein the local features of historical, physical, or archæological interest should receive more attention in detail. These general principles will naturally affect the design of individual museums, and render varied treatment essential. I propose to consider first, now, the arrangements essential to the larger national museums in order to emphasise the conditions which are necessary to ensure success in all. In order to illustrate the various points more fully, I have placed upon the screen a few drawings, for which I am indebted to the courtesy of Mr. John Taylor, F.R.I.B.A., Surveyor to H.M. Office of Works and Public Buildings, in whose charge the buildings referred to are placed.

The British Museum is divided into eight departments, viz.:—Printed Books, Manuscripts, Antiquities, Prints and Drawings, Zoology, Geology or Palæontology, Mineralogy, and Botany. Each department is under the charge of a keeper and staff of assistants and attendants, for whose use studies and workrooms are appropriated. The four last-named departments are under the charge of a superintendent of natural history. Considerable additions have recently been made and are now in progress by the erection of additional accommodation for the first four departments upon the site at Bloomsbury, and the entire collections belonging to the four last are being gradually removed to South Kensington, to the large building designed for their reception by Mr. Alfred Waterhouse, A.R.A.; and as the plan of that building has been designed to meet the requirements of the best authorities, a glance at the internal arrangements and disposition of the departments may not be uninteresting.*

As regards space, the zoology department is the most important of the four branches of science housed at the Natural History Museum. It will occupy more than half the area of the building. The collection will be arranged in thirteen distinct galleries, viz.:—1. Osteological, second floor; 2. Mammalia, first-floor; 2a. Mammalia, saloon; 3. Birds, ground-floor; 3a. Birds, saloon; 4. British natural history saloon, ground-floor; 5. Corals, ground-floor; 6. Shells, ground-floor; 7. Reptiles, ground-floor; 8. Fishes, ground-floor; 9. Starfishes, ground-floor; 10. Insects, ground-floor; 11. Cetacea, basement. Next in size is the geological collection, arranged in eight galleries, all on the ground-floor, viz.:—1. Fossil mammalia; 2. Fossil mammalia; 3. Fossil reptilia; 4. Fossil fishes; 5. Fossil mollusca; 6. Fossil sponges, corals, and plants. Two other galleries will probably soon be opened for,—7. Geographical and typical collections; 8. A special stratigraphical series. The collections of minerals are exhibited on the first floor, in two galleries: 1. Containing the general collection exhibited in table-cases and some "rocks" in the wall-cases; 2. Meteorites, crystals, and rocks.

The botanical department is located on the second floor. The collections are divided into two parts, one portion arranged to illustrate the various groups of the vegetable kingdom, and the broad facts on which the natural system of the classification of plants is based; the other portion is intended for the use of students, and consists of the great Herbarium, stored in cabinets specially designed for facilitating reference.

Some idea of the floor-space occupied by these collections may be obtained from the dimensions of the principal galleries, which are as follow:—Six front exhibition galleries are 278 ft. 6 in. long, by 50 ft. wide; six northern exhibition galleries, 137 ft. by 40 ft.; six northern reserve galleries, 137 ft. by 20 ft. The Reptilian gallery (geology) is 230 ft. long by 21 ft. wide; the Coral gallery (zoology) is 200 ft. by 17 ft.

On the first floor accommodation for the representative of the principal librarian and his staff is provided contiguous to the board-room for trustees' meetings, and to the lecture-room. This accommodation consists of board-room, about 38 ft. by 17 ft., and secretary's room, about 17 ft. by 16 ft., with two clerks' rooms, lavatories, &c., and store-rooms over; the lecture-room is about 57 ft. by 17 ft. The keepers and their chief assistants have studies next to the principal galleries of each department, while the two larger departments of zoology and geology have also private studies and workrooms in the small reserve galleries which lie between the large northern galleries on the ground-floor. The large rooms in the basement facing south form a series of well-lighted studies, store-rooms, and work-rooms for the staff attached to the several departments. On the north and east sides are the workshops, mess-rooms, chemical laboratory, &c., while a large area at the west end is appropriated to the display of skeletons of huge whales slung from the ceiling. The central portion, under the museum and central hall, forms a vast dry storehouse for future acquisitions.

* A paper read at the Architectural Association meeting on May 4, 1883, by Mr. J. Osborne Smith, A.R.I.B.A.

* We will give plans of this Museum, as fitted up, in our next.

The collections of objects preserved in spirit, which have hitherto been located in extremely limited quarters at the British Museum, are now being transferred to a separate building specially designed to reduce to a minimum the risk from fire; a laboratory and studies are attached to the spirit building for the use of the staff and for students. The spirit building and studies measure about 154 ft. 6 in. by 51 ft., and are placed 60 ft. north of the main building. The museum building is set back about 100 ft. from the Cromwell-road. The length of the south front is 675 ft., and the towers are 192 ft. high.

This central hall is 170 ft. long by 97 ft. wide and 72 ft. high; the staircase is 20 ft. wide.

The whole of this large building is extremely simple in plan and admirably arranged. There are a few points about it as at present appropriated, which strike one as having been overlooked, *e.g.*, the lecture-room, a long, narrow room is ill-adapted for its purpose, originally designed, I believe, for a refreshment-room; the executive officers are as far as possible from, and not as near as possible to, the principal entrance, with the exception of the superintendent; and the accommodation provided for refreshing the body in this great temple of knowledge is of the most imperfect character; there are two buffets, but to get at them from the entrance one must walk twice the length of the central hall, and mount some 40 ft. to the second-floor landing. A noteworthy feature is this central hall, which, with the dozen recessed bays on either side is intended to form an Index Museum or popular typical collection of Natural History subjects. The object of such a collection has been thus described by the superintendent (Prof. Owen):—

"One of the most popular and instructive features in a public collection of Natural History would be an apartment devoted to the specimens selected to show type characters of the principal groups of organised and crystallised forms. This would constitute an epitome of Natural History, and should convey to the eye in the easiest way an elementary knowledge of the sciences."

This portion of the museum is not yet fitted up, but the necessary fittings for carrying out this idea are in progress, and in a few months this large and important building will be completely fitted, and we shall be in a position to judge of its value as a vast national storehouse of natural objects, and as a means of popular education in some of the most interesting branches of knowledge.

The general arrangement of this museum has been described by the Superintendent as follows:—

"I may finally refer, in the terms of our modern phylogenists, to the traceable evidences of 'ancestral structures.' In the architectural details of the new Natural History Museum you will find but one character of the primitive and now extinct museum retained, viz., the central hall. In Montague House there were no galleries, but side lighted saloons or rooms of varying dimensions and on different stories. In its successor, the museum developed on its site at a later period, we find galleries added; that, for example, which was appropriated to the birds and shells being 300 ft. in length. This architectural organisation still exists at Bloomsbury. The museum, which may be said to have budded off, has risen to a still higher grade of structure after settling down at South Kensington. In its anatomy we find, it is true, the central hall, and long side-lighted galleries; but in addition to these inherited structures we discern a series of one-storied galleries, manifesting a developmental advance in the better admission of light, and a consequent adaptation of the walls as well as the floor to the needs of the exhibition."

Not far from this splendid building is a popular and interesting miscellaneous collection of objects, which have been accumulating from time to time since 1855. The building in which they are housed was originally a temporary structure, known to the irreverent lover of alliteration as the "Brompton Boilers." Permanent buildings have been gradually erected and are now in progress, but in them we miss the full development of the principle of classification, and galleries devoted to special subjects, found in the design for the Natural History Museum. In place thereof there are, as you know, three very large and lofty courts. One,—the architectural court,—is divided into two equal parts by a two-storied arcade; the other two have aisles or cloisters on all four sides, the south court having also a central arcade of two stories. On the first floor, over these aisles or cloisters, are ranges of galleries chiefly used for the exhibition of paintings.

Adjoining the cloisters, on the ground-floor, are offices for the staff, an art library and reading-room. On the north-west sides of the quadrangle, of which the large courts form the east side, are the schools and official residences, portions of the ground-floor being available for exhibition purposes, and lighted by windows looking into the quadrangle; on the south side are new buildings, intended for the library, &c. Across the centre of the quadrangle runs a corridor, off which are spacious refreshment and retiring rooms, elaborately decorated and fitted up, in striking contrast to the much inferior accommodation provided in the Natural History Museum, and already referred to. Over this corridor and refreshment department is a long gallery and lecture theatre, this last again being far superior to the one spoken of over the way. This ever-extending national collection has, in addition to the buildings already named, taken possession of some of the permanent exhibition galleries erected round the Royal Horticultural Society's gardens, and will probably also in time be increased by a handsome pile of buildings to be erected upon the vacant site at the corner of Exhibition and Cromwell roads. If this be ever realised, it is to be hoped the system of large courts and semi-dark aisles may not be strictly followed, but that some attempt will be made to facilitate the arrangement of kindred objects in single galleries, in such position that they may be seen to the best advantage. At present the buildings at South Kensington Museum teach many valuable lessons to the student of what to do and what to avoid doing. The large courts being top-lighted only at a great height, the arcades are necessarily imperfectly lighted; the least satisfactory room for exhibition purposes in the Natural History Museum, although in appearance an architectural gem, is the saloon for British Natural History, on the ground-floor, and this is arranged with arcades and a central top-light similar to the large courts to which I am referring. Three of the arcades have side-lights, but owing to structural obstacles this form of lighting is only effective on one side. This weak point has been rendered much more apparent in the British saloon by the arrangement of the fittings and the desire to exhibit more objects than the room was designed to hold; but still it is evident from these two examples that aisles arranged as at South Kensington Museum are points to be avoided if possible.

Top and side lighting have just been incidentally referred to and it might be convenient, at this point to consider the very important subject of lighting generally. The vexed question of top *versus* side lighting is really solved by other than abstract considerations of the relative fitness of the two systems. So far as I know there is no museum in existence in which either system is used exclusively. Convenience or economy decides in favour of both, and under the most favourable conditions experience shows that the happy medium between the two gives the most desirable result. A visit to the National Gallery, British Museum, or any similar building with large lighted areas, will clearly show that complete success is not attained by flat top lights. On the other hand, side lighting has its disadvantages, even when a gallery is lighted on both sides as the National History Museum. Where side-lighting is adopted the light should be admitted as near the ceiling as possible. A comparison of the three modes of admitting light may be made at either of the museums to which I have referred. So far as I have been able to compare them the northern galleries at the Natural History Museum would appear to be the most successfully lighted galleries in any of the three museums. In these the light is admitted through a continuous line of slightly raking sashes just above plate level: practically they are side lights placed high up on both sides of the galleries. Cheerfulness and ventilation are aided by a range of lights in each gable end. It is difficult to ensure that every portion of a large building shall be well lighted, but it is well to bear in mind that unless objects can be seen the space they occupy will be much less valuable than it would be if they could be shown to advantage. On the other hand, it is undesirable to overlight a gallery, to expose unnecessarily the inner air to the chilling influences of skylights, or to increase the reflection from light objects to such an extent as to interfere with the comfort of the visitors or students. To give additional emphasis to this lighting question for small museums I am constrained to quote the published opinion of a scientist upon museum building generally:—

"In the construction of our local museums the scientific man has unfortunately seldom, if ever, been constructed as to the practical wants of the curator or lecturer; but the entire design has been left to the architect who, as a rule, is perfectly inconversant with scientific requirements, and thinks it beneath his dignity to confess as much and seek the advice of those who could aid him; while, guided by the instincts of human nature, he throws all his thought into 'general effect,' especially over the exterior, which will be a standing advertisement of his architectural ability to those who are town-councillors, not naturalists."

After criticising in detail two well-known provincial museums, he concludes thus:—

"In building any local museum, the first effort ought to be to produce a shell, fitted with the most convenient arrangements human ingenuity can devise for the wants of curator, teacher, and student; and when that has been accomplished, then devote any surplus funds to the external ornamentation of that shell in any manner good taste may direct, as long as the design will not interfere with the effective lighting of the several departments,—at least, this is the naturalist's, if not the architect's, view of the question."

The South Kensington Museum and the Reading Room at the British Museum have now been lighted for some time by the electric light with an amount of success which will probably cause it to be used in future for similar large areas. At the Natural History Museum branch gas has been introduced into the basement and central hall, but at present the galleries, studies, &c., are closed at dusk.

Fittings.—The form, position, and size of the cases and fittings to contain or protect the specimens should be well considered and arranged in such a way as to favour and facilitate the classified arrangement of the exhibits. The nature of the specimens will determine the kind of case or fitting, and the position, size, and number of fittings should determine the extent and plan of the galleries. The fittings appropriate for museums may be seen in great variety at the British Museum, where experiments to obtain security and to preserve specimens from dust have been tried, regardless of expense. At the South Kensington Museum, where more economy has been practised, with rather gloomy results in some of the earlier stands, the recent fittings are more successful in producing a pleasing exterior. The fittings at the Natural History Museum have been designed by Mr. Waterhouse, and are placed in positions specially arranged to receive them. Some have been executed in metal, but most of them are in mahogany; the doors are ebonised and strengthened by metal plates. Some of the galleries are fitted with table-cases brought from the British Museum. The wall-cases in the northern galleries are arranged in bays about 17 ft. long, while at the British Museum they are continuous; the former are found in practice to be less convenient for classifying the specimens. The side-lighted galleries have pier-cases at right angles to the windows on each side of a central gangway, about 15 ft. long by 10 ft., and 12 ft. high, and of various depths. The coral gallery is fitted with cases glazed on both sides with glass shelves for the specimens. At South Kensington Museum the cases vary considerably in size, shape, and appearance, and are made portable. The British Museum is fitted chiefly with continuous wall-cases of mahogany or metal, and the floor space occupied by table-cases and stands of a uniform type.

Materials.—Materials for museums should be selected for their durability, appropriateness, and cleanliness. As it is always inconvenient to disturb a carefully-arranged gallery for cleaning purposes to say nothing of the risk of damaging the specimens, the internal surfaces should, as far as possible, be of a non-absorbent permanent character, which would not require frequent renewal or cleaning. The sombre effect produced by London atmosphere upon the exterior and interior of the British Museum buildings would seem to suggest the desirability of avoiding plaster and stone in favour of more cheerful materials. Experiments of a totally different character have been tried at South Kensington in the other two museums under consideration. The iron construction of the courts with the mosaics in the bays at South Kensington Museum are certainly more cheerful if not so dignified as the solid masses of dark material at the older institution. So also the

terra-cotta interior and exterior of the National History Museum presents a very pleasing and interesting (possibly on account of its novelty) surface to view, and one admirably adapted for external use at any rate, especially when designed with so much common sense and intimate acquaintance with the material as is displayed in the details of the whole of this work. The oak floors of the older museum have been adopted generally in the new offshoot in the Cromwell-road, and are far better than the too smooth tile pavements over which one has to slip painfully at South Kensington Museum. These pavements are as inappropriate for their purpose as the highly-polished stands upon which the stuffed monkeys and other lively creatures are placed by the score in the British Museum cases. The central hall and corridors of the Natural History Museum are floored with Messrs. Burke's mosaic pavement, and the entire area of the basement floor is covered with Seyssel asphalte. All the floors are of fire-proof construction, and the roofs of iron covered with slate. The idea of using terra-cotta for this building was originated by Captain Fowke, and the result is thus enthusiastically referred to by Professor Owen, at the meeting of the British Association at York in August, 1881:—

"In the construction of a building for the reception and preservation of perishable objects, the material should be of a nature that will least lend itself to the absorbtion and retention of moisture. This material is that artificial stone called terra cotta. The compactness of texture which fulfils the purpose in relation to dryness is also especially favourable for a public edifice in a metropolitan locality. The microscopic receptacles of the soot-particles on the polished surface of the terra-cotta slabs are reduced to a minimum; the influence of every shower in displacing those particles is maximised. I am sanguine in the expectation that the test of exposure to the London atmosphere during a period equal to that which has elapsed since the completion of Barry's richly-ornamented palace at Westminster, now so sadly blackened by soot, will speak loudly in favour of Mr. Waterhouse's adoption of the material for the construction of the National Museum of Natural History."

Warming.—Museums probably more than any other kind of buildings require the interior atmosphere to be maintained at an even regular temperature, and quite independently of the variation which may take place outside. This is not only essential for the comfort and health of the staff, students, and visitors, but is absolutely necessary for the preservation of the most delicate and sensitive specimens. The variation of a few degrees has been known to produce the most interesting changes in the condition and appearance of certain minerals. In a building where light is all important, and large lofty windows are numerous, where top-lighting is considered as a primary desideratum and sky-lights abound, it may readily be conceived that the maintenance of an equable temperature inside a building separated to a large extent from our outer variable climate by glass only is a task requiring much experience and accurate judgment to accomplish successfully. The difficulty does not lie so much in obtaining the necessary heat as in judiciously conducting or disposing of it when obtained. One is tempted frequently to aver that buildings of this class are usually overheated. The three buildings previously referred to are all warmed by the air coming in contact with hot-water and steam pipes. In the South Kensington Museum, I believe, the pipes are carried through the galleries and courts on the floors, and the building warmed throughout by direct radiation from them. In the other two the problem is solved by admitting fresh warmed air from the basement up into the galleries, supplemented as required by hot-water or steam pipes to assist the warmed air to circulate. In the most recently-erected building the hot-water pipes, with a few minor exceptions, do not rise above the basement floor, but are arranged under this floor in channels running parallel with the main walls of the front galleries, and under large shafts leading to the centre of the back or Northern galleries, cold fresh air is admitted to the channels, and exits are provided from them to 14 in. square flues in the walls, which conduct the warmed air to the upper floors. The hot-water pipes are arranged in the channels in three tiers of five in each tier, and amount altogether to about 28,000 ft. run of 4 in. pipes, including three large coils under shafts leading to the central hall. To heat the water in these pipes there are thirteen steam-chests or heaters disposed at points shown on the plan, which are supplied with steam for three twenty horse-power boilers, situated under the British saloon on north side of the central hall. The warmed air in travelling up the shafts to the top story becomes reduced in temperature about one half, but steps are being taken to reduce the loss of heat to a minimum. The cold air is filtered through canvas screens as it enters the channels, and the channels and flues are rendered in cement on the inside. The warmed air is admitted to the galleries at the floor level through galvanised iron gratings. Provision for ventilation is made by flues in the walls opening to galleries at ceiling level, leading to turrets and towers. The large smoke-shafts on the north side of the building are also used for ventilating the galleries.

In concluding these imperfect notes I would fain confess to feeling a patriotic satisfaction that the national collections of artistic, scientific and natural history treasures should be so well cared for and so generously displayed in buildings specially designed to receive them. The buildings now in the course of erection upon the Bloomsbury site and the gradual extensions going on at South Kensington Museum indicate the necessarily progressive nature of these institutions. We may hope to see,—probably at no far distant date,—the full development of that which Professor Owen styles the "higher grade of structure" into a more complete architectural organism than it has yet become.

One may be permitted to hope, further, that as these vast structures grow increasingly valuable as depositories of knowledge, they may at the same time become more and more important factors for educating and humanising the community at large.

THE LATE MR. DAVID RHIND.

By the death of this gentleman, which took place in London on the 20th ultimo, the architectural profession in Edinburgh has lost one of its most distinguished members.

Mr. Rhind received the rudiments of his professional education in London, where he was the friend and companion of the late Sir Charles Barry. He started in business in Edinburgh about fifty years ago, and has, during that period, maintained a high position in the profession. His most ambitious effort was a design submitted in competition for the Houses of Parliament at Westminster, the style adopted being the Elizabethan. The first work of importance carried out from his designs was the Commercial Bank Buildings in Edinburgh, the Corinthian portico, and the bold but elegant details of which, have been much admired. The arrangements of the interior, especially the grand staircase and hall, are conceived in a lofty spirit, the effect of which is, however, lessened by the circumstance that the massive pillars and balustrades are formed of wood painted to resemble marble. This building was the forerunner of the several bank buildings which adorn the northern metropolis and form a considerable instalment of the noteworthy edifices in the city. The building for the Life Association of Scotland, in Princes-street, came from his pencil, and is a remarkable example of the adaptation of the Venetian Renaissance style carried out in a very rich and florid manner; and the Normal School in Chambers-street, in the modern French manner, is a graceful composition, where reticence as regards ornamentation has been subordinated to the requirements.

In the vicinity of the city, on the Portobello-road, but not in a conspicuous position, is situated a stately mausoleum for the late Mr. Miller, of Craigentinny, designed by Mr. Rhind He has here taken the idea from the Roman tombs, and even on the Via Sacra it would be looked upon as a remarkable edifice. It is constructed of stone throughout, with the exception of large marble bas-reliefs of subjects taken from Bible history. One of these, the passage of Pharaoh and his host through the Red Sea, was exhibited in the world's show in 1851, and attracted much attention.

When Mr. Rhind departed from Classical types he was not successful. Stewart's Hospital, which occupies a commanding position to the west of the city, is one of his essays in the Elizabethan style, and is overloaded with towers and turrets, with the object, apparently, of producing a picturesque effect. None of the few churches or ecclesiastical edifices designed by him show the true spirit of Gothic architecture, but the addition to the assembly-hall on the Castle Hill was carried out by him in thorough accord with the remainder, and cannot be distinguished from the original work. A remarkable instance of how his predilection for Classical models affected his Gothic designs was the drawing he exhibited in the competition for the Memorial to the Prince Consort in Edinburgh. The design consisted of a lofty clustered Gothic column, such as supports the clearstory of a cathedral; upon this was placed a statue, and the base was surrounded by open canopies, cusped and crocketed. In the provinces, Mr. Rhind is best known by his buildings for bank purposes, those in Gordon-street, Glasgow, for the Commercial Bank, forming a handsome group.

Mr. Rhind was much respected by his professional brethren, many of whom, now occupying good positions in the city, passed through his office.

COMPETITIONS ABROAD.

St. Stephen's, Vienna.—In connexion with the two-hundredth anniversary of the delivery of Vienna from the Turkish siege in the year 1683 which is to be celebrated in September next, a monument is to be erected in the Cathedral of St. Stephen in that city. The competition, which was opened for the best designs, has resulted as follows:—The first prize of 2,000 florins is awarded to the design of Professor Edmund Hellmer; the second of 1,500 florins to that of the architect Julius Deininger and the sculptor Ludwig Gloss; and the third of 1,000 florins to the sculptor Emanuel Pendol. The jury who awarded the prizes consisted of Baron von Ferstel and Herren Makart, Dumba, Eitelberger, Schmidt (cathedral architect), Kundmann, Streit, Trenkwall, and Tilgner.

Cairo.—A competition was opened here a few weeks ago for the best designs for a Deaconesses' Hospital for the use of the English, German, American, and Swiss colony resident in Cairo. The result was that the first premium of 1,000 francs was adjudged to Messrs. Guimbard and Gouron, architects, of Cairo; and the second of 300 francs to M. Huldermann, architect, connected with the Ministry of Worship and Education or of the Vakouf, at Cairo.

HOUSE-BUILDING IN PARIS.

According to a series of details published in the *Geshundheit*, there were erected during the years 1881 and 1882, in Paris 3,253 new houses (designed for a number of families), together with 816 subsidiary buildings. In these there were 17,000 stories and 34,000 separate dwellings. It is, however, remarked that these freestone palaces, erected as a speculation, are by no means suited to the requirements of families possessing small or even moderate incomes. The site costs, as a rule, about 13*l.* 7*s.* 6*d.* per square yard, and the erection of the houses spoken of represents an outlay of about 40*l.* to 43*l.* for the same superficial measurement. In order that space may be obtained for the erection of these structures, the older class of house in which rents were cheaper, has been freely knocked down.

This reduction in the accommodation at the disposal of those who cannot afford a luxurious abode has, it would seem, caused since 1881 an advance of 80 per cent. in the price of small furnished dwellings. Thus families which at one time were able to occupy a comfortable set of rooms, must now content themselves with proportionately-reduced accommodation.

The relatively high cost of rent in Paris affects even the wealthier classes to some extent, as suites of five rooms in the third or fourth stories command, it is said, an annual rent of 120*l.* in a respectable neighbourhood. These rooms have, as a rule, only one window each, and insufficient as the dwellings may be from a domestic or sanitary point of view, it is remarked that they are vastly superior to the separate furnished rooms now available, in which dirt and discomfort are gradually becoming more apparent.

A committee appointed by the Municipality of Paris is said to have recommended the erection between now and 1885 of house accommodation for 30,000 workpeople, in order to alleviate the overcrowding in the more densely-populated quarters. It is proposed to build these houses on ground belonging to the city. The Parliament has, it would seem, expressed

itself as being opposed to the scheme. The reasons alleged for this action are that the responsibilities which the Municipality proposes to undertake are too great, and that it would be difficult (in view of the cost of labour and materials) to erect within the municipal limits houses of the character described, which would allow of cheap accommodation within them. It is suggested that such an enterprise would be more successful at a certain distance from Paris, provided an efficient system of communication with the capital were also organised.

DEMOLITION OF OLD BUILDINGS IN FLEET STREET.

THE ancient premises in Fleet-street and Falcon-court, nearly opposite Chancery-lane, known as Fisher's Gift, are about to be demolished, and new buildings of a modern character erected on the site. The Fleet-street properties,—Nos. 30, 31, and 32,—are said to be more than three centuries old, and have for some years past been occupied by Messrs. George Phillip & Son, the well-known map-sellers, who will again be the tenants of the intended new buildings. Messrs. Horne, Eversfield, & Co. sold the materials of the old buildings on Tuesday, and a few days will suffice for their disappearance. Mr. Alfred Tisley, in an account of the various charities and properties of the parish of St. Dunstan-in-the-West, says:—"John Fisher, gentleman, by his will, dated 24th March, 1547, gave certain premises in Fleet-street and Falcon-court, to the Worshipful Company of Cordwainers, London, to the intent that they should yearly, and every year, distribute 5*l.* by twelve pence a piece to every poor householder, most needy and poor, of the parish of St. Dunstan-in-the-West, in the City of London, by the discretion of the churchwardens of the said parish; and that they should cause a religious service to be had, and should distribute to strangers 6s. 8d., and each churchwarden attending twelve pence; and that the Master and Wardens should be present thereat, and should have for their pains, the Master twenty pence, and the Wardens ten pence each. On the third Wednesday in May, every year after divine service and a sermon in the parish church, these payments are made by the said company of the 5*l.* to one hundred poor persons, whereof eighty belong to St. Dunstan's parish, and twenty to the Liberty of the Rolls, and of the 6s. 8d. to the poor strangers. Besides the above-named payments to the poor, and to the officers, as directed by the will, after paying the preacher and the church servants for their services, they give sixpence to each of the charity school children."

Mr. Thomas E. Knightley is the architect of the new buildings to be erected on the site where the existing structures now stand.

SCHOOLS FOR THE PRECINCT OF THE SAVOY.

WE illustrate this week the new schools now being erected at the expense of her Majesty the Queen for the Precinct of the Savoy, the foundation-stone of which was laid on Saturday, the 21st of April, by H.R.H. the Duchess of Albany.

The building is intended to supersede the inconvenient premises in the basement of the houses in Lancaster-place hitherto used as a school, and provide a sufficient accommodation for the education of the children of the Precinct, and for the "Royal Savoy Club" and other similar institutions connected with the Chapel Royal.

The building will contain three rooms, each about 30 ft. by 14 ft., the upper one with an open roof, and some smaller class-rooms and a staircase arranged in an angle tower. The walls will be faced with Kentish rag random-coursed, the dressings being of Doulting stone, and the roofs will be covered with red tiles. The ornamental diaper work round the angle-turret will be of split flints and wrought stone, this class of work having been a marked feature in the ancient buildings of the Savoy Palace before its destruction.

In his speech at the laying of the foundation-stone the Chancellor of the Exchequer referred to the fact that the Precinct of the Savoy was exempt from episcopal supervision, and acknowledged the Queen only and directly as its ecclesiastical governor. In the same way,—and this may be more interesting to architects,—this new building and the building of the Chapel Royal are exempt from the supervision of the District Surveyor and the operations of the Metropolitan Building Act.

The works are being carried out by Mr. W. Brass, of Old-street, St. Luke's; the carving will be done by Messrs. Farmer & Brindley; and Messrs. Perry & Reed, of the Adelphi, are the architects.

NEW PICTURE GALLERY AND BILLIARD-ROOM, BROOME HALL, SURREY.

THIS illustration represents the interior of the new Picture Gallery and Billiard-room recently added to Broome Hall. The chamber is of elegant proportions, lighted from the roof, and by a large deeply-recessed south-west window commanding a view of beautiful scenery, for which this neighbourhood of Holmewood and the Leith hills are celebrated. Besides other choice works of art, the new room contains the well-known pictures of "Queen Esther" and "Vashti," painted by Mr. Edwin Long, R.A., and exhibited at the Royal Academy a few seasons ago. The structure is of the most substantial description; the interior, which is surmounted by a moulded and carved embattled parapetting, is of the Tudor period, to accord with the mansion which was built by Mr. Spottiswoode some half a century ago. The works have been executed by Mr. Messom, of Twickenham, under the direction of Mr. John Birch, architect, of John-street, Adelphi.

THE EXHIBITION IN ROME.

PALACE OF THE FINE ARTS.

THE Fine Art Gallery at Rome, of which we give an exterior view this week, and which contains the collection of paintings and sculpture, is a building the façade of which is far more imposing than its interior. Some critics accuse the architect that, in devoting the third portion of the edifice to the handsome portico, he has not taken due account of proportions. However that may be, it is enough to say that the façade, in a severe and elegant style, with its grand central arch of magnificent proportions, its columns of imitation marble, and its bold flights of stairs leading to the three openings, is in keeping with Classical Roman taste, and impresses favourably all who enter the Exhibition. On the day of its opening, when the portico was hung with flags, trophies, and coats-of-arms, to welcome the King and Queen of Italy, the entrance presented a picture which must have delighted the architect.

The building, which has no loggias and no balconies, is lighted from above, like most of the larger galleries of Europe. Externally, it is well adorned with statuary. The projecting columns which help to form the portico carry figures of large size, representing Architecture, Painting, Sculpture, and the Arts applied to Industry respectively. The twelve smaller statues which surmount the building are representations of Lucca de la Robbia, Phidias, Apelles, Apollodorus, Bramante, Michelangelo, Raffaelle, Rembrandt, Bernini, Canova, Delaroche, and Benvenuto Cellini. Crowning the whole edifice is a well-conceived group by the sculptor Adalberto Cencetti, and representing Art accompanied by Peace and Study, which are necessary for the full development of the artist.

If we understand rightly, the edifice is destined hereafter to house permanently the principal public art-treasures of Italy, both paintings and sculpture. We shall give some further particulars hereafter.

NEW CONGREGATIONAL CHURCH, SHANKLIN, ISLE OF WIGHT.

THIS church, now in course of erection, consists of a nave and north aisle, seating 367 persons on the ground-floor, while an end gallery accommodates 72, making altogether a total of 439.

Spacious vestries for ministers and deacons, with conveniences, are provided in the half-basement in the rear, separate access to which is obtained both from the church and the street.

At the principal corner is a tower and spire, 75 ft. high, containing an illuminated clock, both partially provided by public subscription amongst the townspeople. The clock itself is the old one from the Hammersmith parish church, and was purchased previously to the pulling down of the tower.

The principal entrance is also at the corner, while a smaller doorway gives access to the aisle and gallery staircase. It being essential to provide for a congregation varying in number with the seasons, the seating has been so arranged that the aisle, gallery, and seats under the same can be cut off temporarily by means of curtains without injuring the appearance of the interior.

The Communion-table is placed in the semi-circular apse, on the left and right of which are the pulpit and prayer-desk respectively, while the organ occupies a special chamber at the end of the aisle.

The walls externally will be faced with local stone, and internally with plaster relieved by Bath stone dressings. The roof is slated externally and boarded internally, with the timbers showing.

The work is being carried out from the designs and under the superintendence of the architect, Mr. John Sulman, of Furnival's Inn, Holborn.

DESIGN FOR AN ACADEMY OF MUSIC.

IN accordance with our promise, we now give sections of the Academy of Music, view and plans of which we published a fortnight ago. The drawings, as we then stated, obtained for Mr. Robert A. Briggs the Soane Medallion for 1883. It may be convenient if we repeat a portion of the particulars. The principal entrance to the building, through a covered portico placed in the centre of the principal front, gives access to a spacious and well-lighted vestibule. Between this and the inner hall to the theatre and concert-hall runs the principal corridor, off which are the library and reception-room, together with its waiting-room, and at one end the private staircase to the professors' suite, and at the other end the staircase to the green-rooms to the concert-hall. This corridor is continued round two sides of the building, light being obtained from spacious areas between it and the theatre, which also prevents all chance of sound being transmitted from one department to the other. These corridors give access to professors' rooms, matron's rooms, luncheon-rooms, &c., placed on each flank of the building, each side being provided with separate entrances and staircases for male and female students. Passing the principal corridor, the hall to the theatre is reached, with staircases to the dress-circle of the theatre and to the concert-hall ranged on each side; and in the centre the entrance to the grand promenade to the theatre, which has been made a special feature.

On the first floor, directly over the entrance vestibule, is placed the grand concert-hall, carried up two stories and planned to accommodate 300 people, with provision for organ and orchestra. In immediate connexion with this are the green-room, room for instrumentalists, and on the second floor, chorus and solo singers' rooms. On the other side of the concert-hall is situated a residence for the head professor, arranged on the "flat" system, with necessary offices, bedrooms being on the second floor. The class-rooms are ranged on this floor on each flank for male and female students. On the second floor are the practising-rooms, dressing-rooms for theatre, and caretakers' rooms. On this floor are the entrances to the students' gallery of the theatre.

Ashton, near Preston.—A new Wesleyan chapel has just been opened in this district. The plan consists of a nave and two shallow transepts. In the rear there are vestry, class-room, and the requisite lavatory accommodation. The walls are of brick, with Longridge stone for the moulded and ornamental work to the entrance-porch and triplet window in east gable. Terra-cotta is also employed in the spandrels of the windows and for hoodmolds. The internal joiners' work is of pitch-pine, varnished, and the ceiling is of pitch-pine matchboarding, relieved by stencilled ornamentation. Comfortable accommodation is provided for 250 sittings. Local contractors have carried out the various works from the designs and under the supervision of Mr. David Grant, architect, Preston.



NEW PICTURE GALLERY AND BILLIARD ROOM, BROOME HALL, SURREY.—Mr. John Dando Sedding, Architect.

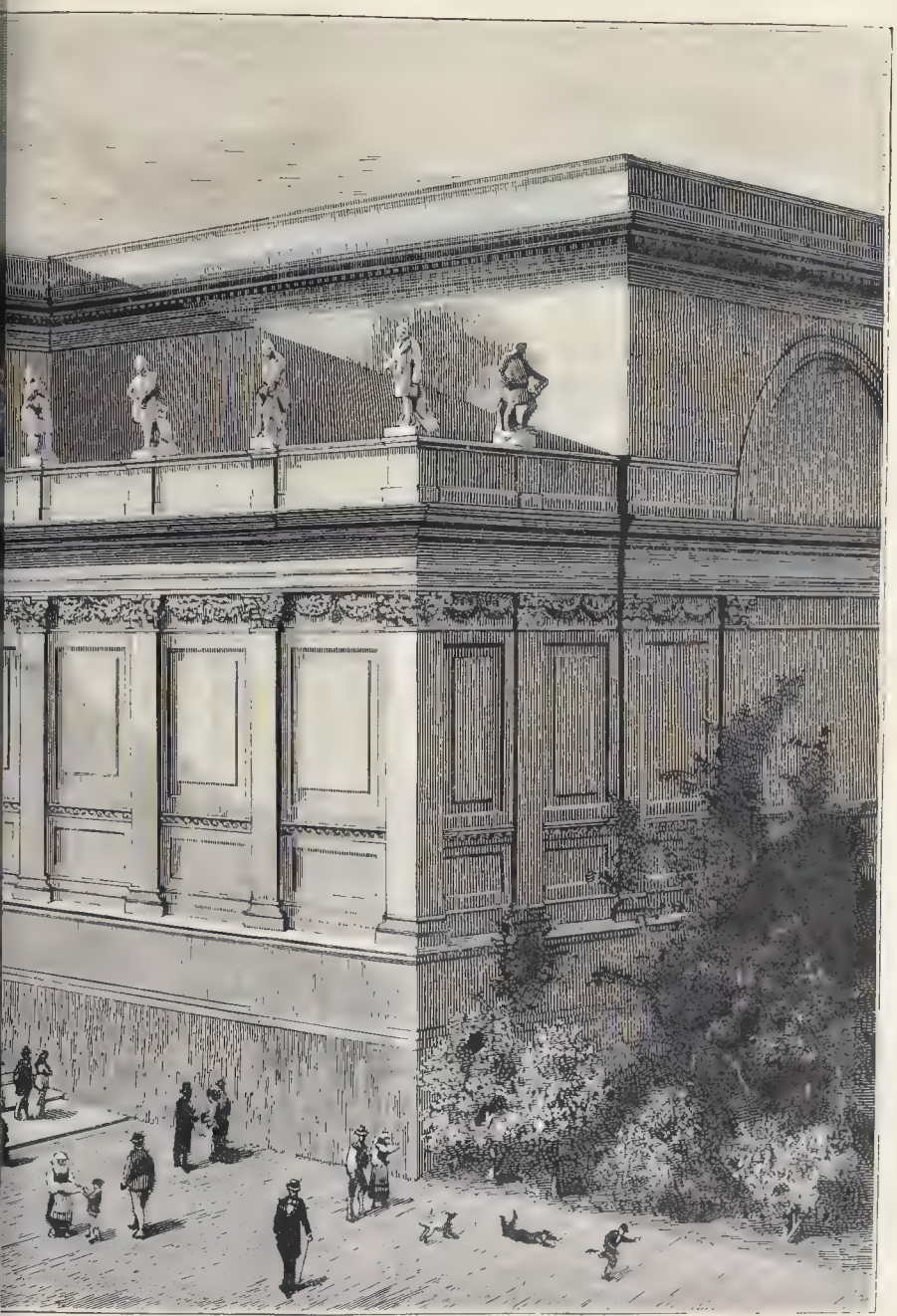
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THE EXHIBITION IN ROME





PLAN

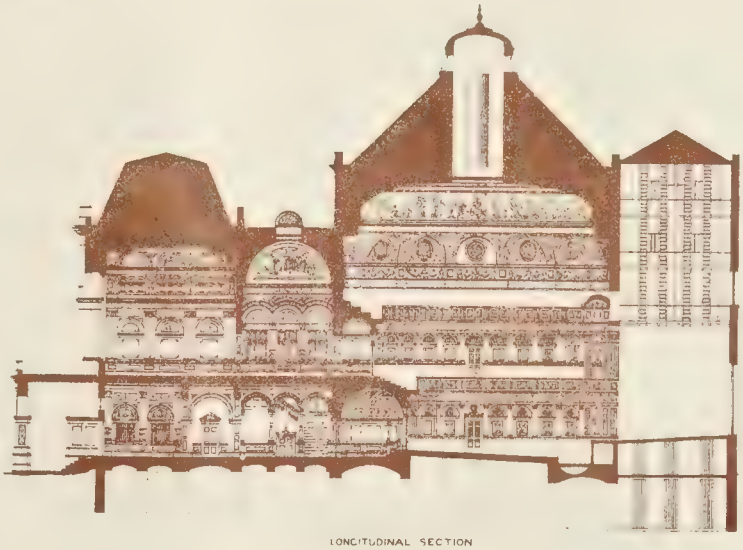
CONG.L CH · SHANKLIN · I·W·



TRANSVERSE SECTION

RIBA SOANE MEDALLION

DESIGN FOR ACADEMY OF MUSIC



LONGITUDINAL SECTION

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DESIGN FOR AN ACADEMY OF MUSIC

ROYAL INSTITUTE OF BRITISH ARCHITECTS.

At the annual general meeting, held on Monday evening last, Mr. Horace Jones, president, in the chair,

The Secretary announced that at an Examination held on the 26th and 27th of April, under the terms of the Metropolitan Building Act, 1855, eight candidates were examined, of whom three obtained Certificates of Competency to act as district surveyor in London, viz.:—Mr. Edward Haslehurst, of Queen Elizabeth's-walk, Stoke Newington, N.; Mr. Reginald Frederick Charles Francis, of 14, Warwick-crescent, W.; and Mr. Francis Grinham Howell, of 3, Lancaster-place, Strand, W.C.

The report of the Council on the state of the property and affairs of the Institute * having been taken as read, the President moved, and Mr. Charles Barry, past-president, seconded that "the report be received and adopted." This, after a few inquiries and some discussion, was put and carried *nem. con.* A vote of thanks to the auditors for the past official year was passed by acclamation, and Mr. J. Ebenezer Saunders briefly responded on behalf of his colleague (Mr. Lewis Solomon) and himself.

A list of the attendances at the meetings (30) of the Council, during the official year 1882-83, having been submitted, and a letter from Mr. George Vulliamy, past vice-president, expressing regret that his engagements at the Metropolitan Board of Works prevented his being present at the Council meetings, and that consequently he had decided to withdraw from the Council, having been read, it was moved by Mr. Charles Barry, and seconded by Mr. C. J. Phipps, that a vote of thanks to Mr. Vulliamy for his past services be entered on the minutes. This having been put and carried *nem. con.*, the meeting appointed two scrutineers, namely, Mr. John Noyes and Mr. James Williams, to receive the balloting-papers for the election of the new Council, and report the result. Whereupon, the following Fellows were elected to the offices of president, vice-presidents, secretaries, and other members of Council, for the year terminating on the first Monday in May, 1884, namely:—

President.—Mr. Horace Jones.

Vice-Presidents.—Messrs. Ewan Christian, David Brandon, F.S.A., and Edward I'Anson, F.G.S.

Ordinary Members of Council.—Messrs. A. W. Blomfield, M.A., F.S.A.; James Brooks, Arthur Cates, Joseph Clarke, F.S.A.; Henry Currey, James Barlow Fraser (Leeds), John Gibson, Octavius Hansard, John Honeyman (Glasgow), James Thomas Knowles, Edward Graham Paley (Lancaster), Sir James Allanson Picton, F.S.A. (Liverpool), Professor Thomas Roger Smith, Mr. Alfred Waterhouse, A.R.A.; and Mr. Thomas Worthington (Manchester).

Honorary Secretary.—Mr. John Macvicar Anderson.

Secretary.—Mr. William Henry White.

Sir Walter Rockliffe Farquhar, bart., Hon. Associate, was elected to the office of Hon. Treasurer; Mr. Frederick Willis Farrer to that of Hon. Solicitor; and Mr. Edward Cookworthy Robins, F.S.A., Fellow, and Mr. Edward John Tarver, Associate, were elected Auditors: all for the year terminating on the first Monday in May, 1884.

The following gentlemen were elected to serve on the Board of Examiners (appointed under the Metropolitan Building Act, 18 & 19 Vict., c. 122, s. xxxiii.), for the year of office 1883-84, viz., Messrs. George Aitchison, A.R.A.; Thomas Blashill, Francis Chambers, Charles Fowler, Frederick William Hugh Hunt, Edward Blakeway I'Anson, M.A.; Joseph Jennings, Professor Robert Kerr, Mr. James Thos. Knowles, Mr. J. Douglass Mathews, Mr. Edwin Nash, Mr. Frederick William Porter, Professor Thomas Roger Smith, and Mr. Sancton Wood.

An Opening.—The Municipality of Singapore have asked Major-General Sir Andrew Clarke, K.C.M.G., to select and send them out a chief engineer. Salary 1,000*l.* a year. Candidates should send their applications, with testimonials, addressed to Whitehall. [*Copies* of testimonials would surely suffice,—the originals to be forthcoming if needed.]

* The substance of this report we printed last week (see p. 617, *ante*).

EDINBURGH.

The congregation of St. Andrew's Free Church, George-street, which is mainly composed of people from the West End, have become dissatisfied with their church, and have made application to the Assembly for power to sell the building, and to apply the proceeds towards the erection of a new church. A site has been secured at Drumsheugh-gardens, one of the most fashionable of the newly-erected quarters of the city. The sum of 12,000*l.* is to be spent on the erection, and we are informed that five architects (three belonging to Edinburgh and two to Glasgow) have been invited to submit plans. The present church was built shortly after the time when the Free Church sprang into existence in 1843, when the requirements of the sect were much more modest than they now are. It occupies the area in rear of one of the ordinary street-fronts in George-street, through which a passage had been cut, and the entrance is marked by a rather clumsy portico. The interior possesses none of the attributes of an ecclesiastical building, and presents much of the aspect of a saloon, attached to business premises.

A limited liability company has been formed for the purpose of establishing Turkish baths at the West End, on a site to the north of the old Queensferry-road, a short distance westward from the Dean Bridge. The building has been designed by Mr. Burnet, of Glasgow, and partakes of an Eastern character.

The foundation-stone of a new City Mission-house has been laid by Mr. D. L. Moody, the "Evangelist." The building is to cost 11,000*l.*, exclusive of furnishing, and the locality,—adjoining John Knox's house, at the foot of High-street,—is a most suitable one for an institution of the kind. The position is well known to every visitor to the city as one of the most picturesque spots in the Old Town, but we fear the new building will not prove a welcome addition in an æsthetic sense. It is described as a rather "imposing building in a Classical style of architecture," whereas the spirit of the scene points distinctly towards something very different. The design has been prepared by Mr. John Armstrong, architect, and the building occupies a frontage of about 60 ft. towards High-street. There is a central door, flanked by shops, and behind these are three halls, one capable of accommodating about 1,500 people. The first floor is devoted to a drawing-room, committee-room, and offices, and on two stories above there are class-rooms and a janitor's house.

The Edinburgh Merchant Company have agreed to an additional vote of two hundred guineas from their funds toward the fund for the extension of the Edinburgh University Buildings. The subscriptions towards this fund now amount to about 32,000*l.*

IDENTICAL TOWN NAMES.

The confusion caused by a number of different places in the same country bearing the same name is nowhere more felt than in Brazil. In that empire there are thirty-five towns and villages called Santa Cruz, and as many as one hundred and seventy-two named Santa Anna, seventeen Santa Isabel, forty-six Santa Rita, and twenty-four Santa Maria. Unless the province and postal town are exactly given in each of these cases, a letter or paper may wander about in the hands of the Post Office for months before it reaches its destination. And these particulars are the more necessary, as while there are 9,660 towns, villages, and hamlets in Brazil, the number of post-offices is only 1,400. The same evil is frequently felt in the United States, where repetitions of the same name for different places are very common. One of the most favourite names in recent times is Bismarck, which has been given to a dozen different settlements in the Western States.

The Parkes Museum of Hygiene.—At a meeting of the Council of the Parkes Museum, on Wednesday, May 9th, the Vice-Chairman read the following letter from General Sir H. F. Ponsonby, K.C.B.:—"I have laid before the Queen the documents enclosed by you, and I am commanded by her Majesty to assure you that it has given the Queen much pleasure to learn the satisfactory progress of the Parkes Museum."

NOTES FROM THE WEST.

Rather unexpected action has been taken with reference to the floods which some months ago rose from the Frome and drowned out the inhabitants of the low-lying districts in its neighbourhood. A considerable part of the district had been for years liable to flooding, but this last flood was greater than any recollected before, and immense damage was done. The Bristol Town Council appointed a committee, which has given no report yet, to inquire into the best means of preventing the recurrence of the evil, and the Sanitary Authority took magisterial proceedings against the owners of several of the domiciles badly flooded for allowing them to be inhabited while in a damp and unhealthy state. The magistrate dismissed the summonses taken as test cases, holding that the offence against the Public Health Act had not been made out. The sufferers from the floods are now turning the tables, and a committee having been formed, request by advertisement was made that those having sustained damage from the water should send in the amount at once. A large number of the inhabitants have accordingly sent in claims and a demand has been served on the Town Clerk of Bristol, representing the local authorities, for 40,000*l.* damage, alleged to have been sustained through the neglect of the Corporation. The plaintiffs allege that the flooding was caused or aggravated by the method in which the levels of the water in the Floating Harbour were regulated. What the outcome of this claim will be has yet to be seen.

The Bristol General Hospital, after having been closed for four or five months, has been re-opened by the Mayor of Bristol. The most extensive alterations have been carried out, in a sanitary point of view. An expensive item in the bill was the replacing the cement floors, about which there has been a good deal of difference of opinion, with wooden flooring. The wood is rendered non-absorbent by special treatment. The total cost of the work was over 8,000*l.*

The New Children's Hospital, St. Michael's-hill, Bristol, is being actively proceeded with by Messrs. R. Wilkins & Sons, the contractors. The designs are those of Mr. Robert Curwen, Westminster. The style of architecture is the Late Perpendicular, and the hospital is being constructed on the pavilion system, light and air being afforded on three sides of the wards. The walls are of warm-coloured stone quarried from the site, lined with brick and dressed with Bath stone. There are five wards 30 ft. by 20 ft. in size, and smaller apartments for various purposes. Under Captain Norton's patent system of ventilation, which has been adopted by the committee, the foul air is exhausted by means of an engine placed in the basement. The drainage arrangements have also been carefully attended to. In one part of the ground is to be placed a small building for any infectious cases that may arise. The cost of the whole building is to be about 11,000*l.*, but the present contract only covers a portion of it. The site, which is close to the present hospital (carried on in several spacious dwelling-houses fitted up for the purpose), is very airy, has a warm sunny aspect, and commands fine views of Bristol.

Much surprise was felt in Bristol, Bath, and other places affected, at the Parliamentary Committee throwing out the Bill by which the Bristol and London and South Western Junction Railway Company sought to secure a second route from Bristol to London. The scheme in its entirety met with a most enthusiastic reception when placed before the citizens, but on going before the Committee the promoters withdrew the proposal to bring the line on arches and bridges to the centre of the city, and to establish a central station on a covered-in part of the Float. They also altered their route and increased the distance to the metropolis. Notwithstanding the alterations in the scheme (a brief description of which, in its first state, has been given in the *Builder*, the cost being then estimated at a million and a half), it was still warmly supported, though some thought its competitive worth would not be very great. The Committee's decision that the preamble was not proved clears the board for new proposals.

Christchurch, Broad-street, and St. Nicholas Church, both old Bristol churches, have been recently re-opened after improvements costing respectively 1,600*l.* and 2,000*l.* All Saints', another church in the centre of Bristol, is now undergoing renovation.

An important departure has been taken in agricultural matters in Gloucestershire in the establishment on the estate of Lord Fitzhardinge of a manufacturing dairy. The building, which has just been opened, is an experiment; it cost about 2,000*l.*, and the machinery about the same amount. The work has been undertaken by the Berkeley Vale Shorthorn Dairy Company. The factory will take the produce of twenty average farms, and as there are about 200 farms on the Berkeley estate, other similar buildings may be expected to follow. The cream is separated from the milk by means of De Laval's patent steam separators, and in the manufacture neither the cream nor the butter is touched by hand. Most modern appliances are also used in the cheese department. A semi-portable engine of 8-h.p. nominal, manufactured by Messrs. Ransome, Head, & Jefferies, supplies the required power, and shafting connects it with pumps, curd-breaking machines, cream-separators, churns, and butter-workers in various parts of the building. The skim milk is disposed of in various ways, and partly with the whey will serve to feed 300 or 400 pigs, into whose styes it will gravitate from large tanks. Every precaution has been taken in fitting up these styes to secure the greatest cleanliness. The whole of the buildings were designed by Messrs. R. A. Lister & Co., of Dursley, and Mr. S. Bloodworth, was the contractor for the building. The company has fixed, we understand, 1s. 5d. per lb. as the summer price of butter, and 1s. 7d. as the winter price to large consumers.

The Town Council of Calne have resolved to build a Town-hall on the site of the present one, at a cost of upwards of 3,000*l.* The ratepayers have protested against this course, but the authority adheres to its plan.

The sea-front improvement scheme at Weston-super-Mare is actively being carried out. Owing to some dispute, the men employed by Mr. Krauss, the contractor, struck work, but an arrangement was amicably come to almost immediately.

An important supply of fresh water has been recently discovered at Avonmouth under rather peculiar circumstances. Mr. W. S. Lawrence, who has obtained considerable reputation for having found water in unexpected quarters, was engaged, and with Mr. E. Prudhoe, the mechanical engineer of Avonmouth Dock, went over the locality. The *modus operandi* is clearly explained in Mr. Prudhoe's report to the dock-master, Captain Pomeroy:—"When Mr. Lawrence came down to try and find water I went with him. He had a piece of fine spring steel about 12 in. long, $\frac{1}{4}$ in. wide, and $\frac{1}{16}$ in. thick. He held the ends in his hands, and bent the steel in the form of a horseshoe, and placing his elbows close to his side began to walk slowly about the field. He told me to take particular notice of his hands and see that he did not move any of his muscles or cause the spring to move mechanically. I was very sceptical as to there being any virtue in the steel, so I watched him very closely. We walked for some distance, the steel remaining perfectly still until we came to the place where the bore-hole is now, when the steel became violently agitated and twisted itself into rings with such violence that it cut his fingers. He then said if we bored at that spot we should find water, and a good quantity. We have since bored through about 107 ft. of strata, as per sketch [a sketch was appended to the letter]. We got no water until we were down 70 ft. When we touched the spring it at once rose to within 17 ft. of the surface, and has remained at that level, never sinking any lower. We kept on boring down to 107 ft., when we stopped and began pumping. The bore hole is 2½ in. in diameter, and we put a 2-in. suction-pipe 24 ft. into the hole, and after six and a half hours' pumping with a double-action pump, throwing 1,000 gallons per hour, we drew the suction-pipe and found the water still standing at 17 ft. from the surface, showing that there is a good supply."

St. Arvan's parish church, near Chepstow, is about to be restored and enlarged at a cost of 2,000*l.*

The Penarth Local Board have accepted the tender of Mr. Davies, Cathays, Cardiff, to construct sea baths at Penarth for 6,000*l.* This was the lowest tender. Lord Windsor has contributed largely to the cost.

The congregation at the Commercial-street Wesleyan Chapel, Newport, contemplate building a fine new chapel at a cost of about 6,000*l.* It will be in the Gothic style, and will accommodate about 1,000 persons, or about 200 more than the old structure. There will be a tower and spire, nave, aisles, transepts, and recessed organ-chamber. At the basement will be fitted up class and school rooms.

A small Reformed Episcopal Church has been opened at Cheddar.

ARCHITECTURAL ASSOCIATION.

AT the ordinary meeting of this Association on the 4th inst., Mr. E. G. Hayes, president, in the chair, Messrs. A. J. Balding, W. M. L. Seaman, A. E. Douglas, A. Bond, T. Powley, T. Amsden, and D. J. Caddy were elected members, and four other gentlemen were nominated for membership.

On the motion of Mr. Eales, a vote of thanks was given to the Entertainments Sub-committee and to the musicians for their services in connexion with the recently-held members' *soirée*.

Votes of thanks were also, on the motion of Mr. Berry, accorded to Mr. Waterhouse, A.R.A., for permitting the members to visit the new building for St. Paul's School at West Kensington, and to Mr. Trubshawe for services rendered on the same occasion; and to Mr. G. Roumieu Gough and Mr. J. P. Seddon for allowing the members to visit the new parish church at Hammersmith.

It was announced that the next visit of the members would be to the Royal Courts of Justice Chambers, Strand, on the 26th inst.

After an announcement with regard to the Surveying Class, now in course of formation,

Mr. J. Osborne Smith read a paper on "Museums," which we print elsewhere.

The Chairman, in inviting discussion on the paper, said the Association was very much indebted to Mr. Smith for having brought the subject under its notice. Although it was not likely that very many of them would be called upon to design or erect museums, the subject was well worthy of attention. Mr. Smith had referred to the new Natural History Museum, which was no doubt the largest as well as the latest building of its kind, and was therefore, presumably, to be taken as a model embodying the most carefully considered requirements. The scientist whose criticism of architects had been quoted by Mr. Smith seemed to be quite unaware of the fact that no architect would think for a moment of relying entirely upon his own judgment in planning a large museum, for it was absolutely necessary, in planning buildings of that character, that the architect should be furnished with the fullest details of the requirements of the building. In no two cases would the requirements be identical, owing to the difference in the nature of the collections to be housed in museums.

Mr. Hardcastle, in proposing a vote of thanks to Mr. Osborne Smith for his paper, said it required some ingenuity to discover a novel subject for a paper, but such a subject Mr. Smith had succeeded in finding. In reference to the quotation of some remarks made by a learned professor against the noble profession of architecture, he (Mr. Hardcastle) was very much struck with one criticism to which the professor's remarks were open, and it was a criticism by no means peculiar to this particular instance. The Professor mentioned the three requirements which he regarded as paramount in the construction of a museum. First of all came the wants of the curator; secondly, those of the teacher; and thirdly, those of the students. It would be observed that the wants of the general public were not thought of at all by this gentleman. Thus it too often happened in such buildings that the general public were "nowhere" in respect of the consideration shown for their requirements. This was particularly illustrated in the case of the new Natural History Museum. As Mr. Smith had shown, in that building an intended refreshment-room had given birth to an abortive lecture-room. On the other hand, the South Kensington Museum, whatever might be said of its defects,—defects, no doubt, mainly due to the piecemeal way in which the buildings had been erected,—was managed in a way which reflected the greatest credit upon the officials, who sought to make the Museum a really popular and useful institution to the public at large. The very opposite line appeared to have been taken by the trustees of the British Museum with regard to their buildings at Bloomsbury, as well as with regard to the new Natural History Museum at South Kensington. Imagine a man who wished to spend an instructive day in the new Natural History Museum being obliged to prowl about the dismal region of South Kensington in search of adequate refreshment! In the interests of students some reasonable provision for refreshment ought to have been made in the new building, and seeing that Mr. Waterhouse in his plan had provided a suitable and convenient refreshment-room, it was a censurable thing that it should have been struck out of the plan, or, rather, made into a bad lecture-room. He endorsed the President's remark as to the absurdity of supposing that any architect would think of designing a museum without special regard to the wishes and requirements of the staff. But it was the architect's duty also to consider the requirements of the public, by making the building simple in its arrangement, with all its parts easy of access from the centre and from each other, so that people who did not visit the museum every day might easily find their way about, and see the objects they wished to see. With regard to the question of reflection from the glass cases, it was a well-known law that the angle of incidence was equal to the angle of reflection, and therefore it could be easily ascertained, by simply setting up a perpendicular normal upon the surface of the glass,—say, at the highest point of the glass,—and then drawing the most acute angle which a ray of light could make from the window with that perpendicular, whether the line on either side of the angle would fall below the angle of sight. In every case such line should fall not less than 4 ft. 6 in. or 5 ft. above the ground at a distance of 8 ft. from the glass. But this question of the prevention of reflection was largely dependent for its solution upon the question whether top-lighting or side-lighting prevailed. Whatever method of side-lighting was adopted, especially ordinary side-lighting low down, reflection could not be avoided if the cases extended at right angles to the walls.

Mr. Stannus, in seconding the motion, said that Mr. Smith, in speaking of the South Kensington Museum, had alluded to the tentative manner in which the buildings were put together, but when one remembered how Mr. (afterwards Sir) Henry Cole had to fight against the official mind for years to get miserably niggardly grants from year to year, and how the whole scheme of the Museum was perfected piecemeal, and almost in spite of the Governments of the time, one could only be lost in admiration of the marvellous success of the great man's enlightened efforts,—for he was in many respects a great man. One could not but be struck by his immense force of character, and by the manner in which he succeeded in getting his own way. At times, it was true, his conduct seemed to assume an angularity which was not always agreeable, but one could now see that if he had not put his foot down, and kept it down firmly, we should never have had the South Kensington Museum. The public owed him a deep debt of gratitude not only for the institution of the Museum, but for the establishment of the other facilities for education in science and art which existed in connexion with the Museum. Mr. Smith was peculiarly qualified, from his official position, to bring the subject of which his paper treated to the attention of the Association. He had discussed the principal features of three of our great London museums, but he should have been glad if he could have devoted a part of his paper to the consideration of what might be called the units of museums. All large museums, it might be assumed, consisted of a central or administrative department and of a number of units. For instance, there might be the mineralogical unit, the botanical unit, and the zoological unit, the size of the museum being dependent upon the number of these units which it might be necessary to provide for the accommodation of the collections. As to the scientists' criticisms of architects, it was an amiable weakness of scientific minds to think that all wisdom would die with them,—and there could be no doubt about it,—but architects had the consolation of knowing that they were not the only people whom the scientists set right.

Mr. J. A. Gotch, in supporting the motion, said the criticism of the scientific gentleman referred to by Mr. Osborne Smith was absurd. It was ridiculous to say that architects attempted to design buildings for museums or other special purposes without consulting the authorities. With regard to the British Museum, and especially the reading-room, he hoped that if Mr.

Smith or any other member of the Association were ever entrusted with the erection of a reading-room they would not make it quite so lofty and capacious as the immense room at Bloomsbury, the size of which was so huge that the air contained within its vast space was liable to have atmospheric storms generated within it; at any rate, the movement of air within it was at times so violent as to cause great discomfort to the readers. The refreshment-room accommodation at the same museum was of the most miserable and meagre description, entailing upon hardworking students the hardship of having to go to the Holborn Restaurant for refreshment. Mr. Osborne Smith had said nothing about local museums, the establishment of which in greater numbers in our own country was very desirable. In France every little town had its Musée, and very often these small museums contained, besides many things of purely local value, objects of wider and more special interest. Almost every small town in our own country had some sort of antiquities or local history that might be well illustrated in a small local museum if our people had a little more public spirit. In the new Natural History Museum at South Kensington we had a building specially designed for its purpose, and specially lighted and heated, but many of the best-known museums in the world had not been specially built for that purpose. It would be interesting to hear from Mr. Smith whether he considered such museums seriously handicapped by that fact? The Louvre, for instance, was built as a palace, but he did not remember to have ever heard of its defects as a museum.

A member asked for further information as to the warming of buildings of this description.

The Chairman having put the motion, it was carried with much applause.

Mr. Smith, in the course of his observations in reply, said that the quotation he had made from the professor was a typical one. As far as his (Mr. Smith's) experience went, the ordinary scientist was the last man in the world to appreciate architecture or the difficulties of architects; in fact, he did not understand architecture; he only saw his "objects," and only cared to have room to display them. He had heard some of those scientific gentlemen gravely suggest that the richly-modelled terra-cotta columns in the new Natural History Museum had better be plastered over and made perfectly square, so that the cases would fit better against them! They also objected to the terra-cotta reliefs, on the ground that they harboured dust, but coming fresh from the British Museum, with its large and plain wall-surfaces, they forgot that the projecting cornices of the latter building afforded lodgment for dust. He could not but think that it was bad policy on the part of the trustees to stint the refreshment-room accommodation in the new Natural History Museum. The result of this policy was seen in the fact that members of the staff of the Museum had to repair to the refreshment-room in the South Kensington Museum, on students' days signing their names in the students' book in order to gain admission! With regard to Mr. Stannus's remarks as to the units of museums, he had accumulated a great deal of information on the subject, which he hoped on some future occasion to collate. As to the reading-room of the British Museum, it was not perhaps generally known that coils were fixed beneath such of the large windows in the dome as were most exposed to cold winds, and those in charge of the heating arrangements had to watch the wind, and heat the coils as required, so as to prevent down draughts. As regarded the Louvre, his own impression was that the building was not altogether satisfactory as a museum. In conclusion, Mr. Smith gave some details in addition to those given in his paper as to the heating and ventilating arrangements of the new Natural History Museum at South Kensington, some of which were as yet, however, only in the experimental stage of development, for it took a long time to find out the exact requirements of such a building in these respects.

Glasgow Master Builders' Association.—At a largely-attended meeting of the Glasgow Master Builders' Association, held in the secretary's office, on Tuesday, it was unanimously agreed that no advance of wages be given to the operatives, as the labour market is well stocked. It was also resolved not to alter the present system of fortnightly to weekly pays.

LIVERPOOL ARCHITECTURAL SOCIETY.

THE annual general meeting of this society was held at the Royal Institution, Colquitt-street, on Wednesday evening, the 2nd of May, the President, Mr. William Parslow, F.R.I.B.A., in the chair. After the election of members, the prizes for work done during the recess of 1882 by members of the Sketching Club were distributed, the silver medal of the Society being awarded as first prize to Mr. George Hornblower; and the second prize, of books, to Mr. James B. Hikins. Mr. Hikins was also awarded the first prize in the Students' Competition for work done by student members with the Sketching Club; and prizes for merit were obtained by Messrs. J. H. Dawson, Richard Holt, J. M. Knott, J. H. Phillips, and J. H. H. Sutton.

A discussion then ensued as to the desirability of removing to more central and commodious rooms, where all the advantages of a club could be obtained, and where students' and draughtsmen's "mutual improvement" classes could be held on ordinary evenings. The subject was ultimately referred to the Council for further consideration. The annual report of the Council, and the statement of the hon. treasurer, were then read, from which it appeared that the society had a balance of nearly 20*l.* to its credit, in addition to 12*l.* owing for subscriptions.

The council for Session 1883-84 having been elected,

The President delivered his closing address, which, owing to the unusual length of the preliminary proceedings he was compelled to curtail considerably. In the course of his remarks he touched particularly on the dangers and disadvantages of the continually-increasing overhead telephone and telegraph wires, giving it as his opinion that the time had arrived for dealing comprehensively with this matter by some system of general underground channels for the reception of gas and water pipes, and wires of all sorts. Mr. Parslow alluded also to the unsatisfactory condition of architectural competitions, expressing a hope that the whole question might be shortly authoritatively dealt with.

The usual vote of thanks to the president and officers of the society having been put and carried, this terminated the business of the meeting.

BUILDING OPERATIONS IN BROOKLYN, UNITED STATES.

THE city of Brooklyn, in the immediate vicinity of New York, has for a long time been favourably considered as a place of residence by New York merchants and others. Partly by reason of the pure air and the profusion of a number of trees dispersed throughout the city, Brooklyn has a rural aspect, in addition to which it offers a retreat from the noisy thoroughfares of the business parts of New York. The near prospect of completing the huge bridge, in course of construction for several years, leads to the expectation that Brooklyn will become, more or less, an integral part of New York, and the creation of a bridge in lieu of a dependence on steam ferries, on which the intercourse depends between the two cities, has brought residences in still greater favour during recent years.

The immediate consequence has led to an immense development of the building trade. Upwards of 2,000 dwellings, factories, and other edifices have, on the average, been yearly erected. The comparisons of the value or cost of the operations have been slightly over 7,000,000*l.* on the average yearly. The total of the fifteen years' achievements are compiled in a table stating the number of edifices constructed, of all descriptions, and the cost thereof, for a term spreading over fifteen years. These returns emanate from official sources, and are published by the Building Department of the City of Brooklyn.

In the course of the year 1882 the number of buildings proposed and in course of construction was 2,561; the outlay for the same being contracted at a total of 8,955,737*l.* sterling. At the same time were alterations completed in buildings which comprised an aggregate cost equal to 852,496*l.* sterling.

The distribution of these works tends to show the drift of capital towards certain parts of the city where there is plenty of building room. The cost of material forms, as a matter of course, a large part of the capital for investment, but there is a proportionate amount devoted to the skill and science devoted to the architect's labour as well as scope to aid the endeavours of the builders and his assistants.

Statement showing the Annual Comparisons of the Number of Buildings erected, and the Cost reduced into Sterling Money, in the City of Brooklyn, during fifteen years.

Year.	Number.	Cost.
1868	2,014	£6,903,520
1869	2,348	8,070,560
1870	2,351	6,933,600
1871	2,782	8,517,080
1872	1,708	5,574,980
1873	1,311	4,987,300
1874	1,388	3,333,480
1875	1,406	3,645,380
1876	1,379	3,180,780
1877	1,432	3,673,020
1878	1,672	3,043,920
1879	2,065	4,513,460
1880	2,252	5,823,120
1881	2,648	8,678,260
1882	2,561	8,955,720

Brooklyn possesses a park, styled Prospect, which fairly rivals with the Central Park of New York. The area covers 510 acres, on which, since 1860, upwards of 2,000,000*l.* sterling have been expended. There is a lake of 60 acres and a variety of picturesque scenery, augmented by altitudes which afford distant views over the Bay of New York of great magnitude. There is a large mileage open for rambles, with upwards of ten miles for carriage-drives, in addition to about five miles of riding-paths.

These attractions heighten the desire to acquire property near the avenues to the park. There are many public buildings,—the town-hall, and other institutions embellish the city,—and Brooklyn has earned the title of "The City of Churches," from the fact of having 240 churches.

The Report of the City Building Department above referred to gives some very interesting details in regard to the use to which the buildings planned and constructed during 1882 will be put; the classification and arrangements are specified in the following summary:—

	Number of	Cost.
Dwellings	585	£1,940,000
Flats and tenements	1,257	5,600,000
Hotels	8	112,000
Shops and offices	140	960,000
Factories	139	407,000
Schools	4	32,200
Churches	17	112,500
Municipal and other public buildings	19	127,000
Stables	130	186,000
Frame dwellings and others	462	140,000

A long series of details follow these statements in regard to the most prominent, which it would be difficult to reproduce. We confine ourselves, therefore, to a summary sketch, which testifies the immense progress making by our Transatlantic cousins.

THE LONDON JOINT STOCK BANK BUILDINGS IN CHANCERY-LANE.

THE London Joint Stock Banking Company have just completed and opened a new block of bank buildings, on a site nearly opposite the old Serjeants' Inn. The buildings have a frontage of 50 ft. to Chancery-lane, and are between 50 ft. and 60 ft. in height, containing four floors and dormers. The ground-floor portion of the frontage is in Portland stone, surmounted by a frieze and bold cornice, in the same material. The upper part of the frontage is in yellow brick, with red brick dressings and window-heads, the windows having Portland stone key-stones. The first and second floors have ranges of arched windows, flanked with Portland stone piers and capitals. The frontage is surmounted by a deep cornice in Portland stone, resting on ornamental trusses, and above the cornice are arched dormers. At the south and north sides of the frontage there are pediment entrances, supported by panelled piers. Enclosed within the pediments are the arms of the Company, surrounded by sculptured foliage. The whole of the ground-floor and the basement is occupied for banking purposes. The banking-house, which is 60 ft. in depth, and occupying the entire width of the frontage, is handsomely fitted and decorated, the floor being laid with ornamental encaustic tiles, of various colours and patterns. The rear of the apartment is lighted by domed skylights in coloured glass. The basement contains spacious strong

rooms. The upper floors are intended to be let as offices, the entrance to which is at the south angle of the building.

Mr. Harrison, of Cannon-street, City, is the architect, and Messrs. Scholes & Sons are the contractors.

THE GRAY'S INN ROAD IMPROVEMENT.

THE widening of Gray's Inn-road, between Holborn and the new Town-hall, at the corner of Clerkenwell-road, is now being vigorously carried out, and will shortly be an accomplished fact. On Monday last Messrs. Horne, Eversfield, & Co. sold the materials of the remaining properties required to carry out the improvement, with the exception of the premises of Messrs. Sage & Co., the well-known house and shop fitters, and these will shortly come under the auctioneer's hammer. The materials of the buildings sold on Monday consisted of those of five public-houses, namely, the Clarence, Black Bull, Havelock, Ship, and Red Lion. Along the entire route, where the widening is being carried out, large numbers of workmen are employed in taking down the materials of the old buildings, and clearing the sites for the new buildings that will, no doubt, shortly be erected in the widened thoroughfare, which, when finished, will be one of the finest northern outlets from the City.

THE NEW APPROACHES TO THE THAMES EMBANKMENT.

LAYING-OUT THE NEW STREETS.

THE land belonging to the Corporation between Tudor-street and the Thames Embankment, extending westward from the new City of London Schools to the Temple buildings, is at present being laid out by the formation of new streets, which will serve as additional approaches to the Embankment from Fleet-street, along Salisbury-court and Dorset-square, Whitefriars-street, and Bouverie-street. There will thus be three of these new approaches, each 40 ft. in width, one being immediately to the west of the City of London Schools which has already been completed. In addition to the three new streets, another roadway of similar width, intersects the land midway, running from east to west in the direction of the Temple grounds. The whole of the sewerage works have already been completed, and the streets themselves are now in course of construction. Walls have been built up on each side of the foot-paths abutting on the adjoining land, admitting of areas in front of the buildings intended to be erected fronting the several streets. Tudor-street, from New Bridge-street to the Inner Temple Buildings, is to be made upwards of 40 ft. in width, and one of the old buildings on the south side of King's Bench Walk will be taken down in order to continue this width of the street to the entrance of the Inner Temple grounds. The improvement involves the taking down of a large public-house opposite Whitefriars-street, which was erected only a few years ago. In connexion with the improvement it is expected that a superior class of office and other buildings will be erected on the south side of Tudor-street.

Messrs. Mowlem & Burt are the contractors for the works in progress.

BUILDING ON THE SION COLLEGE ESTATE.

WITH the exception of the old library buildings, the whole of the sites in the neighbourhood of Aldermanbury and London-wall, belonging to the trustees of Sion College, have now been covered with new warehouse and office property. A new block of warehouse premises, at present in course of erection in Aldermanbury-avenue, completes the covering of the various sites in that recently-formed business centre. The building is situated within a few feet of the library of the College, and at the rear is brought close to the south side of the church of St. Alphege, in Aldermanbury and London-wall. At the time when the land upon which the structure now in course of erection was let on lease for building purposes by the trustees of the College, there was some litigation between them and the church authorities, the latter contending that the building would seriously interfere with the lighting of the church. The result was that an arrangement was come to between the parties that the building at the rear should slope down obliquely from the top to a level with the bottom of the church windows, leaving an area of several feet between the rear wall of the new building and the south wall of the church, and in the construction of the warehouse premises this arrangement has been carried out. The Aldermanbury-avenue frontage of the building is about 60 ft. in length, and consists of four lofty floors. The elevation chiefly consists of spacious windows, flanked with massive piers of Portland stone and white Suffolk brick.

Mr. G. Vickery is the architect, and Mr. E. Lawrence, of City-road, the contractor.

THE INDIAN INSTITUTE, OXFORD.

THE foundation-stone of this new building was laid on the 2nd inst. by H.R.H. the Prince of Wales. The building occupies the site of the late Professor Donkin's house, at the corner of Broad-street and Holywell-street, and the site, though of small extent, is one of the best and most central in Oxford. The building will be in the Elizabethan style, and the exterior will be of Taynton stone. At the north-west corner there will be an octagon tower, including a staircase leading from the basement to the top of the building. The main entrance faces Broad-street, and there will be a spacious vestibule, with a corridor running the whole length of the south side. In the basement are the lavatories, kitchen, store-room, &c. On the ground-floor are three lecture-rooms, porter's lodge, and vestibule. The curator's rooms, museum, and library are on the first-floor, while on the second-floor are the assistant curator's rooms, and the upper part the museum and library. Above these are the attics and the bedrooms for the curators. Mr. Basil Champneys, of 19, Buckingham-street, Strand, is the architect, and the contract for the erection of the building has been let to Messrs. Symm & Co., of Oxford. The objects of the promoters of the Institute are fully set forth in a pamphlet which has been issued by Professor Monier Williams, from which we take the following:—

The establishment of an Indian Institute in the University of Oxford was first proposed and advocated by the Boden Professor of Sanskrit, in a Congregation of the University, held on May 13th, 1875. The object of that Congregation was to provide special teaching for the Indian civilians resident at Oxford. In the autumn of 1875 the Boden Professor obtained leave from the Vice-chancellor, and undertook, at his own expense, a journey to India, making provision during his absence for the stipend of a deputy-professor, in accordance with the terms of the Boden statute. There he held meetings in many of the largest towns (for example, Bombay, Calcutta, Delhi, Lahore), explained the nature of his project, and asked for aid. The proposal was received with favour and approbation by his Royal Highness the Prince of Wales, then in India, who, in the presence of the Lieutenant-Governor of Bengal (Sir Richard Temple), graciously promised his support; by Lord Northbrook, then Governor-General; by many eminent members of the Civil Service, and by all the leading native princes and chiefs. On his return to England the Professor gave several public lectures, and put forth a printed statement of the result of his work. Towards the close of 1876 the Professor went a second time to India, extending his journey to the extreme south, and to Ceylon. Everywhere he met with similar encouragement. Soon after his return from his second journey he published a second statement, and gave lectures and addresses not only in Oxford, but in London and different towns of England, striving to arouse an interest in Indian subjects, and labouring to show that our possession of so vast an empire involved two special duties—first, the formal recognition of Indian studies at our Universities, and secondly, the establishment of institutions at great centres of education,* the direct object of which should be to develope a taste for Indian languages and literature, to assist and direct all engaged in Indian studies, to disseminate correct information on Indian subjects, and generally to make India and England better known to each other.

An important accession to the cause next followed. The project of founding an Indian Institute at Oxford received the approval and support of Her Majesty the Queen and the Royal Princes, who graciously became contributors to the fund. At Oxford the Boden Professor was aided in the first stages of his work by the sympathy and co-operation of the Master and Fellows of Balliol College, and other members of the University. He succeeded in obtaining promises of pecuniary support from numerous well-wishers to the undertaking. By far the largest contribution was promised by Mr. Brassey (now Sir Thomas Brassey, K.C.B.), M.A. of University College, M.P. for Hastings, and Civil Lord of the Admiralty. It is not too much to say that Sir Thomas Brassey, by his munificent donation of nearly 9,000*l.*, must be regarded as the chief founder of the Indian Institute. Mr. Edward Cazalet has contributed 1,100*l.*, Mr. C. Morrison 300*l.*, the Marquis of Ripon 250*l.*, and Mr. Bertram Currie 250*l.* These are the largest private contributions up to the present time.

The building (which will be fire-proof throughout) will contain several lecture-rooms, library, a reading-room, a typical Indian Museum, and every appliance for promoting scholarlike, systematic, and corporate action in the prosecution of Indian studies.

The first and main object of the Indian Institute will, of course, be to give effective and trustworthy teaching in all subjects that relate to India and its inhabitants; to promote and encourage Indian researches; to concentrate and disseminate correct ideas on Indian matters by united effort and combined action. Books without number are written upon India; information is tendered on all sides by persons not always competent to give it; and there is no lack of teaching carried on in different places in a loose, scattered and unsystematic manner. The Indian Institute will effect its object by scholarly union and scientific co-operation. It will have in view the great advantage to be derived from conveying instruction through the interaction of ear and eye. Its lecture-rooms, library, and museum will by their interdependence and inter-communication aid and illustrate each other. Its reading-room and library will offer for daily use a collection of Indian MSS., books, maps, and plans, many of them too rare and costly to be procurable by private means. Its museum will present to the eye a typical collection of facts, illustrations, and examples, which, judiciously selected and arranged, will give, so to speak, a concise synopsis of India, of the country and its material products, of the people and their moral condition. Assuredly neither library nor museum will aim at attracting mere sight-seers, curiosity-hunters, and excursionists. Their sole *raison d'être*, their one final cause, will be to assist in the prosecution of original research,—to subserve the acquisition of knowledge,—whether acquired in the adjoining lecture-rooms or by self-tuition.

* Long ago Dr. Forbes Watson urged the building of an Indian Museum in connexion with an Indian Institute in London, but his scheme was never carried out.

THE GERMAN ARCHÆOLOGICAL INSTITUTE OF ROME.

AT the last meeting of the above society in commemoration of the foundation both of Rome and of the Institute itself, some interesting facts were mentioned in reference to the result of recent excavations and researches in the Ninth Region of ancient Rome. Signor Lanciani pointed out that this district was distinguished above all other parts of the ancient city for the prevalence of colonnades. This peculiarity was favoured by the fact that the ground throughout this division of the city was very level. Here in the plain of the Tiber almost all the great buildings of ancient days had been connected by colonnades. They were rare, indeed, in Republican times, but by the age of Augustus they had become the prevailing fashion. Within a period of about twenty years the entire *Campus Martius* had been, so to speak, covered with colonnades, and the example of Augustus and his friends was imitated down to the times of the latest of the emperors. The speaker, after enumerating the principal features of this class of structure, proceeded to speak of certain examples which had recently been discovered, or of which we had obtained a better knowledge either through excavations or through the recovery of ancient documents referring to them. One of the principal instances was the portico of the Argonauts connected with the Temple of Neptune, that had been made known through relief figures and trophies excavated partly in earlier years and partly very recently. Then there is the colon-

nade ascribed to Diocletian and Maximian, near the Theatre of Pompey. It bears the inscriptions "Porticus Jovia" and "Heraclea," and Signor Lanciani considers it to have been intimately connected with the restorations of the theatre in question. The speaker proceeded to speak of an interesting relic, the fragment of the Capitoline plan of the city, which shows two temples. One of these is a round peripteros, the other a rectangular hexastyle peripteros. These, he showed, belonged to the eastern side of the Porticus Pompeiana. The round temple was still preserved in the court of the cloisters of St. Nicolo a Cesarini, and when the Via Nazionale was lengthened that temple would be laid bare. The rectangular temple had been drawn and described as late as the sixteenth century by Sangallo, but it had probably been demolished on the building of the Church of St. Nicolo. Signor Lanciani then gave a vivid description of the gardens and villas which surrounded ancient Rome, stretching on the one side from the Pincio over the Esquiline Hill to San Croce; and on the other side over the Janiculus. These quarters, however, were not tenantable during the extremes of temperature in winter and summer. It was for the purpose of providing the inhabitants with walks available at every season that the colonnades were erected. Under such colonnades it was possible to walk from one end of the Campus Martius to the other. The immense extent of these structures was shown by the speaker, who quoted certain figures illustrating the area they covered. Signor Lanciani then proceeded to speak of the restorations and new structures of the later emperors, especially of the Porticus Maximæ of the time of Gratian, Valentinian, and Theodosius. He was of opinion that these emperors did build a colonnade running from the Pompeian temple to the Pons Ælius, and ending with the arch of triumph of St. Celso. Columns belonging to this structure had been discovered in the year 1800. The three emperors above mentioned, however, had also connected the already existing colonnades together by means of new ones, and the name Porticus Maximæ was applied to the entire system of colonnades leading from the Pons Ælius to the Porta Ostiensis. This view had also been taken at an earlier date by Signor de Rossi.

THE BOWER-BARFF PROCESS OF PRESERVING AND ORNAMENTING IRON AND STEEL SURFACES.

AT a meeting of the Society of Engineers, held on Monday evening, May 7th, in the Society's Hall, Victoria-street, Westminster, Mr. Jabez Church, M.I.C.E., F.G.S., president in the chair, a paper was read by Mr. George Bower, on the above subject.

The subject of the paper was of necessity interesting to all those who had to use iron and steel for constructive purposes, but although the author's and the Barff process of coating these metals with magnetic oxide had been before the world for several years, yet it was astonishing how few there were who really understood what these processes were. There were two methods of producing the film of magnetic oxide, one of them, the Barff, by means of subjecting the articles, at a red heat, inside an iron muffle, to the action of a superheated steam; the other, the Bower, by subjecting articles, at a similar heat, inside a brick chamber, to the action of products of combustion and of superheated air. The Bower-Barff Company having acquired both patents, a furnace had now been devised which embraced the good points of both systems. Iron at a sufficiently elevated temperature decomposes water; the oxygen entering into combination with the iron, in certain definite proportions, forms magnetic oxide, which is impervious to rust. This is especially applicable for wrought iron. The Bower process was more especially adapted for cast iron, and it proceeds on the principle of first forming sesqui-oxide and then reducing it to magnetic by hydro-carbon gases or carbonic oxide. The Barff process produces magnetic oxide at one operation, but it is costly, and takes a long time, while the Bower is obtained in two operations, and a very cheap and effective coating is produced in less than half the time of the other. The author showed a very curious property of magnetic oxide. He applied a brush formed of wires of different metals, first of all, to a casting which was not coated, and on which no effect was produced; then to a similar one which had been coated, when it was immediately covered at all the parts touched by the brush with a beautiful shining coat of the metal of which the brush was formed. The author attributes this to the fact that magnetic oxide not being metallic, and to some extent gritty and porous, it had rubbed off by attrition some of the metal from the wires; and he expected that this would supersede the existing methods of bronzing and of depositing metals for the commoner kinds of Birmingham goods.

THE LONDON AND BRIGHTON COMPANY'S NEW STATION AT FOREST HILL.

THE London and Brighton Railway Company stand out in favourable contrast to many other companies as regards the accommodation provided at the several stations on their line, and the general character of these structures. Within the last few years they have rebuilt and enlarged several of their stations, and they are now providing a handsome and commodious new station at Forest-hill, which has been rendered necessary by the constantly increasing population in that locality. The station is being largely extended both on the up and down sides of the line. The works on the up side, which form the principal portion of the reconstructed station, have just been completed, and those on the down side are now in progress. The principal frontage of the new station is in Devonshire-road, close to its junction with the London-road. The elevation is in red Fareham brick, pointed in black, with Bath stone facings, and terra-cotta moulded corbels in the cornices and string courses, the window-heads all being arched, and in Bath stone. A tower is one of the most prominent features in the structure. It is about 80 ft. in height and 11 ft. square. On three sides of it are arched openings in Bath stone. These openings are 7 ft. in width, and 13 ft. in height. In the upper portion of the tower is a clock, having three illuminated dials. The tower is finally surmounted by ornamental finials and a weather-vane. An entrance immediately under the tower leads into a vestibule, 8 ft. in width, the walls of which are faced with white enamelled brick. The general waiting-room and booking-office, an apartment 30 ft. by 18 ft., is approached through another entrance, and in close proximity are ladies' and gentlemen's first and second class waiting-rooms, whilst immediately adjoining is the station-master's office, with rooms above as a residence. Arriving at the railway level we come upon a spacious and convenient covered platform, 200 ft. long and 55 ft. wide, provision being reserved for an additional line of rails intended to be laid down for the London and Crystal Palace traffic, and also for an additional centre platform. The platform is covered in with a roof consisting of alternate rough-plate glass and Vieille Montagne zinc, supported on ornamental cast-iron columns and brackets. A covered way, well lighted from the railway above, is carried under the line. It is 10 ft. in width, and entered at each end by flights of steps. The railway metals are carried over this covered way on wrought-iron girders.

Mr. F. D. Banister, the company's engineer-in-chief, designed the station, which has been carried out under the superintendence of Mr. H. J. Mannering, Mr. Deacon, of Lower Norwood, being the contractor. The platform roofs were erected by Mr. White, of Croydon.

ST. WILLIAM'S HOSPITAL, ROCHESTER.

THIS hospital, erected for the Rochester and Chatham Joint Hospital Board, was opened by the Bishop of Rochester on the 16th ult. The architect of the building, Mr. George J. Shipper, of Norwich, whose plans were selected in public competition eighteen months or more back, has disposed the building in five blocks on a site having considerable inequalities in levels. The formation of terraces was therefore necessary, and these have been arranged, not only to give greater healthfulness, but so as to group the whole of the buildings in a pleasing manner. The first building as one approaches by the winding drive from the Delce-road is the administrative block, containing on the ground-floor a waiting-room and surgery on one side of the hall, and matron's room and stairs on the other side. At the rear are the kitchen, scullery, &c. The first floor is devoted to matrons', nurses', and servants' bedrooms and linen stores, and the basement to larders, beer-cellars, stores, &c. Leading off from this block, on the right-hand side, or southwards, are the two ward blocks, one at each end of the arms of the ⊣ shaped line of covered-way, of which the administrative block, is at the base. These two ward blocks are alike, and contain accommodation for a total of thirty-two patients. There are wards for male patients, one containing six beds and another two beds, and similar wards for female patients, besides nurses' room, bath room, and lavatory, and annexes containing sinks and other conveniences in each of these blocks. The wards in all cases are amply lighted by opposite and double-glazed windows, and so have the full benefit of "cross ventilation." Each bed has a minimum of 144 superficial feet floor-space, and 2,000 cubic feet of air space, the wards being 14 ft. high. Ventilation is also provided for by vertical openings for fresh air admitted at window-boards, and the vitiated air is extracted at the ceiling-level. Mr. D. O. Boyd supplied and fixed the stoves for heating the large wards, and his patent extraction ventilators are fixed in the ceiling. For warming the smaller wards Barnard & Bishop's slow-combustion grates are used, and the central corridor, annexes, laundry, and disinfecting-chamber are ventilated by Boyle's air-pump ventilators on the roofs. The walls of the wards, &c., are plastered with selenitic cement. The laundry block is placed at the rear of the administration block, and the disinfecting-room, ambulance-shed, and mortuary are, again, in a separate building behind the laundry. Goddard & Massey's disinfecting stove is provided for purifying the linen, bedding, &c. The sewage is disposed of on the principle of sub-irrigation, Field's annular flushing-tanks and apparatus being adopted. The excreta is dealt with on the dry-earth (Moule's) system. Externally, the walls are built of Burham wire-drawn white bricks, laid in Portland cement for facings, and the roofs are covered with slates. Considerable care has been bestowed in fencing round the site in a suitable way, and yet so as to be conformable to the requirements of the Local Government Board. The whole of the works have been carried out under the supervision of the architect, by Messrs. J. Gouge Naylar & Son (the senior member of the firm, Mr. J. G. Naylar, being elected mayor of Rochester this year), Mr. G. Hampton acting as clerk of works.

FOREIGN NOTES.

An Improvement in Steam Fire Engines.—Major Witte, the chief of the Berlin Fire Brigade, has taken out a patent in Germany for an arrangement by which fluid carbonic acid is employed in setting steam fire-engines to work. It has always been felt as a defect that these machines have not been capable of being made to begin working at a moment's notice. Several minutes must elapse ere the steam can be got up and the engine commence operations. If a certain quantity of fluid carbonic acid, of which a stock is always to be carried about with the engine, is let into the steam-chamber, the machine will at once begin to play, and will go on discharging the water until the steam is fully up, and the engine works in the ordinary manner.

Vienna.—It is intended to erect a monument in this city to the great German poet, Johann Wolfgang von Göthe. The Emperor of Austria heads the list of subscriptions with a contribution of 1,000 florins from his privy purse.

Homburg.—The Berlin Historical and Antiquarian Society has decided to erect a monument to Hölderlin in Homburg von der Höhe.

Versailles.—It is the intention of the French Government to cause the splendid waterworks and fountains at Versailles to be repaired. The cost of the renovation is estimated at 1,000,000 francs, or 40,000*l.* sterling.

Munich.—A complete system of telephonic communication was opened in Munich on the 1st of May.

Rome.—The noted sculptor and director of the Papal museums, Ignazio Jacommetti, died in Rome last week.

Paris.—M. Edouard Manet, the founder of the "Impressionist" school of painting in Paris, and who in art represents the same idea as M. Emile Zola does in literature, died last week in Paris.

Dusseldorf.—Herr Christian Sell, one of the most successful painters of German battle-pieces, of the campaigns of 1866 and 1870-71, died on the 21st ult.

EXHIBITIONS.

THE Berlin Fine Arts Exhibition for 1883 has just been opened in the commodious halls belonging to the new Polytechnic School in the pleasant suburb of Charlottenburg. Among the paintings this year there is not a single work of the first rank of excellence, although the average of merit is very fair. As the place of exhibition is fully an hour's walk from the Avenue Unter den Linden, it is only too probable that the receipts will materially suffer. One of the most striking of the plastic works to be seen in the Exhibition is the colossal statue of Martin Luther. The sculptor is Herr Rudolph Siemering, and it is intended to inaugurate the work at Eisleben on the approaching 400th anniversary of the birth of the great Protestant Reformer. Luther is represented as crumpling up the Papal bull in his right hand, and about to throw it, with the seal that hangs down from it, into the fire. With his left hand he is pressing the Bible to his breast. His head is covered by a baretta, and his features display the greatest resolution and energy.

The Société Philanthropique of Paris has opened a very interesting Exhibition of Portraits by some of the most celebrated of the modern painters of France. The collection is shown in the Palais des Beaux Arts, and embraces 300 works, which fully illustrate the art of portrait-painting in France during the last 100 years. Among the older artists whose works are here shown the most noted are David, D'Ingres, Delaroche, Fragonard, Flandrin, Gérard, Géricault, Girodet, Greuze, Laurence, Lebrun, Ary Scheffer, Horace Vernet, Winterhalter, and Boilly; and of the younger generation, Baudry, Delaunay, and Bastien Lepage.

In the *Salon* this year there are no works of a sensational character, or of such extraordinary merit as to raise them far above the level of the average. It is generally agreed, however, that amongst the best are the following:—an idyllic *genre* painting, representing a pair of rustic lovers, by Bastien Lepage, which many of the Paris papers predict will take the first prize; a "Christ on the Cross," by Morot; "The Death of Baras," by Weerts; two paintings, "Maternity" and "Night," with life-size figures, by Bouguereau; a colossal painting of "Spring Flying Past," by Bertrand; "Two Sisters," by Giron; "Billows of the Sea," by Renouf; and finally, "The Obsequies of Gambetta," by Scott. Some of the disappointed artists this year have shown their chagrin in a very extraordinary fashion. Thus, M. Wanbeers was so dissatisfied at the placing of one of his pictures that he daubed it all over with black paint in the presence of a crowd of astonished visitors. Another artist for a similar reason cut his canvas with a razor out of its frame.

THE EDINBURGH ARCHITECTURAL ASSOCIATION.

A MEETING of this association was held in the Professional Hall. After the usual preliminary business was disposed of, the Chairman, Mr. MacGibbon, introduced Dr. Arthur Mitchell, who proceeded to read a paper entitled "Scottish Celtic Art," in the course of which he said that the three principal patterns forming the much-admired Celtic decorations of surfaces are interlacements, angular frets, and a pattern formed of diverging spirals. The first two appear in other styles of decoration belonging to other countries. The third, which is the most beautiful, is purely Celtic, and has been used only by the Scots-Irish Celts. The three in combination, however, really form what is known as Celtic decorative art; and so combined, they produce a style of decoration emphatically national. It was an art of the Christian period, and was used chiefly in the decoration of objects related to the Christian worship or faith, such as manuscripts, crosses, croziers, shrines, chalices, &c.; but it was also used to decorate such things as personal ornaments, armour, horse trappings, &c. The forms given to the objects decorated were decidedly good, and they were forms which were suitable for receiving such a decoration. The decoration was aided by the use of colour when possible, and in the case of metal-work, by enamelling and jewelling. The art probably came to Scotland from Ireland. The best work in the manuscripts and metals occurs in Ireland, but the best work in stone occurs in Scotland. It does not, however, appear in Scotland with most force and frequency on the west side, as we should expect in view of its reaching us from Ireland, and of the strong missionary settlements in the west. There are some singularly beautiful examples on the west side, but on the whole the Celticism of the stone monuments, and probably also of the metal work, found on the east side is more intense, and the relics showing high Celtic decoration are more numerous there. The Celtic decorative art is essentially zoomorphic, and it dies out by becoming foliageous. This is well seen on the slabs and free-standing crosses which are so numerous in the Hebrides and west coast parishes, and which exhibit little more than traces of Celticism in their decoration. The Celtic illumination of manuscripts extended from the end of the seventh to the middle of the fifteenth century. Probably it began in the sixth or seventh century and was little used after the eleventh or twelfth. It was at its height when the pictorial art may be said to have been almost extinct in Italy and Greece, and scarcely to have existed in other parts of Europe. The age of the stone and metal work is even more doubtful, but it is almost certainly later, both in its start and in its decline, than the manuscript illuminations. The West Highland slabs, with their foliageous decoration, are erroneously called Celtic, and many of them probably belong to the fifteenth and sixteenth centuries. The almost pure zoomorphism of Celtic decoration became, in the decoration of the West Highland slab, a florid, debased, and incongruous combination of zoomorphism and dendromorphism, with the latter predominating. At the conclusion of the lecture a cordial vote of thanks was passed to Dr. Mitchell and acknowledged.

On Saturday afternoon the members of this association visited Winton Castle, about thirteen miles south-east of Edinburgh, and also several places of interest in its neighbourhood. Arriving at Ormiston in the early part of the day the chief feature which attracted the attention of the visitors was the old church. Proceeding to Winton Castle members were assisted in their examination of the interesting pile and its interior by Mr. Lessels, architect, who is familiar with the building and has examined its records. The accounts of the mansions, however, are very scanty, and are chiefly got from Maitland's "History of the House of Seton," where it is stated that Winton House was built in 1491 by the Earl of Seton. That house was destroyed by fire in 1620, and the present castle was erected about the middle of the seventeenth century, but it was greatly altered, and additions were made to it by Wyatt.

THE INTERNATIONAL FISHERIES EXHIBITION.

THIS Exhibition, which will undoubtedly be of great interest and value, is to be opened by H.R.H. the Prince of Wales (acting for her Majesty the Queen) on this Saturday, the 12th inst. Unfortunately, the arrangement of the exhibits will not be completed before the opening ceremony takes place; nevertheless, there has already been got together and arranged a marvellously varied and instructive display of the innumerable classes of objects into which the exhibits are divided. Some countries (from causes with which we are unacquainted) seem to be very much behind-hand in their arrangements. This is particularly noticeable in the case of Russia, in the large building (about 200 ft. long) alloted to whose exhibits there was, up to Wednesday afternoon, nothing but emptiness. On the other hand, China was, at the time of our visit, ahead of most other foreign countries.

Some idea of the extent of the Exhibition may be gathered when we say that the temporary buildings which have been erected for it over the greater part of the Horticultural Gardens at Kensington occupy an area of about twenty-two acres, and in addition to these temporary buildings the Exhibition appropriates the two long permanent arcades which bound the gardens on the east and west, and the two quadrants which connect those arcades with the conservatory at the north end of the gardens, just south of the Royal Albert Hall. The temporary buildings have been erected under the superintendence of the late General Scott and Mr. Wilson Bennison, the Surveyor to the Executive Committee. These buildings are of two kinds, some being almost entirely of wood, and others being chiefly of galvanised corrugated iron. The contractors for the whole of the wooden buildings are Messrs. Peto Bros., whilst the whole of the iron buildings have been erected by Mr. J. C. Humphreys, of Knightsbridge. The wooden buildings are painted internally and externally with asbestos paint, as a safeguard against fire, and steam and chemical fire-engines and other fire-extinguishing appliances are provided at numerous points.

From the principal entrance in the Exhibition-road access is gained, through the vestibule used by visitors to the Horticultural Gardens, to a long and spacious gallery extending right across the south end of the gardens to the entrances in Queen's-gate. This gallery, which is nearly 1,000 ft. in length, is parallel with, but some little distance northward of, the buildings used for the National Portrait Gallery; it is entirely of wood, and top-lighted, the roof principals being semicircular in form and of laminated construction. This long gallery is wholly appropriated to the display of a portion of the exhibits of Great Britain, who, it need hardly be said, occupies a far larger amount of space than any other country. This and other of the temporary wooden buildings (as, for instance, the one jointly occupied by New South Wales, India, and China) strongly recall, if they are not to a large extent copies of, the annexes of the '62 Exhibition. Parallel with about one-half of the long gallery specially referred to are spacious dining-saloons (in the decoration of which we noticed that Lincrusta-Walton has been used) and kitchens. A notable adjunct of this portion of the building is the fish dining-room, near to which is a lecture-room or theatre in which, as we understand, lectures will be given on (among other subjects) the cooking of fish. On the opposite side of the long gallery are large sheds for the exhibition of life-saving apparatus of all kinds, for machinery in motion, and for the machinery for electric lighting, of which there will be some very extensive installations. The whole of the buildings are to be illuminated by means of the electric light, some dozen or more systems being represented, including those of Messrs. Siemens Bros. & Co., the Swan United Co., the Gülcher, the Lever, and the Jablochkoff, the illumination being partly effected by arc lights and partly by incandescent lights. The whole of the western arcade is appropriated to the purpose of an aquarium, and here nearly all the tanks are completed and stocked with fish. The tanks have been made by Messrs. Leete, Edwards, & Norman, the iron fittings in connexion with them having been treated, apparently, by the Bower-Barff process, so as to prevent oxidation. The quadrants at the north end of the gardens are mainly occupied by a large and notable loan collection of specimens of fish and birds, illustrative, not only of natural history, but of the prowess of members of angling clubs and other sportsmen. The live and dead natural history collections included in the western arcade and the quadrants all form part of the show made by Great Britain, who also occupies the eastern arcade with a variety of miscellaneous exhibits. The inland fisheries of Great Britain are illustrated in a large gallery extending across the gardens from east to west, just south of the ornamental water. This gallery, in effect, is the cross-bar or horizontal member of a group of buildings representing the letter H on plan, the vertical members of the letter being parallel with the permanent arcades already referred to,—that on the right hand or eastern side being appropriated to the exhibits of New South Wales, India, and China; and that on the left hand or western side being half occupied by Great Britain, and half by Germany, France, and Italy. Each of the galleries formed by the vertical members of the letter is about 400 ft. long, the cross-bar of the letter representing a building some 500 ft. long. In the hollow space above the cross-bar are the ornamental waters of the Horticultural Gardens, while the space below or south of the cross-bar is filled with spacious courts devoted to the exhibits of Russia (on the extreme left), Canada and the United States (in parallel courts), Sweden and Norway (also in parallel courts), and Spain (on

the extreme right). Belgium occupies a court to the south of those appropriated to Sweden and Norway, and the Netherlands have a court south of that of Belgium, while Newfoundland is provided with ample space south of that allotted to Canada and the United States. Just south of the Netherlands court, on the right-hand side of the central north and south avenue, is the pavilion erected for the accommodation of H.R.H. the Prince of Wales. Approached through a pair of wrought-iron gates, this structure, which is externally of Mr. Humphreys's corrugated iron, is internally very tastefully fitted up. It contains entrance-hall, dining-room, drawing-room, boudoir, study, conservatory, and one or two minor apartments, all of which have been fitted up, decorated, and furnished by Messrs. Gillow. The dining-room has an American walnut dado, the walls being covered with the material known as Tynecastle tapestry, a kind of canvas, embossed and decorated. The ceiling of this room is panelled, the cornice and the divisions between the hand-painted surfaces being of American walnut. The drawing-room is in the style adopted by the Brothers Adam. The walls of the entrance-hall are covered with embossed leather paper, with panels of woven tapestry work. The conservatory has been fitted up by Messrs. Dick Radclyffe & Co., and shows how the electric light may be utilised in combination with plants for decorative effect. Messrs. Gillow, it should be stated, have executed the decorations of the Newfoundland, Canadian, Italian, and other courts, a noticeable feature of their work being some large lunettes, filled with suitable allegorical figure-subjects in monotone by Priolo. The decorations of the Indian Court have been executed by Messrs. Holland & Sons, of Mount-street, from designs by Mr. Purdon Clarke. This court, with the adjoining space occupied by China, is very bright and gay with colour. The Belgian Court has been decorated with the national colours by Messrs. Defries & Sons. The terra-cotta decorations in the western or aquarium arcade have been executed by Messrs. Pulham & Son, of Broxbourne. Messrs. Deards, of Harlow, have done some part of the glazing, on their patent system, but the greater part of this work has been executed by the contractors with putty, in the old way. As we mentioned two or three weeks ago, in connexion with our notice of the Building Exhibition, the remarkable material known as the Willesden waterproof paper has been largely used for roofing purposes in these temporary buildings.

A special feature of the Exhibition will be the retail fish-market, which is located near the principal entrance in the Exhibition-road. This temporary market is fitted up with slate stall-boards, and is paved with the patent Victoria stone. To this market consignments of fish will be sent from Grimsby and other fishing stations daily.

The Exhibition is to remain open for six months, and we trust that it will be successful in every sense of the word. On a future occasion we may have something to say with regard to some of the exhibits.

THE PROPOSED SCULPTURE ON BLACKFRIARS BRIDGE.

SIR,—I am of opinion that the conclusion arrived at by the referees, touching the proposed statuary on Blackfriars Bridge, is on several accounts to be regretted. I am quite aware that the powers of sculpture are limited, but not necessarily to that narrow verge which would but admit of the setting up of four more bronze equestrian skittles in the metropolis. Without sanctioning the extreme manner adopted in some past Italian and French examples, a certain degree of freedom, or picturesqueness of treatment, is permissible in sculpture destined for sites such as those the bridge offers; and artists, moreover, require greater freedom of action in these matters. All great artistic enterprise is crushed out by that immobility of the powers to encourage monumental art either in painting or in sculpture,—that immobility which Mr. Cavendish Bentinck has entitled "the waiting game." I know that a splendid suggestion for the embellishment of the four piers or pedestals of the bridge, and admirably appropriate to the locality, was withheld from the competition from a conviction that the City authorities were not prepared to spend the sum of money required to carry out so thorough a proposal. The citizens of London only know how to foster one art, the art of hospitality,—a very good art it is to understand, too, and all very well in its way. But they should learn that to entertain artists at sumptuous City banquets is not to encourage art, and that there is but one way of doing this practically and effectively, and that is by employing painters and sculptors on the embellishment of public buildings and of unadorned sites, as did the citizens of less wealthy cities than the City of London, the citizens of Venice, of Florence, and of other patriotic Italian cities. METER.

PROPOSED ADDITIONS TO THE NATIONAL GALLERY.

IT is stated that definite arrangements have been made for making material additions to the National Gallery with as little delay as possible. The *Times* says that the plans actually prepared are as follow:—New galleries are to be built immediately in the rear of the centre of the main building, to adjoin those built from the designs of the late Mr. E. M. Barry. The galleries would consist of one measuring 92 ft. by 40 ft., ruuning north and south, at the end of which would be another, 87 ft. by 40 ft., running east and west, the latter forming a continuation of the great Italian Room in Mr. Barry's building. To the right and left of the centre of the longer gallery will be two small rooms, each 30 ft. by 20 ft. To carry out this plan a very important alteration in the present arrangement of the building is proposed, but it will not be effected until the new galleries themselves have been built. The present rather insignificant staircases are to be abolished, and in their stead we are to have a new grand staircase, immediately behind the vestibule, leading straight into the first of the new galleries. To make this staircase it will be necessary to do away with the existing "Turner Room"—a badly-lighted gallery—and to find accommodation for Turner's pictures elsewhere. The walls of the new grand staircase will afford space for many large pictures not of the first importance, while the space gained by the removal of the present staircases will be utilised for new rooms. The picture space to be provided in the new galleries and staircase is about 958 ft. lineal, or a net addition of 764 ft. lineal. That given by Mr. Barry's building was 1,235 ft.; while the total space given by the original galleries was 1,428 ft. The estimated cost of the whole building is no more than 66,000*l.*, including 2,000*l.* to be paid to the War Office authorities for rebuilding the guard-room of the St. George's Barracks in the rear. The site already belongs to the Government, and, as no rent is paid for it, no loss will be incurred by its appropriation to new uses. It is intended to ask for the first vote on account during the present Session, and to begin operations as soon after as possible. It is expected that the whole work may be completed in four or five years.

It is not stated whether an "outside architect" is to be employed to carry out the works, or whether they will be carried out by the officers of the Department.

RAILWAY RATES FOR CARRIAGE OF LONG TIMBER.

LONDON AND NORTH-WESTERN RAILWAY COMPANY *v.* IVENS.

MR. JUSTICE WATKIN WILLIAMS and Mr. Justice Mathew, sitting in Court VII. of the Royal Courts of Justice, had this special case before them on the 27th ult. It was an action brought by the plaintiffs against Mr. William Ivens, timber merchant, of Harboro' Parva, near Rugby, Warwick, to recover the sum of 485*l.* 16s. 4d., balances of account for the carriage of goods.

The questions raised under the special case stated for this Court were,—Whether the Company were entitled to charge the defendant 2s. 6d. per ton more than their ordinary rate for the carriage of consignments of timber, each of which consisted of several pieces of timber which, by reason of their great length, could not be carried in one wagon or truck; also, whether the plaintiff Company were entitled to make the additional charge for the carriage of consignments of timber, each of which consisted in part of pieces of timber which, by reason of their great length, could not be carried in one wagon or truck, and in other part of pieces not too long to be carried in one wagon or truck.

Sir H. Giffard, for the plaintiff Company, submitted that his clients were entitled to recover the amount by the London and North-Western (New Lines and Additional Powers) Act, 1876, Section 83. That section gave the plaintiffs power to charge the additional sum for any consignment of timber which contained pieces of timber which, by reason of their length, could not be carried in one wagon or truck.

Mr. Lumley Smith, on the part of the defendant, contended that the section only empowered the plaintiff Company to make an additional charge for consignments of single pieces of great length.

Their lordships replied to the question raised affirmatively, and gave judgment for the plaintiffs for the amount claimed.

LIABILITIES OF HOUSE-OWNERS.

COOK *v.* ELVIN.

IN the City of London Court on Tuesday, before Mr. Commissioner Kerr, a case of importance respecting the liability of landlords for pecuniary damages for defective house-drainage was heard.

The plaintiff was described as a builders' contractor, and he sued Mrs. Elvin, a widow, to recover the sum of 4*l.* 16s. 6d., rent due for a dwelling-house. In answer she filed a counter-claim for 10*l.* damages,—first, for breach of a contract by which she agreed to pay an increased rental of 4*l.* a year on condition that the house was made habitable; and, secondly, for illness and loss incurred through the bad state of the drains.

Defendant deposed that she had lived in the house for eleven years, but at length was compelled to leave, owing to the horrible stench which sometimes emanated from the drains. The soil in one place oozed through the floor. Her lodgers and even her son left the house because of the nuisance. Others, who had lived in the house, were called in corroboration.

The judge found for the defendant, both upon the amount claimed and also for the counter-claim. He would, he said, have given her a great deal more had he been asked, because no one could calculate the injury to health at the time, and in the future, from living in an unsanitary habitation. He also allowed costs on the higher scale, observing that it was high time that landlords were taught that property had its duties as well as its rights.

BUILDING PATENT RECORD.*

APPLICATIONS FOR LETTERS PATENT.

2,129. T. J. Palmer, London. Manufacture of decorative material for walls, &c. April 27, 1883.

2,199. T. Smith, Sunbury. Combination of materials for making cements, &c. May 1, 1883.

2,208. E. R. Palmer, Beckenham. Self-acting flushing apparatus for flushing sewers, drains, water-closets, &c. May 1, 1883.

2,238. G. Noles, London. Domestic fire-escapes. May 2, 1883.

2,242. F. G. Glaser, Berlin. Apparatus for catching soot from smoke in chimneys. (Com. by C. A. Petgold, Berlin.) (Comp. spec.) May 2, 1883.

2,260. T. Wood, Bristol, and G. Milton, Gloucester. Hot-water heating apparatus for warming buildings, &c. May 3, 1883.

NOTICE TO PROCEED

has been given by the following applicant on the date named:—

May 1, 1883.

798. W. B. Shorland, Manchester. Latches and securing knobs to the spindles of locks and latches. Feb. 14, 1883.

ABRIDGMENTS OF SPECIFICATIONS.

Published during the Week ending May 5, 1883.

4,287. L. C. Jervoise, Torquay. Open fire-grates. Sept. 8, 1882. Price 2d.

A metal plate is fitted to slide on the bottom bars of the grate to provide for a slow combustion of fuel when required. (*Prov. Pro.*)

4,332. D. Hendry and J. Melville, Kirkcaldy. Machinery for preparing or manufacturing Linoleum. Sept. 12, 1882. Price 6d.

The ground cork is fed into one end of a long cylindrical mixing vessel, in which revolves a long Archimedean screw and two sets of angled mixing-knives. At the other end the material falls on an inclined shelf, which guides it between rolls, whence in the form of a sheet it passes to a disintegrating spiked drum, which again breaks it up, and then it is delivered on the sheet of cloth, and pressed thereon by rolls.

4,353. H. Pearce, London. Apparatus for opening, closing, and securing fanlights, &c. Sept. 13, 1882. Price 6d.

To the fanlight is attached a lever, on the other end of which is a screw nut, which works on an Archimedean

* Compiled by Hart & Co., Patent Agents, 186, Fleet-street.

screw on a rod, which passes up the side of the window frame. By turning this rod round, the fanlight is closed or opened.

4,368. G. L. Marshall, Birmingham. Venetian window-blinds. Sept. 14, 1882. Price 4d.

A tongue is used to clip and hold fast the cords of the blinds when required.

4,369. W. A. MacLeod, Birkenhead. Window sash-fasteners. Sept. 14, 1882. Price 6d.

A spring catch bolt is fixed on the side of the meeting-rail of the inner sash, and a guarded slide on the inside of the side rail of the outer sash. The bolt engages this slide by the action of the spring, and the lower sash is allowed to open only the length of the slide, or *vice versâ*. A stop is fitted to the catch bolt, so that it can be completely disengaged of the slide when it is required to open the window wide.

4,383. F. Bander, Venezuela, South America. Construction of walls, &c. Sept. 14, 1882. Price 2d.

All the several parts of a building,—bricks, piers, abutments, door and window frames, &c.,—are interlocked with each other by mortises and tenons. (*Pro. Pro.*)

4,402. S. S. Hellyer, London. Supply and waste valves for baths, lavatories, &c. Sept. 15, 1882. Price 6d.

The valves in one form are fitted with a weighted lever arm and knee-joint lever, and are arranged at an angle to the discharge or supply thoroughfares. They close against the pressure, and are actuated by a handle, the rod of which, when the valve is closed, lies in a straight line within the guide, thereby preventing the valve being opened by mistake or concussion. Several other forms of arrangement are shown. The flush is effected by a tipping vessel in the tank, which, when full, capsizes, and fills the syphon which empties the tank.

CHURCH OF THE REDEEMER, EDGBASTON.

SIR,—In your notice of architectural works at the Royal Academy, the lighting of this church is spoken of as probably defective. May I be allowed to explain, what is perhaps not easily discoverable from the view, that the chief light in the interior is from the lantern tower, and that the lower windows are purposely subordinated to it. This tower, which is 30 ft. wide inside, contains sixteen lancet windows, each 3 ft. wide. The large front window, which, of course, is not visible in the view from the chancel end, is next to the lantern, the principal source of light to the nave.

JAMES CUBITT.

NEW CHURCH OF ST. JOHN BAPTIST AT NORWICH.

SIR,—In your notice of the architectural drawings exhibited at the Royal Academy, you have inadvertently attributed my design for the new church of St. John Baptist at Norwich to my brother.

I may mention that the drawings referred to illustrate only the nave, now in progress, of what will eventually be a complete cruciform church with a central tower.

G. GILBERT SCOTT.

THE GROSVENOR GALLERY.

SIR,—I should feel obliged if you would kindly state, in fairness to myself, that although the architect of the Grosvenor Gallery and Library, I must disclaim the honour of having designed the new entrance to the above, as recently erected.

WILLIAM THOS. SAMS.

KILLING WORMS ON LAWNS.

SIR,—Referring to the paragraph in your issue of the 14th ult., p. 620, *re* "Killing Worms on Lawns," quoted from a gardening journal, I write to inform you that I have applied to a great many chemists to obtain the "corrosive sublimate," and they all refuse to supply it, stating that it is the most virulent and deadly of the mineral poisons, one-thirtieth of a grain being sufficient to kill a man, and the use of it in any way, except by experts, would be very dangerous. I think it only right to let you know this, in case in some rural district some one might obtain it, and it might be carelessly left about, and cause disastrous results, as the chemists inform me its power does not disappear or decrease by any amount of exposure.

H. H. BARTLETT.

MARBLES.

SIR,—Will you permit me to say that the Belgian marble mentioned by Mr. Gough as being used at Hammersmith parish church on the occasion of the visit of the Architectural Association was supplied from the quarries at Soignies, for which I am sole agent; and also that I shall be most happy to submit samples and estimates to any architects contemplating using this material, which is extremely like Purbeck marble? I have Mr. Gough's permission to state that any architect may inspect the work supplied at the church on presenting his card.

Union-court, Old Broad-street. A. NOLF.

WROUGHT-IRON BARS, &c.

SIR,—Can any of your readers oblige by informing me through whom I can obtain the various sections of wrought-iron bars used in the manufacture of weather-tight window casements, also the gun-metal furniture fitted to same?

MAGNUM BONUM.

Books.

Light Science for Leisure Hours. Third series. Familiar Essays on Scientific Subjects, Natural Phenomena, &c. By RICHARD A. PROCTOR, B.A., Camb. London: Longmans & Co. 1883.

MR. PROCTOR is so well known as a popular writer on scientific subjects, especially astronomic science, and deservedly so, that it may appear almost superfluous to praise a book that proceeds from his pen. It is a noteworthy feature of his writings that he understands how to present what may at first sight seem abstruse subjects in language so entertaining, and yet so instructive, that even the most unwilling to approach them will read them ultimately with pleasure. In the third series of his "Light Science for Leisure Hours," the author has included a number of papers relating to the great solar eclipses which have been successfully observed since 1868, papers which were written at the time, and appeared in the various publications to which he has been an entertaining contributor. Those papers describe the anticipations formed as each eclipse approached, and the results actually obtained during the progress of the eclipse. The other essays which form part of the present volume resemble in general character those in the two former series. "The Earth in Meteoric Shadow" is one of Mr. Proctor's latest papers, deeply interesting, which is reprinted from Messrs. Longman's new magazine. The short article on "Vivisection" ought to be read by all those who would deprive the medical and surgical profession of one of their principal helps for the relief of human suffering; whilst that headed, "Are we Jews?" should give a check to those Sabbatarians who would sacrifice life to a narrow view of Sunday observance. We might add to this short list of interesting papers contained in the present volume; but we would rather refer readers to the book itself. The papers are food for the mind of a nature which gives them a permanent value.

Miscellanea.

The New Central Fish Market for London.—On Thursday morning last the Lord Mayor and Sheriffs attended in state to open the new fish-market in Farringdon-road, which covers an area of 44,000 ft. It consists of a series of shops, thirty-three in number, having in front stands for barrows and wagon stands for salesmen, the whole approached by a roadway having a width of 18 ft. always clear for vehicular traffic. In the middle of the market area is a further arrangement of stands, with an area of about 4,400 ft. We have in previous volumes described and illustrated the market buildings. The new market had its origin in the public discussions which took place a few months since about the deficient supply and high price of fish. A special fish committee of the Corporation was appointed, of which Mr. W. Pannell was the chairman. That body carefully and exhaustively considered the best means of bringing fish to the metropolis and distributing it to the consumers, and the result of their report was a decision on the part of the Court of Common Council to apply to Parliament to enable them to divert the market they were then constructing for fruit and vegetables to the purposes of an inland fish-market. An Act was obtained and the conversion was effected. On the site and building the Corporation have expended during the last seven years 430,000*l*.

The International Electric Exhibition, Vienna.—Among all nations who will exhibit at the International Electrical Exhibition the French are the first who have completed their plan of installation. According to the latter, a richly-decorated pavilion of the French Administration of Telegraphy will form the centre of the French Exhibition, in which, besides the scientific instruments and apparatus of the present, likewise very valuable historical apparatus for the history of evolution of telegraphy will be exhibited.

Ulster Reform Club, Belfast.—The contract for this work has been let to Mr. Henry, of Belfast. The cost of the building, including the grates, chimney-pieces, internal plumbing, tiling, bells, hoists, heating, and other fittings, will be under 12,000*l*. The work will be carried out at once under the superintendence of Messrs. Maxwell & Tuke, architects, Manchester.

Leases of Houses.—The right which Mr. Broadhurst, M.P., proposes to confer on tenants of purchasing the fee simple of their houses or cottages, is to apply only where there are thirty years unexpired of a lease already created, or twenty years of any future lease. In these purchases may be included chattels, and also any gardens or other lands held with the house to the extent of three acres. For carrying out the scheme, Mr. Broadhurst's Bill adopts the machinery of the County Courts. When a tenant wishes to purchase his house, his first proceeding is to be to pay into court two years' rack-rent, by way of deposit. After advertising the application the Registrar of the County Court would investigate the landlord's title and interest, and the tenant's right to claim the benefit of the Act. The County Court Judge would then proceed to ascertain the sum that ought to be paid for the purchase. In this inquiry any person interested would be entitled to demand a jury. The sum to be thus ascertained would be that which the entire estate in the house, beyond the tenant's interest, would fetch by sale in the open market. But as regards future leases, there would be excluded from computation the value of any improvements that may have been made by the tenant or his predecessor in title which were not in pursuance of a contract with the landlord. On paying the purchase-money into court, the tenant would be entitled to receive from the Registrar a certificate of purchase, which would operate as a conveyance from all the landlords who have been served with notice. The purchase-money would then be distributed by the Registrar, or retained pending inquiries, in accordance with the directions of the Judge. From his decision, however, on questions of law, but on those only, an appeal is allowed. With regard to the expenses of these proceedings, they would to a reasonable extent be borne by the tenant.—*Times.*

The Factory and Workshops Bill.—In the House of Commons, on Wednesday, Mr. Broadhurst moved the second reading of the Factory and Workshops Bill, the object of which was to prohibit the employment of girls under fourteen in the occupation of nail-making and chain-making.—Mr. Monckton moved the rejection of the Bill, which he asserted would be mischievous and cruel in its operation on the working classes affected, and would drive trade abroad without benefiting anybody. If any irregularities existed, they might be met by the appointment of additional inspectors.—Mr. Brinton also opposed the Bill, which he believed would deprive the working classes of harmless occupation.—Mr. Hastings and Mr. Wiggin bore testimony to the unpopularity of the Bill in the districts affected, where it was regarded as a blow at female labour.—Sir R. Cross pointed out that the trades were not unhealthy, for which reason he had not included them in his Act, and he warned the House against being led to play into the hands of those who desired to discourage women's labour for the sake of increasing men's wages.—Sir C. Dilke informed the House that out of a total number of 896 shops engaged in the trade, the Bill would only affect nine shops, and as each of these only employed one girl under fourteen, the House was being asked to legislate for nine persons. On a division, the Bill was thrown out by 124 to 44.

National Health Society.—A meeting to promote the objects of this society was held on Wednesday at Grosvenor House, by permission of the Duke of Westminster, who presided, and, in the course of his speech, said they had established in Westminster a sanitary aid association, the members of which had done a great deal of good amongst the poor by acting as sanitary visitors. A main feature of the association was the giving of lectures and promoting exhibitions, and next month an exhibition of sanitary domestic appliances, hygienic dress and decoration, would be held at Humphrey's Hall, Knightsbridge. Resolutions were passed recognising the services rendered by the society in diffusing among the people a knowledge of the laws of health and the means of preventing disease; approving the educational series of lectures which have been arranged in connexion with the forthcoming exhibition at Humphrey's Hall; approving of the preservation of open spaces, and laying out and beautifying public places and playgrounds in the metropolis; and affirming that means are urgently required for the improved inspection and regulation of the sanitary arrangement of dwelling-houses.

Proposed Town-hall, Eastbourne.—At a meeting of the Eastbourne Local Board on Monday evening, Mr. G. H. Chambers moved "That having regard to the urgent want that exists for public office accommodation, and to the fact that the probable requirements of a Municipal Corporation can be easily determined in advance; and also considering that a whole year would be lost by waiting till the future Corporation got into full working order; the Board hereby directs the Parliamentary Committee to negotiate at once with Mr. Foulkes, of Birmingham, with the view of making use of his prize plans of 1880; with power to the Committee to modify the elevation or details of the same, if they deem it expedient to do so; the limit of expenses for building and furnishing to be 25,000*l.*; the building to be erected either all at once or in two portions, and to occupy a part or the whole of the Board's freehold, as the Committee may deem expedient." At some length Mr. Chambers advocated the idea set forth in his resolution, and contended it was high time the question was dealt with.—Mr. Simmons seconded the proposal, and opinions favourable to the scheme were expressed by Mr. Tomkinson, who thought that it was really time the new Town-hall was built.—Mr. Francis spoke against too great an expenditure, but wished to have a complete building if they had one at all. He would like to see Mr. Currey (the architect to the Duke of Devonshire) also prepare a draft plan of the new Town-hall.—Mr. Wallis (the duke's local engineer), pointed out that it would not be convenient for Mr. Currey to undertake such work single-handed on account of his duties.—Dr. Hayman thought the Board should begin over again with the Town-hall scheme, see what accommodation was wanted, and get a competent architect to go on with it.—Ultimately the Board agreed to proceed with the new Town-hall, as Mr. Chambers had urged, and that all plans be referred to Mr. Currey for his opinion.

The Royal College of Music.—A second step in that movement for the formation of a national institution to promote the cultivation of music which was auspiciously begun at the meeting in St. James's Palace little more than a twelvemonth ago, is marked by the opening on Monday, by the Prince of Wales, of the Royal College of Music. The ceremony had necessarily somewhat of a private character, owing to the limited accommodation afforded by the rooms in the building, which, though doubtless well-adapted for class-work, are not of sufficient size to permit a large assemblage to be brought together. The College takes possession of the building in Kensington-gore facing the west side of the Albert-hall, hitherto used by the National Training School of Music, and presented to the Prince of Wales for the purposes of the Royal College of Music by Sir Charles J. Freake. By special permission of Her Majesty's Commissioners for the Exhibition of 1851, the College will have the use of rooms in the Albert Hall for choral and instrumental practice. The Prince of Wales, in the course of his speech, announced that Her Majesty the Queen proposed to mark her interest in the institution and its aims by conferring the honour of knighthood on Professor Macfarren, Dr. Sullivan, and Dr. George Grove, the director of the college.

A Big Bell for the Royal Courts of Justice.—On Wednesday afternoon a large bell, to sound the hours at the Royal Courts of Justice, was cast in the foundry of Messrs. Gillett & Co., at Croydon. Parts of the large clock, which is to be placed 100 ft. above the ground, were to be seen in different rooms of the factory. The iron framework, some 7 ft. 6 in. in length, which will hold the clock, is ready, and so are the two cast-iron dials, each 8 ft. 6 in. in diameter, which will replace the smaller clock faces at present projecting from the tower. The works of the clock will, of course, be within the tower. The bell will be 5 ft. 10 in. in diameter across the lips, 5 ft. high to the top of the crown, and 5¾ in. thick at the sound bow. The note, it is expected, will be C. The alloy is calculated in the proportion of 17 parts of copper, worth about 70*l.* per ton, to five parts of Redruth tin, valued at 100*l.* per ton, and allowing for waste from the 4½ tons of metal put into melting-pot, the bell should scale about 3 tons 12 cwt.

Hammersmith Parish Church.—We are asked to state that the whole of the Box-ground stone for this work is being supplied from the quarries of Messrs. Randell, Saunders, & Company (Limited).

Theatres and the Public Safety.—In the House of Commons on Wednesday, Mr. Dixon-Hartland moved the second reading of the Theatres Regulation Bill, which sought to substitute for the present conflicting jurisdictions the central authority of the Home Office.—Sir J. M'Garel-Hogg moved the rejection of the Bill, which he condemned as crude, unworkable, and certain to produce confusion. He explained what, he contended, was the effective system of survey and regulation enforced by the Metropolitan Board of Works, and insisted, too, that the present was a very inopportune time for moving in the question, as the Government was about to introduce a comprehensive scheme of metropolitan reform.—Mr. Labouchere also opposed the Bill, which, he pointed out, did not provide for the question of licences, and must create divided authority without any real responsibility. The proprietors of the theatres, he said, were by no means of opinion that the Metropolitan Board had done nothing.—Sir C. Dilke opposed the Bill, which he characterised as singular, despotic, centralising, and reactionary. On a division the Bill was thrown out by 141 to 22.

Sanitary Assurance Association.—Professor T. Roger Smith presided at a public meeting held on Wednesday evening at No. 9, Conduit-street, Regent-street, when Mr. Henry Rutherfurd, barrister-at-law, delivered an able address on "Sanitary Assurance from a Householder's point of view," in which he pointed out what an enormous pecuniary loss was sustained by the prevalence of diseases arising from neglected house sanitation, and earnestly pressed upon his audience and the public at large the desirability of having their houses inspected properly and reported on by a competent authority such as the Sanitary Assurance Association. At the conclusion of the address, Mr. W. White proposed, and Dr. Norman Chevers seconded, the following resolution, viz.:—"That the Council of the Association be requested to consider whether they cannot recommend legislation compelling the builders of all new dwellings to obtain a certificate from some authority or qualified person as to their sanitary condition before it shall be lawful for such buildings to be inhabited."

The Exhibition Buildings in Cork are now on the eve of completion. In a few days they will be out of the contractor's hands, and arrangements will be commenced for the reception of the exhibits. The first case of articles intended for exhibition has already arrived. It has been contributed by Sir John Pope Hennessey, Governor of the Mauritius, and consists of collections of porcelain and other objects from Japan and China, an old and curious edition of Spenser's "Fairëe Queen," and two pictures of old Cork.

Gas on the Stage.—Among the exhibitors at the Furniture Exhibition are Messrs. Vaughan & Brown, of Farringdon-road, who show, at Stand No. 9, Tollerton's Patent Flash-light System for instantaneously lighting gas-battens, footlights, &c., in theatres. This system is now in use, we understand, in the Princess's Theatre, Oxford-street, the Savoy Theatre, Strand, and in some of the provincial theatres.

Warwick.—At a special meeting of the General Purposes Committee, held at the Court House on the 21st ult., a letter was read from Mr. Thos. Broughton, Assoc. Mem. Inst. C.E., the Borough Surveyor, resigning his appointment in consequence of his having accepted an important office from the Duke of Devonshire in the Bolton Estate.

Drying New Buildings.—With reference to our notices of "The New Offices at Euston Station for the London and North-Western Railway Company," "The Fine Arts Gallery" in Piccadilly, and "The New National Liberal Club" in Northumberland-avenue, Messrs. Dreyfus & Co. say they dried all these, either wholly or partially, by "Ligny's Patent System."

Chapelthorpe Church, Wakefield.—This church is to be opened on this Saturday, the 12th inst. The interior fittings, including a handsomely embroidered altar-cover, brass lectern, &c., and rug-seating and hassocks thoughout the church, have been supplied by Messrs. Jones & Willis, of Birmingham and London.

Devonshire Hospital and Buxton Bath Charity.—We continue to receive attacks on the management of this Institution, but do not find ourselves in a position to justify us in giving publicity to the assertions made.

Gilmorton Church, Leicestershire.—A very large new clock has been erected in the parish church here, striking the hours, and showing the time on two dials, from Messrs. John Smith & Son's Midland Clock Works, Derby.

Jersey.—At a meeting of the Government of Jersey, in March, a vote was passed to carry out the plans of Mr. T. W. Helliwell, of Brighouse, for laying out the spare ground, near the harbour, as a park and public pleasure-grounds. Mr. Lister Kershaw, of Brighouse, will carry out the work.

TENDERS.

For pulling down and rebuilding No. 17, Lawrence-lane, Cheapside. Mr. John Young, architect, 36, King-street, Cheapside. Quantities supplied by Messrs. Arding, Bond, & Buzzard, No. 23, Surrey-street, Victoria Embankment:—

Ashby & Horner	£2,237 0 0
Ashby Bros.	2,195 0 0
E. Conder	2,191 0 0
Mowlem & Co.	2,141 0 0
Brass	2,056 0 0
Woodward	2,026 0 0
E. Lawrance (accepted)	2,006 0 0

For the erection of Board offices, High-street, Smethwick, for the Smethwick School Board. Messrs. J. P. Sharp & Co., architects. Quantities supplied:—

J. Smith & Son, Birmingham	£1,560 0 0
Wilson & Son, Soho	1,550 0 0
Sapcote & Son, Birmingham	1,526 0 0
Jeffery & Son, Birmingham	1,500 0 0
E. Walton, Smethwick	1,478 0 0
J. Stockton, Oldbury	1,459 0 0
G. H. Marshall, Smethwick	1,435 0 0
Whitehouse & Jones, Birmingham	1,433 0 0
W. Whitehouse, Smethwick	1,335 0 0
Harley & Son, Smethwick	1,290 0 0

For the erection of infants' school at West Smethwick, for the Smethwick School Board. Messrs. J. P. Sharp & Co., architects. Quantities supplied:—

Wilson & Son, Soho	£2,310 0 0
W. Whitehouse, Smethwick	2,178 0 0
Smith & Son, Birmingham	2,160 0 0
Jeffery & Son, Birmingham	2,076 0 0
J. Stockton, Oldbury	2,070 0 0
Whitehouse & Jones, Birmingham	2,045 0 0
Smith & Son, West Bromwich	2,000 0 0
G. H. Marshall, Smethwick	1,997 0 0
E. Walton, Smethwick	1,960 0 0
Sapcote & Son, Birmingham	1,929 0 0
Harley & Son, Smethwick	1,869 0 0

For Southend and Park Roads drainage, Croydon. Mr. Geo. B. Carlton, C.E., surveyor:—

J. H. Firbank, London	£2,289 6 6
J. Taylor, Pimlico	1,612 9 9
W. Langridge, Croydon	1,472 12 2
W. Martin, Willesden Green	1,403 16 6
H. Streeter, Croydon	1,398 19 1
J. Bell, Wood Green	1,375 16 1
J. Young & Co., Skegness	1,342 0 0
S. Saunders, Wandsworth	1,216 18 8
E. Iles, Wimbledon	1,213 14 1
Beadle Bros., Erith	1,204 0 0
J. Mowlem & Co., Westminster	1,195 8 4
G. B. Marshall, Brighton	1,174 13 0
A. Blake, Sydenham	1,127 6 0
W. Carter, Auerley	1,107 13 5
A. Palmer, Birmingham (accepted)	993 0 9
H. C. Duffield, Battersea-rise	969 2 3

For extension of "House of Retreat," Lloyd-square, Clerkenwell. Contract No. 2. Mr. E. Newton, architect. Quantities by Messrs. Palmer & Rusult:—

McLachlan & Sons	£5,220 0 0
Perry & Co.	4,975 0 0
Dove Bros.	4,975 0 0
Forster & Dickson	4,799 0 0
Brass	4,687 0 0
Maides & Harper	4,660 0 0
Bangs & Co. (accepted)	4,549 0 0

For alterations and additions to the Alexandra Schools, Penge, for the Beckenham School Board. Mr. John Ladds, architect:—

T. W. Jones, Beckenham	£3,666 0 0
Syme & Duncans, Beckenham	3,498 0 0
Le Gassick & Co., Balham Hill	3,435 0 0
Avis & Sons, Peckham	3,375 13 0
J. & C. Bowyer, Upper Norwood	3,290 0 0
J. W. Bunning, Camberwell	3,289 9 0
Staines & Son, Great Eastern-street	3,283 0 0
G. Barker, Peckham	3,111 0 0
J. Bingham, Westerham	3,097 0 0
Smith & Son, South Norwood	2,987 0 0
Holliday & Greenwood, Loughborough Junction	2,957 0 0
Hollidge & Stuart, South Norwood	2,828 0 0
H. Ormsted, South Norwood	2,797 0 0
J. Longley, Crawley	2,760 0 0

For new boys' school, &c., for the Mitcham School Board. Mr. E. Chart, architect. Quantities by Messrs. Franklin & Andrews:—

Sabey & Sons	£2,095 0 0
Higgs & Hill	2,050 0 0
Lawrence	2,015 0 0
Kirk & Randall	1,941 0 0
Jarrett	1,900 0 0
Dove Bros.	1,875 0 0
Howard	1,845 0 0
Legg	1,800 0 0
Ward	1,775 0 0
Stewart	1,698 0 0

For new dispensary, lodge, and reading-room, East Kennett, near Marlborough, for Mr. Richard Fisher. Mr C. E. Ponting, architect. Quantities not supplied:—

H. Hoskings, Hungerford	£1,080 0 0
B. Hillier, Marlborough	1,070 0 0
S. Elliott, Newbury (accepted)	1,029 0 0

For the erection of new east wing to the City Terminus Hotel, Commercial-street. Mr. Chas. Barry, architect :—

Walker	£29,682	0	0
Holland	24,705	0	0
Bangs	24,673	0	0
Lovatt	24,500	0	0
Brass	22,787	0	0
Perry & Co.	22,775	0	0
Nightingale	22,371	0	0
Booth	21,959	0	0

For the erection of new Congregational school, Caterham, Surrey. Mr. E. C. Robins, architect :—

Outhwaite	£24,509	0	0
Ansell	23,926	0	0
Adamson	23,889	0	0
Nightingale	23,338	0	0
Bangs	22,940	0	0
Dove Bros.	22,655	0	0
Ashby Bros.	22,340	0	0
Lovatt	21,856	0	0
Wall Bros.	21,622	0	0
Shaw	21,598	0	0
Brass	21,473	0	0
Hobson	20,742	0	0

For the erection of proposed new premises, Nos. 37 11, Lower Marsh, Lambeth. Mr. G. Vickery, architect :—

Simpson	£13,315	0	0
Mowlem	13,43	0	0
Conder	12,720	0	0
Morter	12,676	0	0
Scrivener	12,449	0	0
Patman & Fotheringham	12,424	0	0
Greenwood	12,389	0	0
Brass	12,24	0	0
Nightingale	12,081	0	0
Laurence	12,028	0	0

For new warehouse, Canterbury. Mr. John Green Hall, architect

H. Stiff, Dover	£3,155	0	0
T. C. Gaskin, Canterbury	2,880	0	0
G. H. Denne, Deal	2,858	0	0
J. F. Cezens, Canterbury	2,802	0	0
T. E. Wiltshier	2,799	0	0
T. Wise, Deal	2,740	0	0
E. Hatten, Canterbury	2,710	0	0
Hayward & Paramor, Folkestone	2,710	0	0
W. T. Wiles, Dover	2,698	0	0
A. Matthews, Dover	2,628	0	0
T. L. Ward (accepted)	2,300	0	0

For the erection of a clergy house in Philbeach-gardens, South Kensington, for the St. Cuthbert's Church Building Committee. Mr. Rounsieu Gough, architect, 6, Queen Anne's Gate :—

Chappell	£1,888	0	0
Abraham	1,850	0	0
Litt	1,681	0	0
Shaw	1,645	0	0
Sharpe	1,626	0	0
Lister	1,620	0	0
Chamberlin Bros.	1,593	0	0
Belham & Co. (accepted)	1,399	0	0

For new Sunday-school for the Baptist Church at Ponder's End. Mr. John Edward Sears, architect :—

Chas. Wyman	£459	0	0
Field & Sons	412	0	0
Talmond	408	0	0

For sundry repairs and alterations, 39, St. Peter's square, Hammersmith. Mr. Frederick Lea, surveyor :—

Builder's Work.

James Holloway (accepted)	£585	0	0

Sanitary Work.

Dent & Hellyer	114	0	0

Hot-water Supply.

Price, Lea, & Co.	53	10	0

For enlargement of national schools, Sowerly, near Halifax. Mr. T. L. Patchett, architect :—

Crossbrig Bros., Ripponden (excavators and masons). Sutcliffe, Siddall, & Hanson, Sowerby (carpenters and joiners).
W. Fox & Son, Sowerby Bridge (plumbers and glaziers).
John Robinson, Luddenden Foot (slaters and plasterers).

For residence for Mr. J. Brough, Thirlmere-terrace, Tooting Bec Common. Mr. F. Wheeler, 119, Cheapside, architect

Hill Bros., Streatham (accepted)	£1,378	0	0

For alterations, covering in yard, &c., at Oldridge-road, Balham, for Mr. G. Goodge :—

Le Gassick & Co., Balham Hill (accepted).

For road and sewer work, for Mr. R. C. Martyn and Mr. G. A. Baker, jointly, Enfield. Messrs. Whitmore & Reeves, surveyors, 14, Devonshire square, Bishopsgate-street :—

John Jackson, West Ham	£1,425	0	0
Hoare & Son, Blackfriars-road	1,352	0	0
Jesse Jackson, Leyton	1,345	0	0
John Cardus, Acton	1,260	0	0
P. G. Pound, Bow-road	1,170	0	0
John Bell, Wood-green	1,083	15	0
J. C. Trueman, South Hackney	1,050	0	0
Carter, Ilmerley	940	0	0
Nicholls, Wood-green (accepted)	857	0	0

For internal plastering, staircases, matchlining and finishing of shop and house, No. 20, Tabard-street, Southwark, together with the erection of washhouse and other works at rear, for Mr. Purdue. Mr. E. Crosse, architect, No. 32, Bermondsey-square :—

J. Abbott	£392	0	0
W. Wilson	385	0	0
B. Wells	335	0	0
S. Kipps (accepted)	330	10	0

For the completion of six dwelling-houses, Walthamstow. Mr. J. William Stevens, architect, No. 1, Dyers'-buildings, Holborn

W. Radd (accepted)	£130	0	0

For building a new public-house in Brook-lane, Brentford, for Messrs. Fuller, Smith, & Turner, Griffin Brewery, Chiswick. Mr. Geo. More, architect :—

Adamson & Sons	£1,889	0	0
Hunt	1,872	0	0
Lamble	1,872	0	0
Spicer	1,790	0	0
Nye	1,790	0	0

TO CORRESPONDENTS.

E A O shall appear soon. Particulars should be sent.—G. F. D. particulars of the St. Katelin Museum competition have been already forwarded.—W. R. T. We should look [illegible].—C. & R. L. B. & O.—A. L.—F. M.—Hill Bros.—W. & E.—J. P. M.—A. C.—W. D. G. F. S. L.—L. R. N.—D. & Sons.—A. M.—P. W.—S. W.—M. H. J. P. M.—W. M. L. G. & C.—F. S. A.—N. P. N. R.—Regular Subscriber.—G. G. S.—T. W. H.—W. H. W.—Capt. H.—T. G.—[illegible].—A. P. K.—G. B. C.—J. G. R.—J. J. C.—W. de G. B.—F. W. H.

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One of the great advantages of these Stoves (amongst others) is that they will burn "**Anthracite,**" or Smokeless Coal, which has been so strongly recommended by the various speakers at the recent discussions at the Society of Arts on the subject of "London Fogs."
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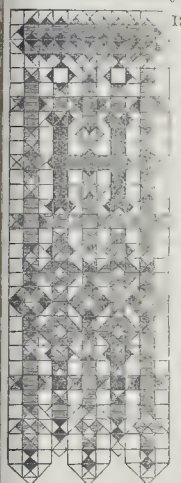
ILLUSTRATIONS.

A Country House, Bromley.—Mr. Aston Webb, Architect .. 670
Market Hall, Newark (Double-page Engraving).—Competitive Design by Messrs. Saville & Son .. 672
Exterior of Ulm Cathedral, as proposed to be Restored (Four-page Engraving) .. 674
Ground-floor Plan of British Museum (Natural History), South Kensington .. 683

CONTENTS.

The Viability of London .. 685
The Royal Academy .. 686
The King's Palace at the Tower .. 687
Architecture and Archæology in Western and Eastern Syria .. 687
Food for the Million .. 694
A Recent Decision: Delays with the Progress of Works, and on the Functions of Architects and Engineers .. 694
Form Blindness .. 695
Models .. 695
The Uspensky Cathedral at Moscow .. 695
The Masonry and Carpentry of the Greeks and Romans .. 697
Ulm Cathedral .. 698
Market Hall, Newark .. 698
A Country House, Bromley .. 698
The New Natural History Museum, South Kensington .. 685
Chinese Fishing-Stations .. 695
Sham Legislation: The Institute and the Board of Works .. 696
Passing Notes .. 696
The Victoria City Railway .. 696
News from Birmingham .. 696
Chit Chat from Papers .. 697
The Cromwell Will and Family .. 697
The Iron and Steel Institute .. 698
The Diamond Fields of South Africa .. 699
Masters in Walls .. 699
The Municipal Improvements at Cologne .. 699
The Cape Colony .. 699
New St. Mary's, Battersea .. 699
Dry-rot in City Churches: St. Stephen's, Walbrook .. 699
A Petrified Forest .. 699
A Joiner's Shop and its Management .. 699
Building Patent Record .. 699
The Sculpture for St. George's Hall, Liverpool .. 701
The Land Tax .. 701
Church-building News .. 701
Dissenting Church Building News .. 701
Stained Glass .. 701
Books: Dredge's Electric Illumination .. 702
Miscellanea .. 702

The Viability of London.



HISTORY, it has been said, repeats itself. Whether that be the case or not, blunders, oversights, and nuisances have a remarkable tendency to repetition, unchecked by the results of former experience. The Strand, says the correspondent of a daily journal, "is perhaps the busiest and most crowded thoroughfare in the world. Yesterday [this was at the end of April] workmen ripped up the old pavement and its concrete foundation, and put in its place fresh concrete to receive the new wooden pavement. At six p.m. they knocked off, leaving a lot of lamps, a fire or two, and a watchman. Why do not the authorities arrange for a fresh gang to come on by night? I need not dilate on the inconvenience to the public, the stoppage of business, men, and goods; the trial of temper consequent on the timing of changes of this kind just at the time when London is at its fullest."

Commenting on this letter, the journal which prints it says, "The evil chiefly lies in original defects of construction. It is faulty foundation that causes the pavement to become uneven in its surface." We are not altogether prepared to say as much as this, as of late years it is certain that much more care than was formerly given has been bestowed on the sub-structure of pavements in cities, whether made of stone setts or of wood. But there is a sense in which we wholly agree with the complainants. About the time referred to, it chanced that we had the opportunity of contrasting the inconvenient block thus set up in the Strand with the condition of what used to be the very throttle-valve of London traffic, and the terror of the hard-pressed cattle, the once infamous Snow-hill. The hill, we all know, has disappeared; the level viaduct having shortened the distance between Holborn and St. Sepulchre's,—by how many miles or portions of a mile we will not stop to calculate. But the level thus attained is not more perfect, we apprehend, than that in the blockaded part of the Strand. The width of roadway, speaking without book, is less over the Viaduct than in the street. Why is one route always liable to dislocation at the most inconvenient times, and the other always quiet and in good order?

The reason is not far to seek by those who visited the Viaduct in building. The architect took the trouble to think, before he substituted one roadway for another. In so doing he came, so far as we can judge from results, to the conclusion, that London traffic is impeded, and London pavements made both bad and costly, by allowing one structure, or one area of ground, to discharge inconsistent functions. To provide a channel for the living tide of man and beast, with ponderous trains of vehicles, is the open, avowed, proper function of the streets of London. But coincidently with this function the street is made to discharge the uses of a railway ditch. It is opened, at the good pleasure of the authorities, to allowing of the digging out a channel for water, enclosed, it is true, in a pipe. Again it is opened to perform the same service, for gas. Nor are we absolutely safe against similar operations for the purpose of drainage; or, may be, of telegraph-laying. The services of all these important arteries of life and light, health and intelligence, are allowed to contend with the passenger traffic at one time, with the operation of her paviours at another, and with the excellence of the pavement in all cases.

Over the Viaduct nothing of the kind occurs, because from end to end of that structure, as our readers know, a properly-designed subway was constructed in the first instance. Thus, when access is needed to pipe or drain it is to be had at once, without the barbarous expedient of picking up the road. Whether this pavement has been,—and if so, at what intervals,—relaid, we are not at this moment aware. But we can confidently expect the publication of any accurate data on the subject. We think that if the saving in the cost of relay alone due to the use of the subway were brought to account, the figures would tell their own tale. And we are quite sure that if any account could be taken of the far heavier loss occasioned by the small but continual damages caused to passengers, horses, vehicles, and residential inhabitants by the hand-to-mouth system, the saving to the public effected by the construction of the subway would be found to be very great indeed.

Why is it that, as each season comes round, it brings the same lesson?—to incur the same neglect? These things are not matters of doubtful opinion. They are subjects on which there is no difference between practical men as to what ought to be done. We suffer, year by year, in the same way, simply from neglect. To ascertain first, and once for all, what is the best system for the construction and maintenance of a street through a city, with all its proper appurtenances, and then to put in the hands of some one efficient authority the power and the responsibility of carrying that system out, is surely the very A B C of civilisation, so far as the public convenience is concerned. What should we think if our railways were periodically thrown out of gear for the purpose of laying new lines of telegraph? What if we had to go round by Oxford to Birmingham because a telephone company was bringing its wires from London to the Warwickshire capital? Why should this be permitted on a line that conveys tens, or may be hundreds, where the railway conveys units? The daily papers would not be large enough to contain the letters of complaint and indignation that would swarm from all sides if on one link of one railway the same free-and-easy indifference to the punctuality of the traffic were allowed which we seem to accept as a matter of course in the busiest thoroughfare of London.

On the railways, however, there would be far more excuse for interruption. We cannot recall anything which, for the last half-century, has materially modified the requirements of London streets, except the slow increase of traffic,—slow, that is to say, in proportion to the growth of the passenger traffic of railways. Gas we have had for that period; pipe-water, as it used to be called, for as long; drainage, whether of storm water or sewage, has been as ancient a necessity. No new element has been imported into the problem, and yet the best, or even the fairly good and undisturbed street pavement seems as far from attainment as ever.

But when ponderous and continuous rails,—heavy and complex crossings,—points and switches, and all the connected structure of the railway, the least breach in the continuity of which renders the passage of a train impossible, have to be altogether replaced and relaid, who knows anything about it? Even in the case of that total reconstruction which took place, some fourteen or fifteen years ago, of the railway approaches to Victoria Station, where the work was carried on day and night, and certain parts of it only during the latter,—there was not, if we rightly remember, a single train stopped or discontinued. As to difficulty of arrangement, there is no comparison between the facility with which a broad street can be dealt with, where traffic turned from one part can flow readily over another, and the reconstruction of the approaches to a station such as Victoria or Cannon-street. Why is the one carried on with the minimum, and the other with the maximum, interference with the comfort and the convenience of the travelling public?

The reason, we apprehend, is twofold. In the first place, there is this difference between the street and the railroad,—one has existed from time immemorial, the other is a new creation. As to the first, in good old easy-going times, the accommodation of the residents was the first object. Shakspeare's father was fined for depositing the sweepings of his premises in the roadway before his house,—an interesting note

of by-gone days, showing that in Tudor times the Corporation of Stratford was awakening to a sense of public convenience, if not of sanitary regulation. Thus, from time to time, laws, by-laws, and regulations of various kinds have been passed, with the view of serving the ever-changing relations of the public to the public highways. With the increase of population, and the growth of large cities, the original use of a highway, viz., the accommodation of the residential or riparian proprietors (to apply a term constantly used with reference to water-ways) has shrunk to comparative insignificance, as contrasted with the use made of it for through traffic. But this matter has never been grappled with directly, as in the case of the railway. Here the riparian proprietor has no direct advantage from the vicinity to the line,—very much the other way, in fact, as he suffers from the noise and vibration. The residential advantages offered by a railway are measured by proximity to the stations. Thus it is at once seen that to prevent interruption to the traffic is the first duty of the railway engineer. It is his duty to the proprietors, inasmuch as it has a direct bearing on dividend. And those who are best acquainted with the history of such remarkable *tours de force* as that to which we have referred, of the re-arrangement of the approaches by rail to Victoria Station, are best aware of the admirable manner in which that duty has been performed.

On the road, on the other hand, we lack at the same time the motives for maintaining the traffic undisturbed, and the executive authority for carrying out the necessary procedure in the best way. As to this question of ædileship, or local authority, it is too thorny for us now to do more than indicate its existence. But as to the motive, it must, we hold, be taken as doing good service to the cause of civilisation itself, to aid in giving an enlightened public opinion. Very much is added to the cost, trouble, and inconvenience of city life from the neglect which we have above pointed out. If the costly hours, filched from the toil of the hard-driven man of business by street stoppages were totted up, the sum would be of no small amount. How many minutes are lost by the tens of thousands of passengers daily hurrying through the Strand by every day's obstruction of the direct line of thoroughfare? How much of something more important than time itself, viz., nerve tissue, or brain tissue, is fretted away by annoyance at each day's delay? "The Strand up again, I shall miss my appointment!" says the City man. And whether he miss it or not, there ensue twenty minutes of vexation, anxiety, and annoyance. Those twenty minutes form an appreciable demand on the working power of his brain for the day. Occurring day by day, they tend to shorten the working power of the year, not by time alone, but by exhaustion, and tend to shorten life itself. Is this doubtful? Does not every one feel that it is true? Why, then, do we not take the bull by the horns, and associate for the protection of the viability of our streets? If the law cannot protect them, the law is in need of amendment.

THE ROYAL ACADEMY.*

The central place in Gallery IV. is occupied by Mr. P. R. Morris, with a rather large painting of deer, and two children frightened by them, in a park, and entitled "Foes or Friends?" (370), another of the works in which the canvas is far too large for the interest of the subject. We cannot imagine any one purchasing a picture like this, except a man of sporting tastes, who might like to have a good picture of fallow deer, and this is a good one, so far; the children are good by themselves, too, and would stand well as portraits; but there is no adequate motive for putting them together on one large canvas. Mr. Morris is distressing rather to those who, like ourselves, have admired much of his work as thoughtful and refined; his two separate children, called "The Tambour-minor" and "The Promenade" (391, 397), are very white and chalky portraits of small children, life-size, the interest or beauty of which we quite fail to discover. Between these hangs one of the best things Mr. Briton Rivière has painted, "Old Playfellows" (392), a sick child in a chair, and a collie dog, with his paw on his young friend's knee, looking up wistfully at him; the dog is a master-piece, beautifully drawn and painted in detail, and exhibiting that remarkably keen expression of sympathy and interest which this breed of dog often does exhibit,—more, perhaps, because the conformation of the head conveys that impression to us, than because collies are really more intellectual than other dogs; for experience shows that some of the most stupid-looking dogs are really the cleverest. But we congratulate Mr. Rivière on the fact that he has also made the human figure in this painting really interesting, which he has frequently failed to do; the head of the child is very touching in its expression of weakness and suffering, nor can we in the least see why it should be called "sentimental," as we observe it has been called, unless the truthful depiction of illness and feebleness of body is to be considered as in itself a sentimentality. Mr. Dendy Sadler has a very clever painting of monks, called "Recreation" (408), in which, however, he has been sorely hampered, as a colourist, by the necessity of painting all the masses of scarcely-varying browns in the monks' dresses, and does not seem to have ventured to relieve this by any colour in the room, so that the whole picture is dingy, an orange-tinted handkerchief tied over the eyes of one monk (the reverend fathers are playing at blind man's buff) forming the only bit of colour in the picture, and serving to deepen rather than relieve the heavy brown tones of the whole scene. But Mr. Sadler is making a very good series of pictures out of his favourite subject, and by a kind of retrospective satire suggesting to us the prevalent littleness and folly of convent life, as that of over-grown semi-pietistic schoolboys. Mr. Marks has a little picture in this room, with hardly any subject, a single figure of a man tying flies, called "The Gentle Craft" (422): otherwise this is rather a depressing room, especially for such things as "After the Honeymoon" (*that* is "sentimental," if you please) and the large coarse painting called "An Audience," which has no title to its position.

The leading pictures in Gallery V. are two, each very realistic, each representing a crowd of figures,—one a Venetian crowd, by Mr. Logsdail, "The Piazza" (477); the other an English village crowd by Mr. Fildes, "The Village Wedding" (515). Mr. Logsdail's former and smaller works, in which buildings were usually the predominant interest, we have more than once mentioned with appreciation; in this large and crowded canvas he has made an immense step, and combined a number of figures of various nationalities into one scene in a manner effective in itself, and showing a wonderful amount of brilliant and truthful detail. To this favourable view there are, however, the drawbacks that the picture is disagreeable and unnatural in effect from the almost utter absence of shadow, and (more serious) that it is exceedingly vulgar in the choice of types, women especially, and the way they are painted. We say "women" advisably, for there is not a lady in the picture, and the two females most prominently in the foreground look like everything that women ought not to be. Among so mixed a crowd it might certainly have been possible to find some foreground figures of less unpleasing type than these. The painter has shown his technical power in painting a picture which few people would care to possess; he may, we hope, turn his powers to better account eventually. Compare this with Mr. Fildes's work, and the distinction is striking. Mr. Fildes's picture is somewhat white and raw in colour, and his crowd is a crowd of homely people, but they represent some really interesting and not repulsive phases of human character. Mr. Fildes has never, perhaps, painted anything better than the bride in this picture. She is a rustic, but a rustic raised into unconscious dignity and delicacy of expression by mingled happiness and bashfulness. To paint such a character is a much more difficult task than to paint the brazen women in the foreground of the "Piazza." The bridegroom is an admirable study too, the more set off by contrast with his friend or relative the guardsman behind, come down from town to grace the country wedding, and afford the painter a "foil" for his rustic characters. There is a great deal else of interest in the minor characters of the group. Mr. Briton Rivière has a fine and serious work in this room, "The Last of the Crew" (498), where a survivor of an unfortunate Arctic expedition is looking out over the fields of ice for the sight of any possible relief, an Esquimaux sledge-dog rubbing itself against the man's legs caressingly. Here, again, there is a great advance in the human element in the picture, in comparison with previous work by the artist. Mr. Leslie's "Wayside Rest" (492) is a pretty girl of his usual type, with a background of sun-lit foliage. Mr. Waterhouse's large painting, "The Favourites of the Emperor Honorius" (462), is a very well-composed work, telling the story pointedly and clearly, and very fine in colour.

The large painting called "A Hymn to Osiris" (576), in Gallery VI., appears to be an attempt to imitate Mr. Long, with very small success; nor are the figures Egyptian, as the title should imply, but more Jewish in cast. We are at a loss to understand any claim which this picture has to its position except its size. Mrs. Merritt's "War" (560) is a curious and clever work, which appears to draw its inspiration from Paolo Veronese, as to colour, composition, and feeling, though the texture is as different as possible from his, and, in fact, quite peculiar and distinct from anything else in the exhibition. It is a balcony full of women in Italian Cinquecento style and costume, looking on at troops passing below. Though too much like a modern-antique, it is worth attention. "The Bey of Constantine receiving Guests" (593), by Mr. Bridgman, is hardly one of the best pictures by this follower of Gerôme; it is an interior of Saracenic character, in which the intended effect of light and brilliancy seems hardly to have been attained; the fat figure of the host waddling out along the line of carpet to where his guests are bowing to him, is very characteristic, and his action thoroughly realised. A small painting by Mr. Watson Nicol, "Lochaber no more" (611), where an old Scotchman and his daughter and their dog are taking a last look at their native hills, is one of the most true, pathetic, and finely-composed things in the collection. Next to it "The Church of St. David, Quimperlé" (612), by Mr. Stanhope Forbes, is interesting as a painting of a curious little building and its precincts. Mr. Reid's, "A Spill" (635), a hunting-field incident, seems to us very devoid of interest or story; far too large for the value of the subject. It is surprising how many comparatively large works there are in this year's Academy of which we must say the same, and which are like magnified cabinet pictures. Mr. Seymour Lucas's "A Whip for Van Tromp: The Admiralty, 1652" (653), is a very clever picture of a set of figures of the period inspecting a model of a ship of the period, the drawing for which one of them, probably the "chief constructor," or whatever his title then was, holds in his hand. This is admirably painted; but here, again, we cannot detect very much story in the countenances of the party, or gather much as to the light in which they regard the matter. As a painting which really has a point, and a very marked one, may be named Mr. Bottomley's "Maternité" (642), a sad, serious painting of a woman evidently worn with the struggle for life, holding negligently in her arms an infant, probably more of a burden than a joy to her, and looking at a painting of the Madonna and her Child in Glory, as if contrasting their lot, or petitioning for sympathy. The hands, very well drawn, are a little too much like a lady's hands, and do not belong to the class of woman supposed, and the Madonna figure is not well represented; but there is true pathos in this, and there is an idea of meaning something more than merely painting imitations of persons and inanimate objects; the picture is a kind of poem, with a moral beauty and significance in it. There are few enough of such, unfortunately, in the Academy collection.

Mr. Archer's "Dieu le Veult: Peter the Hermit preaching the First Crusade" (678) is a large picture crowded with figures, very well drawn and very well composed in regard to their relation to each other and to the central figure, a point in which some other painters of crowded scenes might advisably take a lesson from him. The early Lombard architecture of the building from which Peter addresses the crowd has been carefully studied; there is an oversight as to one of the background buildings on the right, which is too late for the date of the incident. Had there been somewhat more of Mediæval "wolfishness" in some of the figures, this painting should undoubtedly have claimed a central place in the hanging; as it is, it shows a careful study of composition in the illustration of an important historical incident, and certainly tells its story clearly. Opposite to it is Mr. Sidney

* See pp. 596, 626, *ante*.

Holland's picture of "The Trial of a Noble Family before the Blood Council, Antwerp, 1567" (723), a well-meant and seriously imagined picture, which lacks force and individuality. Mr. Boughton's "Suspected of Witchcraft" (753) is a painting from the same model as the sacred mistletoe in the Grosvenor Gallery, and equally wooden and bloodless; we cannot make out what the artist has been about in these two pictures. Mr. Clarke's little picture, "Homely Toil" (745), has charming points, as has another small work of his in Gallery VIII., "A Hampshire Cottage" (785), but Mr. Clarke has not fulfilled his "Early Promise."

The best work in Gallery VIII. (still omitting the landscapes) is Mr. Blair Leighton's "Little Nell and her Grandfather" (891), inasmuch as it truly realises the characters intended, and therefore fulfils the highest aim of painting of its class." "The Water Dance" (884), by Mr. Hodgson, an Arab lad dancing with a glass bowl of water balanced on his head, is very clever; the object, of course, is to go through the dance without spilling the water, and the effort to do this is very well indicated in the pose and manner of the dancer. "The Courtship of William II. of Orange" (820), while he and his adored were still children, is a pretty picture by Mr. Wynfield; far superior to his picture in the same room last year. "An impromptu Dance," by Mr. Fred. Brown (834), is a street scene at Chelsea, where some girls and children are dancing (poor things) to the music of one of those accursed barrel-organs; there is a clear light in the scene, and happiness visibly depicted on the face of one of the children. A small painting of more thoughtful class is Mr. Kindon's "Old Cronies" (786), a powerful study of two old and rather dissipated-looking women in dark garments, relieved against a whitened wall with scraps of advertisements adhering to it. Mr. Eyre Crowe's "Market-place, Evesham" (784) and Mr. Claude Calthrop's "Interior at Ham House" (833) are two capital specimens of architectural paintings. Gallery XI. contains Mr. Ernest Crofts's largest, though perhaps not his best, picture, "Charles I. on his way to Execution" (1502), walking with Bishop Juxon along the Mall to Whitehall; the king seems stately and unmoved, the bishop alone shows signs of emotion, which is very likely the truth of the matter. The question occurred in looking at it, how near does this come to being a representation of the actual facts? We may surmise that in this case it is very near. We know that the king lodged the night before at St. James's, we know his likeness and the dress he wore, we know pretty well from old prints what the Mall then looked like, we must presume that there was a strong guard of Cromwellite soldiers, and we know their dress; so that here we may be allowed to suppose that the picture represents all the main incidents in the scene as they must have happened. In Mr. Crofts's picture an incident (also probable enough) is the introduction of a sympathising Royalist among the spectators at the side of the walk, whose appearance draws the attention of all the Puritan soldiery. This is a very serious and thoughtfully-painted work. There are not many other figure pictures in this gallery calling for notice; "The Ruling Passion" (1,450), by Mr. Laslett J. Pott, representing a cock-fight held in the sitting-room of a gouty amateur, with his friends about him, is a clever thing, the best thing the artist has done to our recollection.

Of the landscapes of this year the one by Mr. Alfred Hunt which is hung, "A North Country Stream" (648) only stands on different footing from most of the rest as the work of a painter who presses into the very heart of nature to read the secret of her beauty, and to translate it in art, and who is not content to have merely mastered a clever method of showing one effect and to repeat that year by year. One result of Mr. Hunt's delicate and conscientious rendering of a scene is that his work is far too refined for Royal Academy atmosphere; it is painting to be looked at undisturbed by coarser surroundings, and loses some of its true effect on the Academy walls among a crowd of other paintings. The present work is a summer scene on a quiet river, brown under the reflections of masses of trees, every light and shade in the foliage of which has been carefully studied. Those who, like Mr. Hunt, do not paint for exhibition tone, nevertheless have their reward; and this is a picture to live with and love, beside which the annual repetition of their stock receipts by some of the popular landscape-painters seems only like a kind of trade rather than an art. Mr. Peter Graham's highland scenes with cattle, and Mr. Vicat Cole's river scenes, are quite as good as they have been for some years past, but we know them all by heart. Mr. Hook repeats one treatment of the sea very much too, but it is so powerful and true a treatment that one can afford better to see it repeated; and his "Catching a Mermaid" (28), one of the two hung on either side of his own portrait, perhaps on the whole surpasses anything he has ever done in indicating the motion, the colour, and the surface of sea-water in a breeze and under cold grey light; we seem to forget paint in looking at such a work, and feel the salt sea breeze in our faces. We feel an increasing doubt in this respect as to Mr. Brett's in some senses wonderful sea-pieces. He has given himself lately to the task of realising the sea in calm weather and under bright summer sun, and in his endeavour to do this with the greatest force and vividness he seems to have overstepped the mark and made his seas too blue, hard, and steely. But in realism of foreground he is almost unapproachable, the sand and rocks in "Those Yellow Sands" (142) are deceptive to the eye in their truth and powerful painting of every detail. Mr. Goodwin sends an "Arabian Nights" scene which is not quite equal to his scene from "Sindbad" a year or two ago; it is "The Enchanted Lake" (83), and looks a fine piece of fanciful and imaginative effect, but is hung rather too high to be properly examined: we confess to a feeling that a little of this ideal and fairy landscape-painting is enough; it is a kind of thing, however well done, of which the interest is not very lasting; his other work, representing Prospero's island (1,521), is admirable. Mr. Leader's "Parting Day" (98) is gorgeous, but hard; Mr. Halswelle's landscape (688) is steely grey and hard, as hard as steel itself, the repetition of an effective receipt recently discovered, and that is all. If these works fulfilled the ends of landscape art, there would be little of intellectual interest in that art. Mr. MacWhirter, who has been in the habit of painting the same birch tree too often (perhaps it attains a certain market value), has, at all events, gone out of his beaten track in his two landscapes in Gallery II., "Corrie, Isle of Arran," and "Sunset Fires" (157, 164); the former, a bright breezy seacoast picture, is the best; in the latter, the sunset is rather colour than light; it is meant for a very fine effect, and only just fails. A really fine and impressive winter landscape is Mr. Farquharson's "The Joyless Winter Day" (764), a waste scene of snowdrift threatening to bury the sheep in its folds: this is a fine and very real thing. "The Adder's Pool, Carnarvonshire" (255) is a powerful piece of effect by Mr. Oakes, whose "Salmon River" (376) is, however, a great failure, far beneath what the painter once did when he worked more conscientiously from nature, and made less attempt to be picturesque and poetical, for which attempt all landscape-painters have not the requisite gifts, and would do well rather to make the more of the gift of realism without trying to be poetical. "Moonrise on a Teesdale Moor" (294) by Mr. M'Lachlan, is a powerful sketch rather than a picture; it looks like moonlight, and in this respect may be advantageously compared with the large moonlight picture in Gallery III., by Mr. Yglesias (339); if the painter ever saw so much light and such an amount of detail in moonlight as that, he has seen what no one else has ever seen. It is astonishing how few people who undertake to paint moonlight seem to have observed how very little light there really is in a moonlight scene; even under the brightest moon, how little detail can be really seen, and how dark and massed the shadows are. Mr. H. W. B. Davis's landscapes are all what one may call solid and well painted, and the cattle in his foregrounds admirable; landscape and cattle seem in his paintings mutually to help each other; but, apart from the cattle, his landscapes this year seem artificial and uninteresting. "Springtime at Tillietudlein Castle," by Mr. David Murray (843), is a pretty Spring effect, with plenty of light in it, though it strikes us as an imitation of some other painters' style, a conviction which not unfrequently comes across one at the Academy exhibition. "The First Frost" (621), by Mr. A. Parsons, is a specimen of landscape which is no mere receipt-making, but a most carefully-studied portrayal of character and colour of woodland landscape at the time of year depicted. Mr. J. B. Knight has two or three good landscapes in his well-known style, and Mr. H. Moore a fine study of calm sea (1,444), and a still better work, "Between the Showers" (1,461), a coast scene dashed over with flying gleams of light, after the manner suggested by the title, and carried out with very picturesque force and freedom.

If there were more of interest in the sculpture of this year we should not have dismissed it at the close of an article; but there is a great deal that is very poor and vulgar, and scarcely anything that is of the highest rank. Mr. Simonds's "Perseus" is disappointing. It is a fine head, but the attitude is somewhat strained and stiff, and the pose of the figure as a whole does not impress us nearly so favourably as it did in the small sketch sent to us as an invitation card to a private view of it. Mr. Birch's "Earl of Beaconsfield," the model for a colossal statue for Liverpool, is a very successful example of a portrait statue of this class. The robes are treated with sculpturesque breadth, and the head is admirable, both as a likeness and in its characteristic pose and expression. Mr. G. A. Lawson sends an interesting study of the girl figure, as distinguished from the matured female figure, in his "Girl and Tortoise" (1,549), a girl of fifteen or so, nude, holding a tortoise in her hand. There is no idea conveyed in the figure. It is a figure, that is all; but it is pretty in its unaffected simplicity, which is more than can be said of Mr. Stirling Lee's contorted figure called by the magnificent title, "Dawn of Womanhood," one of the instances of titles far above the real achievement of the work. The recumbent figure, with head thrown back and agonised expression in the features, suggests rather the idea of "night-mare." Mr. Fry's "Vengeance," a life-size of a female figure creeping on hands and knees, hiding a dagger behind her, is odd-looking from some points of view, but original and forcible in its idea and execution. Mr. Onslow Ford's "Henry Irving as Hamlet" is a spirited and real likeness. Among the numerous busts may be named as of special interest Miss Ferguson's "Miss Macleod of Macleod" (1,547), a carefully-finished portrait of a very fine and interesting old lady's countenance; Mr. Milo Griffith's "An Evening Star" (1,550), a bronze ideal bust; Mr. Boehm's "J. E. Millais" (1,581), the sculptor's diploma work; Mr. Havard Thomas's "Mrs. Bernard Cammell" (1,603); Mr. A. Gilbert's "Study of a Head,—bronze" (1,600); Mr. R. B. Browning's "Adelia Abbruzzesi" (1,604), which is really a portrait study, also in bronze (Mr. Browning seems determined to fly at everything, having appeared successively as figure-painter, landscape-painter, and sculptor); and Mr. Amendola's "Lady Brooke" (1,671), a beautiful head, but somewhat spoiled in the marble by over-finish and polish, which takes away the characteristic light and lustre of marble, and gives it an almost waxlight surface. Among sculptural vagaries is by far the worst we ever remember at the Academy, a figure of a nigger minstrel, with bronze face and hands, and coat and other vestments of different-coloured marbles, under the title, "Oh, goodness, gracious me!" The sculptor is one Calvi, we presume an Italian; English sculpture has never fallen so low as that, and the committee did little credit to their judgment in admitting such a piece of vulgarity, which does not deserve the name of art. "But you would admit the same thing painted?" Yes, on a small scale, at any rate; but what is admissible in painting is not necessarily admissible in sculpture, which is the art of pure form, not of realism. And that is exactly the reason why a higher standard of criticism must be applied to sculpture than to painting, as it is, almost unconsciously, by many critics,—a matter of which we have heard sculptors complain. They should not do so; it is a compliment to the dignity and intellectual character of their art. A light character sketch may pass muster in painting, which would look grotesque in clay; a figure may interest us in painting from beauty of colour, carrying off weaknesses in the form and conception; the same figure cut out in cold marble must have much higher abstract qualifications to evoke our sympathy and justify its existence.

Surveyors' Institution.—The next meeting will be held on Monday, May 21st, when a discussion will take place on the Government "Agricultural Tenants' Compensation Bill."

THE KING'S PALACE AT THE TOWER.

Gloster. My gentle nephew, they were ill-advised
To tutor you with such unfitting terms
(Whoe'er they were) against this royal mansion;
. . . . Cæsar himself,
That built the same, within it kept his court,
And many kings since him; the rooms are large,
The building stately, and for strength beside
It is the safest and the surest hold you have.
T. Heywood's "King Edward IV."

The Office of Works have made rapid progress with their scheme of demolition at the Tower, to which Lord Granville alluded at the Royal Academy dinner. Scarcely anything remains but a carved stone trophy and one heraldic shield (which are inserted in an adjacent wall) of the storehouses and Ordnance offices which in the course of last century arose over the ruins of the King's Palace. One may now obtain a fair view from the south-east of the Conqueror's "Arx Palatina," "la Blanche Tour deinz la tour de Londres" of King Edward III., conspicuous from this side for its distinguishing peculiarity of a bold half-round bow which constitutes the apse of the beautiful Early Norman chapel dedicated to the Evangelist St. John. Commanding the river, as of yore, Gundulf's Keep again stands proudly aloft in solitary pre-eminence above the surrounding works of the inner and outer wards. Once more is plainly visible from below the southern front, having in its uppermost, or "state" floor, the picturesque short arcade of eight windows set within recesses in couples, having a plain balaster in common,—one pair of which are probably the only windows in the Keep that present quite their original appearance. The arcade opens from the mural gallery, running around the exterior of the Council Chamber and the adjoining room, wherein the contents of the former Horse and Queen Elizabeth's Armouries are in course of re-arrangement.* From one of these windows Flambard, bishop of Durham, let himself down, not forgetting his pastoral staff, by a rope, which had been conveyed to him in a flagon, having intoxicated his guards with some of the good cheer that was plentifully supplied to him. Flambard, "*pacificator Britannie, sir pessimus*," Rufus's faithful, albeit rapacious minister, had, by severe exactions, greatly promoted the Tower works. He is the first state prisoner here of whom anything certain is known. Sir F. Palgrave says he was confined in the Council-chamber, under custody of Walter de Magnaville (or Mandeville, ancestor of the earls of Essex and dukes of Manchester), hereditary Constable. Committed to the Tower 1st Hen. I., more to satisfy the people's resentment than the king's, and thus handsomely lodged, he seems to have been well treated, since the large sum of two shillings was assigned for his daily needs. Though injured by his descent, the rope proving too short for a fall of nearly 70 ft., he made good his escape to Normandy. Flambard eventually recovered his see, where he completed the cathedral, and added a moat to the Palatine Castle; he also lived to endow Kepyer Hospital, and found Norham-on-the-Tweed. In the southern front appear the four windows of the chapel south-in aisle, two of them in the exterior pilaster strips against this face of the Keep, with three windows of the triforium above. The chapel walls are from 4 ft. to 5 ft. thick; in common with the rest of the White Tower its exterior was defaced, at the hands of Wren, by pointing with flint chips and mortar and the substitution of Portland for the old ashlar dressings; but the windows, enlarged for the most part throughout the structure, are original openings.

That the White Tower was not designed for a customary residence is evident from the tripartite division of each floor, the many massive posts in the several rooms, and the inconvenient means of access from one stage to another. Its original main entrance is not ascertained. Tradition points to the since-enlarged door on the northern, but most exposed, side, about 12 ft. from the ground, from which there is a modern descent to the prison-vaults. Another opening above, now used for the reception of heavy stores, bears traces of an over-arch as though intended for a door of greater size. It would not appear, however, that there ever stood by this face of the Tower any barbican or fore-work, as at the later Norman keeps of, for instance, Scarborough or Rochester. Moreover, the interior, whilst admirably adapted for purposes of safety, is comfortless; it has but four garderobes and one fireplace, and, except in the Chapel, was entirely devoid of ornament. The present door opens into a dark first floor, whence a turnpike vise in the circular north-eastern (Flamsteed's) turret leads to the basement and to the floor above, this latter being entered by a bent and narrow mural passage. From the second floor two turret newel staircases commence to the upper story and battlements. Further, the Council Chamber and adjoining room on the upper story are approached only by galleries in the walls too narrow for two persons to walk abreast. There was another approach from the royal lodgings, consisting of a well-stair, in the southern wall, from whose head a short gallery leads into the Chapel. This is the staircase, commencing at about 14 ft. from the ground-level, by which visitors now enter; at its foot Sir Christopher Wren found the supposed remains of the young princes,—King Edward V. and his brother. Another doorway communicates between the Chapel and the Banqueting Chamber on the second floor.* The mural gallery, about 3 ft. wide, around the "state floor" opens into the chapel triforium by one end at the south aisle, by the other at the north aisle on the chevet.

The removal of the store-houses from each side of the roadway into the inner ward from the drawbridge, flanked by the Well and Cradle Towers on the outer ward, reveals the western side of the Salt Tower. This, called Julius Cæsar's Tower in the Survey of 1532, caps the inner ballium south-eastern angle.† Its western face retains traces of the curtain wall, 10 ft. thick and about 20 ft. high, that stretched westwards to the Lanthorn, and thence to the Wakefield, or Record, Towers. The curtain, here subsequently displaced for the Queen's Gallery, formed part of a revetment to sustain the heaped-up ground along the fronts of the modern inner ward. The natural elevation from the waterside is perhaps increased by the soil piled from the ditch which Longchamp re-excavated. The slope trending northwards is very marked in the rise,—one in ten,—through Edward III.'s Gatehouse,‡ in the steps beyond, up to the parade and Tower Green, and in the flight of stairs down to "Mint-street," at the north-eastern corner by the Martin Tower. Where the Palace stood the levels between the two wards are almost equal. Following the Norman plan, manifest at Rochester, Carlisle, Porchester, Bamborough, &c., the ordinary lodgings for the castle lord and his suite were placed within the inner ward by the keep. But a notable feature of the Tower of London is that the palace buildings had, in addition, encompassing walls of their own. Situated on the lower slope of the inner ward, at its south-eastern corner, they lay within an area connected with the White Tower by a northern and a western wall. The former of these, known as the Wardrobe Gallery, united the Keep with the Broad Arrow Tower, having at its centre point a circular tower and turret,—the Wardrobe Tower. In the Survey of 1532 this is styled "the tower at the east end of the wardrobe"; the gallery remained until the close of the succeeding reign. The western wall joined the northern face of the Wakefield Tower to the Keep. It also carried an intermediate gateway between two towers, similar in shape to the Byward and Middle Towers, — Cold Harbour Tower,§ the now site of the garrison main guard. This western wall and the curtain between the Wakefield and Lanthorn Towers were probably as ancient as the former of those two towers. The two walls, their towers, and the four curtains which, meeting at the Salt Tower, made a defence in this quarter for the royal precincts, as well as the apartments themselves, clearly appear in a plan of 1553. In the earlier surveys the collected buildings, dating from Stephen and Henry II., are named the "Inner Ward"; they formed the first exterior defence to the Conqueror's citadel. The three Wardrobe, Lanthorn, and Cold Harbour Towers are shown as cylindrical in shape, resembling the Wakefield Tower, which is Late Norman. The various apartments would seem to have ever been under repair, absorbing much of the money that from time to time was expended upon the Tower.

During King Henry III.'s prolonged reign, the more pronounced character of a palace was assumed by the fortress, which hitherto had been mainly a refuge and a prison. William Rufus built the greater part of the *enceinte* to the modern inner ward; Flambard deepened the ditch.* Henry II., and his two sons after him, expended considerable sums upon their residence here, its storehouses and outworks. When King Henry III. ascended the throne the inner ballium, then in all probability abutting towards the south upon the river foreshore, was guarded by the Hall (Wakefield); Robyn the Devyll's (Devereux); Bell; Martin, or Jewel; Lanthorn; Wardrobe, and Cold Harbour Towers. To later reigns we must assign the other existing towers along the inner and outer walls. The Devereux Tower (restored by Salvin) is certainly no later than King Richard I. or King John, if, indeed, it be not co-eval with the Wakefield Tower, whose basement dates from King Stephen or his successor, and is a marvellous piece of masonry for that or any other subsequent period. King John used the Martin, formerly Brick, Tower (whither the regalia was removed from the White Tower, *temp.* Charles I.) as his treasury,† for which purpose it regularly served from the 37th Hen. III. The last-named monarch built the upper story of the Wakefield Tower, and close by, to the north-east, the Banqueting-hall (whence its earlier name), in which he celebrated his nuptials with Eleanor of Provence. This hall was demolished during the Commonwealth. He also erected the scarp of the outer ward, much of whose original fabric survives, the Well and Develin Towers thereon, together with the Quay. The Develin Tower stands wholly in the ditch, at the furthest south-eastern extremity of the fortifications, joining an ancient dam for keeping up the water in the moat. It was known *temp.* Richard II., when Chaucer was clerk of the works,—as Galighmae's; in 1549, as the Galleyman; and in 1641 as the Iron Gate Tower. To this same sovereign (Henry III.) is due the commencement, if not the completion, of the Cradle, Salt, and St. Thomas's (the Water or Traitors' Gate) Towers. The Lanthorn Tower, its foundations just uncovered, had always been part of the royal Palace, containing the king's bedchamber and private closet. It was circular in form, and most likely of the same age and size as the Wakefield Tower. The Queen's private lodgings and garden, with the Queen's apartments and gallery, occupied the space that is now cleared. Numerous entries in the Pipe, Mise, Close, and Liberate Rolls‡ testify to the extent and costliness of Henry III.'s operations. Military engines and stores were sent in, timber was brought from Havering, iron, steel and charcoal were purchased for the smith, with large supplies of lead, stone, hide for the balistæ, and other material. The Pipe and Liberate Rolls contain entries for 2nd March, 1238, relating to repairs in the King's chambers. The completion of the chimney in the Queen's chamber and the making a good and fitting spur (partition) of boards between the chamber and chapel,§—the chapel being the oratory still shown in the south-eastern recess on the first floor of the Wakefield Tower as that where Henry VI.'s body was found. In 24 Hen. III. occurs an item of 30*l.* 16*s.* 4*d.* for "una navata" (ship-load) of marble and four ship-loads of Purbeck. Mr. Clark observes that only in the cills of the two windows in the sacrarium of St. Thomas's Tower has Purbeck stone been found in position, though traces exist in the adjacent rampart walls and elsewhere. The activity with which the works were conducted is evinced in the immediate rebuilding of the St. Thomas's Tower, which twice fell down: at the second occasion, it is said, on the first anniversary of the former fall (April 23rd, 1240). The vulgar ascribed the second accident to the indignation of the martyred archbishop and saint at the injury which the new defences threatened to the

* See *Builder*, vol. xliii., p. 644 (18th November, 1882).

* In the eastern wall of the Banqueting Chamber is the circular-headed fireplace with vertical flue, like to that in Colchester Castle.

† For a good view of the Salt(petre) Tower, recently restored, see Archer's "Vestiges," part iii. 1846.

‡ The Garden Tower of Henry VIII.'s survey, so called from its propinquity to the Constable's garden; in 1597 it bore its present name of Bloody Tower.

§ Engl. *ceald-herberga*, cold herberge (Fr. *abri*) or shelter.

* Matt. Paris describes his ineffectual project to fill the ditch from the Thames.

† He deposited 4,000 marks here in 1212. This should not be confounded with the present Brick, or Burbidge, Tower. The Middle used to be called St. Martin's Tower.

‡ Conf. amongst other authorities Bayley's "History of the Tower," and a paper read by Mr. G. T. Clark in 1866 at the congress of the Archæological Institute.

§ Et in cameris Regis in turri Lond. reparandis et eliminee camere Regine perficiendis et uno spiro de bordis et decenti faciendo inter cameram et capellam nove turrelle eiusdem turris prope aulam Regis versus tamisiam, xvi*l.* iij*s.* vij*d.* per breve . . . ."—*Rot. Lib.*

citizens. The stability of the existing fortifications throughout the Tower is the more remarkable considering the nature of the ground, in one part traversed by the old City ditch, on which they were placed. On the 24th of February, 1240, extensive repairs were ordered for the Queen's chamber; the same entry of the Liberate Roll transcribes the king's commands for improved drainage. Later in the year the keeper is told to whitewash the whole of St. John's Chapel, and fit it with three painted windows, representing the Virgin and Child, the Trinity, and the Evangelist; to paint the rood and beam beyond the altars, and to whitewash all the White Tower. In 39 Henry III. (1254-5) is charged a sum of 22*l.* 0*s.* 20*d.* for a house for the elephant presented to the king by Louis IX. of France: a notable addition to the menagerie Henry III. had established in the Lion Tower (at the Bulwark or Spur Yard), on receiving three leopards, "in token of his own regal shield," from the Emperor Frederic II. The successors to the well-cared-for lion, the famous Polar bear from Norway who used to go "a-fishing in the Thames," and the animals of which Addison discourses so pleasantly in his *Freeholder* (No. 47) were removed about fifty years ago to the Zoological Gardens. The Lion Tower was soon afterwards replaced with the present contemptible ticket-office.

A chosen, at times an enforced, home of English monarchs from Stephen to James I., this ancient Palace's story is told in the lives of the princes of our two greatest dynasties,—the Plantagenets and the Tudors. We lately touched upon some of the events it witnessed; to chronicle its annals fully were to recount the most stirring, the most resplendent, the most saddening episodes of our country's history. Within those walls, which gradually disappeared in the times of the Commonwealth and the Stewarts, sovereigns and their subjects, their favourites and their victims, have alike experienced the extremes of good and evil fortune.

ARCHITECTURE AND ARCHÆOLOGY IN WESTERN AND EASTERN SYRIA.

STEADILY, though silently, the great work of the exploration and delineation of Palestine is assuming its position among accomplished facts. That position is one of far more exhaustive importance than was anticipated even by the most sanguine of the early supporters of the Fund. Of the One-inch Map, in twenty-six sheets, with its elaborate hill-shading, and of the hardly less instructive, while more handy, and more beautifully engraved, reduced map on the ½-in. scale, we have spoken when they were brought before the public. The large map is to be accompanied by seven quarto volumes of descriptive text. Of these five are now printed, and the sixth, which is devoted to the description of Jerusalem, and the seventh, in which the natural history of Palestine, under the editorship of Canon Tristram, will be given in descriptive text, illustrated by coloured plates, are in course of execution. When the whole is complete it will form a *corpus* of historic, archæological, architectural, geological, physical, and physiological information as to the Holy Land to which it will be difficult to find a parallel as to any country in any library in the world. It will form, in fact, a monograph of the Holy Land, reaching back to the early times when the exodus was unaccomplished, showing the relationship between the occupants of Philistia, Phœnicia, and the inland valleys known as the abodes of the Canaanites, and the natives of the surrounding country, and detailing most of the changes wrought by the conquest under Joshua.

In all this, while there is much that is old, as well as much that is new, the old assumes a fresh emphasis and meaning under the light thrown upon it by the facts collected by actual survey; and this is the more so from the care that has been given to avoid theory, or the advocacy or attempted demolition of theory. In the early stages of investigation, theory, no doubt, forms a valuable aid to the discoverer. In fact, in such a case as that of Palestine, it may be said to be almost essential to any attempt at the task of discovery. Few men would have given their attention, their time, or their money to effect the survey of a country which possesses so little in its physical condition to attract the traveller, unless under the influence of theory; whether it were, as 700 years ago, the devout faith of the Crusader, or whether it lingered on the footsteps of Constantine, and strove to reconstruct, in imagination, the mysterious *peribolí*, vaults, and pinnacles of the Temples of Solomon, of Ezra, and of Herod. It was the love of men like the founders of the Fund for the Holy Places that led them first to form theories on their locality; then to throw on those places the light of survey; then to fight,—fiercely it might be, if briefly,—against every new deduction that was irreconcilable with older opinions; and finally to subside into acquiescence with the extinction of all imperfect theories in the presence of ascertained fact.

The third volume of the Memoirs is enriched with an appendix containing the latest particulars collected by Captain Conder, R.E., during the tour of their Royal Highnesses Prince Albert Victor and Prince George of Wales through Syria. Before these illustrious visitors doors that are usually closed flew open. And thus the Memoir is enriched with the plans of the heretofore inaccessible Sanctuary at Hebron, which were first drawn by Captain Conder, and appended to his report to the Prince of Wales on the visit of the Princes to the Holy Land,—a document which is reproduced in the third volume of the Memoirs.

The outer walls of this Sanctuary, which is regarded by the Moslem with even greater reverence than "the noble sanctuary" at Jerusalem itself, inclose a quadrangle measuring 197 ft. in length by 111 ft. in width externally. At the four angles are buttresses, 9 ft. wide on each face, and projecting 10 in. Between these there are eight buttresses on the end walls, and sixteen on the longer side walls, each measuring 3 ft. 9 in. in width, with intervals of 7 ft., and a projection of 10 in. All the buttresses are 25 ft. high, and they stand on a base wall which is flush with the face.

The masonry of this wall bears a very close resemblance to the older portions of that in the great wall of the noble sanctuary at Jerusalem. It may be truly called dressed megalithic work. The average height of the courses is 3 ft. 7 in., which is also that at Jerusalem. The largest stone seen measured 24 ft. 8 in. long by 3 ft. 8½ in. in height. That similar projecting buttresses were used at Jerusalem is proved by the discovery of two remaining *in situ* in the north-west angle of the Haram inclosure. Here, however, they were 4 ft. 6 in. wide, 8 ft. apart, and projecting 6 in. The thickness of the walls at Hebron is 8 ft. 6 in. between the buttresses, which is the thickness also of the corresponding wall at Jerusalem. The stones on the inner face of the wall are dressed plainly, without any draft. On the exterior the face of each stone (as at Jerusalem) is drafted on each of its four edges with a shallow and very carefully finished draft, generally about 4 in. wide, and recessed ½ in. from the face of the stone. The tooling of the draft is executed in precisely the same manner in each wall, an axe or fine-toothed instrument having been employed. A second band of similar tooling, about 4 in. wide, runs round the face of the stone, immediately within the draft, and the rest of the face is finished with a pointed tool struck by a mallet. The absolute identity of the character of the masonry in the walls of these two ancient sanctuaries is a feature of great importance, and one which points with tolerable certitude to a near identity of date, as far as the walls in question are concerned.

To the plans, sections, and sketches which Capt. Conder appended to his "Report on the Princes' Visit to the Holy Land," is added in the Memoir a view of the south-eastern angle and entrance to the Haram at Hebron, taken from a photograph. The Memoir is copiously illustrated by this kind of plate, on the value of which to the architectural student it is needless to insist. In the volume of the Memoirs which we have on the table, and of which we are now speaking, particular interest attaches to the views of the west door of the Church of St. John, Gaza, and of the interior of the same church, which is now used as a mosque. An extra or third aisle has been added by the Moslem, on the south, to this old twelfth-century church. The mihrab, or prayer niche, is at the east end of this aisle, but is skewed so as to point to Mecca. The style of ornamentation is very plain, and that of the architecture is severe, in the interior. The original total length was 108 ft. 6 in., internal measure. The nave is 21 ft. 6 in. in the clear, and each of the aisles is 13 ft. wide. The true bearing of the centre line is 109°. The nave has a clearstory, and a second order of pillars stand on the cornice, which runs round the piers above the capitals of the lower order of pillars. The upper pillars are almost of equal diameter with the lower, and have a heavy effect. All the pillars and cornices are well cut in hard dark grey marble, and the diagonal dressing is marked on the base blocks. The spans of the various bays are irregular, varying by about 1 ft.

The roof is entire, with groined vaulting; the windows and arches are pointed, but are broad in proportion to the rise of the arch. On one of the upper order of the pillars on the south side of the nave, on the pier nearest the east end of the church, is a curious design, representing the seven-branched candlestick in a wreath, with a tablet below bearing a Greek inscription.

The west door of this church is a beautiful specimen of the Italian Gothic of the twelfth century churches in Palestine, with delicately clustered shafts and pillars, and deeply undercut lily-leaves on the capitals. The church was dedicated to St. John the Baptist. Over the door of the court of the mosque is an inscription, including the name of Kalawûn, and the date 707 A.H.

The architectural student will delight to linger over the pages of this Memoir, exhaustive as it is of the topography, orography, hydrography, archæology, and architecture of Western Palestine.

The frontispiece to the third volume of the Memoirs is a coloured plate, containing reduced copies, drawn to scale by Captain Conder, of five very curious ancient *freschi*. Of these four are taken from a chapel on Jebel Kuruntul, a mountain which rises as a vertical precipice, 1,000 ft. above the level of the plain, near Jericho, which is shown on sheet xviii. of the 1-in. map. The precipice is burrowed with hermits' caves, and two chapels, one of which is still in use, are built against the rock. The reader is strongly reminded of the account given by Scott in the Talisman, of the residence of the Hermit of Engaddis, and of the mysterious adits and shafts connecting the cave with the chapel. The glamour of the great magician has been thrown over the scene, but it appears that there is some substratum for the account of the perforated mountain.

The lower chapel, on the side of the mountain, is reached through a hole in the roof of an excavated chamber, about 12 ft. or 15 ft. wide. There was formerly a staircase cut in the rock outside, but this is now broken away. The cemented walls of the chapel are covered with Mediæval *freschi*, adorned by the *graffiti* of numerous pilgrims. The eastern portion of the rock-cut chamber is raised, and there were originally windows on the south side. The altar stood on this elevated floor. On the left is a niche, probably for the *piscina*. On the walls are three compartments of colo. red *freschi*. The centre represents a seated figure, in blue and red robes, with a red and gold nimbus. The circular-backed chair or throne is yellow; the ground is blue. Two circular discs are represented, one on either side of the head of the figure, over which is inscribed in bold uncial Greek, ΟΠΑΝΤΟ ΚΡΑΤΩΡ (the Creator). To the left is a much dilapidated figure of the Virgin, with the inscription, ΘΥ, the remains of ΜΗΤΗΡ ΘΕΟΥ (Mother of God), and to the right the upper part of a figure with an aureole, and hand (now black) stretched towards the centre compartment, with the title, Ο ΑΓΙΟΣ ΙΩΑΝΝΗΣ (the Holy John).

On the left of the altar, on a blue ground, is the figure, now black with age, of an angel in the attitude usually given to the Angel of the Annunciation. The legend is ΟΑΡΧ ΓΑΒΡΗΛ (the Archangel Gabriel). On the north wall to the left is the representation of St. Sabas extracting a thorn from the foot of the lion, the animal putting out its paw in the most trustful attitude. This serves, Captain Conder remarks, to date the paintings not earlier than A.D. 532, when St. Sabas died.

On p. 214, we find a description of another important pair of chapels, which form part of the ruin of a Mediæval monastery (on the same sheet of the map) at a place called Kusr Hajilah. The wall which surrounded it remains almost perfect on three sides, but is destroyed on the north. The measurements are 125 ft. east and west, and 163 ft. north and south. There is a projecting tower on the south and west walls, and smaller towers on the north and east. The south tower projects 9 ft., and was 17 ft. wide; that on the west is 14 ft. by 35 ft.

The principal chapel has a bearing 99° west. It has an apse with a domed roof on the east, the diameter 12 ft. 10 in., the depth from the chord 8 ft. to the back of the curve. On the south side were the remains of a staircase, leading to the walls above the apse. The second, or smaller chapel, was more perfect, having a sort of tower or octagonal lantern over the body of the building, supported by groined vaulting forming pendentives, the arches springing from the corners of the building. The chapel measured 9 ft. 6 in. across by 14 ft. long, interior measure. It had a door 2 ft. 5 in. wide on the west; a window, 2 ft. 8 in. wide, on the north; two windows, 2 ft. wide, on the south. On the east was the apse, equal in breadth to the chapel, but having two little apses within it; the northern, 5 ft. 2 in. in diameter, and 1 ft. 10 in. deep. The total height of the chapel was 16 ft.; the lantern above, on the interior, was a circle, 9 ft. in diameter, with four windows. It was 6 ft. high to the cornice, making a total 22 ft. from the floor. There is a vault, 10 ft. deep, below the chapel.

The nave of the main chapel was 44 ft. long, and the other dimensions are given with the same careful accuracy as those we have above cited. There is a very good ground plan of the whole group of buildings. The interior walls of both chapels were painted in fresco, the paintings, as in the former case, appearing to have been executed at two different periods. A descriptive account of these ancient portraitures is given, and the frontispiece contains a reduced coloured copy of the painting of the south-west pendentive, which represents three saints being robed by angels, probably emblematic of the resurrection. Over the upper figure is the legend ΟΣΙΜΩΝ (Simon). Among the figures of saints on the south wall the legends identify St. Andrew of Crete, St. John Eleemon, Saint Sylvester, Pope of Rome, and Saint Sophronis, of Jerusalem. The name of Sylvester the Second, who was a famous Pope, brings down the dates of these inscriptions to about 998 A.D.

It is illustrative of the good service done in the survey and exploration of the Holy Land to cite a note appended by Captain Conder to the description of Kusr Hajilah:—"Visited 17th November, 1873, 1st January, 1875. Note. This place was revisited by me on 8th April, 1882. The Greek monks from Mar Saba were engaged in building a new monastery on the spot, and had deliberately scraped off all the frescos, not a vestige remaining. A better instance of the value of the survey work could hardly be given.—C. R. C." The visit here referred to is also mentioned on p. 29 of the "Report of the Princes' Visit to the Holy Land," where it is said that "this interesting monastery in the plains of Jericho was found to be undergoing repairs by the Russo-Greeks, after having remained nearly eight centuries in ruins. All the ancient frescos which adorned the walls of the two chapels within the precincts of the monastery have been entirely destroyed by the monks!

It is unnecessary for us to express any opinion as to the manner in which these records of the past have been rescued from a fast-impending oblivion by the conscientious work of the Royal Engineers who executed the survey of Palestine. We have but touched the fringe of a great subject. It is pretty clear that many dark spots will be illumined, many imperfect theories reduced to harmonious order, and our general view of the Eastern growth and development of Pointed Architecture very materially cleared up, by the records of the Crusading Architecture of Palestine. It will be a task of no ordinary interest to compare the "Synoptic View of the Building Epochs of the City of Jerusalem for 4,000 years," which we published in this journal on the 4th of January, 1868, with the "Notes on Architecture in Palestine," on p. 411 *et seq.*, of the third volume of the "Memoirs of the Survey of Western Palestine." The "characteristics" which, in that table, we indicated as matter for the attention of the officers of the survey, have proved, indeed, to be an anticipatory index of an amount of information such as, we should think, has rarely been collected in so brief a space of time, at once so new and so exact. Thus we indicated "excavated tombs" as a feature characterising Jewish work. The whole subject of Jewish tombs, with the curious *loculi*, arranged on two distinct plans, will be found reduced to system in the Memoirs. Again, the indications of date which we said would be given by the different types of megalithic and other masonry, have been followed out by something like an exhaustive account of the various massive styles adopted by Jewish, Moslem, and Christian builders. The "Arabic inscriptions," the "Christian inscriptions," the "Templars and Hospitallers' crosses," the records to be won from the "walls of churches and monasteries,"—all pointed out by us in that table,—might be taken almost, as we observed, for the table of contents of the Memoirs, so far as architecture is concerned. For the thorough and successful development of a plan of research from which much was to be anticipated, it would be difficult to find anything in more thorough accordance than was the "Synoptic View" given in the *Builder* in 1868, and the Memoirs of the survey published in 1882–3. And this is none the less remarkable from the fact that the two works were conducted by independent writers and explorers.

On one point the Survey of Moab, of which a popular account is, we hear, in preparation, will throw a light on a subject not anticipated by ourselves. We commenced our "Characteristics" by "Cyclopean Masonry." Under this, it is fair to state, we did not, fourteen years ago, include rude stone monuments. Nor have such been found in the Holy Land. But indications of their former existence there have been found. At one time these were quite unintelligible; but now, from the features of the numerous rude stone circles, cromlechs, and menhirs that have been found to the east of Jordan, they are perfectly plain. Thus, it was not due to the fact that none of these structures were erected in Western Palestine that none have been found within its borders. Sunken depressions in the live rock are found to accompany the dolmens and other rude stone relics in Moab. Similar depressions occur in Palestine, and are thus explained. There can be little doubt that they were intended for sacrificial purposes, connected with the worship associated with the rude stone monuments. Thus a new historic force is given to the record how "all Israel that were present threw down the high places and the altars out of all Judah and Benjamin, in Ephraim also, and Manasseh, until they had utterly destroyed them all." The high places of Baal Peor yet bristle with menhirs and dolmens. In the Holy Land not one, we believe, has been found. But the blood basins and channels, associated with the monuments to the East, are found in like spots to the west of Jordan. Can there be a more distinct proof of a great "cleansing of the land" from the idolatrous structures?

FOOD FOR THE MILLION.

Our readers will have seen with satisfaction the mention of the opening of the new Central Fish Market in our last number, and, with us, will watch with some anxiety to see how so promising a plan actually works. We regard it as a good omen that the commencement of business actually got a start of the formal opening of the market. The arrivals of fish exceeded the anticipations formed for the first day's operations; and consignments from Brixham, Portsmouth, Hastings, Whitstable, and Grimsby were sold by auction at five a.m. The appointment of an official salesman, to whom fish can be consigned for sale by auction, and who will remit the proceeds to the consignors the same evening, is a boon to the centres of the fishing trade of which it seems to us hard to exaggerate the importance. We trust that when fish is thus sold in open market for prices that will not, we suppose, much exceed 1½d. per lb., it will prove impossible for this actual price to be multiplied, as at present, by some tenfold before the retail allotments get into the kettles of the purchasers.

It is further matter for satisfaction that at the meeting, on the same day, of the general committee of the International Fisheries Exhibition, preliminary to the opening of the exhibition itself, the royal and distinguished company were invited to partake of a luncheon, which was offered as a specimen of the cheap fish dinners which will be served in the cheap fish dining-room during the progress of the Exhibition at the moderate charge of 6d. a head. It was stated that the average cost of the fish served on this occasion, at Billingsgate, was 1½d. per lb. This, it will be remembered, is the price at which we have repeatedly stated that fish could be delivered in London. It now lies with the public to give that support and sanction to the liberal action of the City authorities in opening the new Central Market, which shall make it a complete success. And that success, let it be remembered, consists in two elements; first, the fish supply of the market; and secondly, the free use by the public of the facilities which it affords them. This, it is important to remember, should be secured at once, before any organisation of middle men or other intermediaries has time to introduce, at Farringdon-street, the practices so loudly condemned at Billingsgate. The true test of the success of the new market will be the extent to which cheap fish now becomes a constant article of the diet of the poor.

A RECENT DECISION.

DELAYS WITH THE PROGRESS OF WORKS, AND ON THE FUNCTIONS OF ARCHITECTS AND ENGINEERS.

THE case of Lawson *v.* The Wallasey Local Board, reported in the 52 *Law Journal* Reports, p. 302, which is a decision of Justices Denman and Manisty, and which has since (on April 11) been upheld by the Court of Appeal, is one of considerable interest to all those who are connected with building and engineering works. Like many of this class of cases, it is complicated with various details, which render it somewhat less valuable as a guide on future occasions, because the next case of a similar kind may arise out of different facts, and principles enunciated may be difficult to apply under varying circumstances. The dispute arose out of a contract to excavate part of the bed of the river Mersey, contiguous to Seacombe Ferry, and the two main questions upon which the judgment of the Court turned were whether there was an implied contract by the Board that the contractor should not be delayed beyond a reasonable time by the non-removal of certain staging which obstructed his work, and next whether a dispute as to this was one within the jurisdiction of the engineer to decide. It will be necessary before commenting on the judgment of the Court to refer briefly to the facts of the matter.

As we have said, the work to be done was that of dredging a portion of the bed of the river Mersey, and one clause of the contract was to the effect that the contractor should complete the work by a certain date, "subject, however, to an extension of time in case the temporary staging now erected on the site of the work in connexion with a new ferry at Seacombe should not be removed within such a time as will enable the contractor to complete the work by the 1st day of October, 1878, in which case he is to be entitled to such an extension of time as the engineer may think reasonable." The clause then went on in the usual way to provide for the payment of penalties should the work not be completed within the original or the extended time. Clause 9 was as follows:—"If any difference shall arise between the Local Board and the contractor concerning the work hereby contracted for, or any part thereof, or concerning anything in connexion with this contract, such difference shall be referred to the engineer, and his decision thereon shall be final and binding on the Local Board and the contractor." A cardinal fact in the case was that this staging was not removed for a long time, and that the contractor was, therefore, for an equally long time, prevented from proceeding with the work, and the dredgers were kept idle on the spot; the delay, in fact, caused by the presence of the staging lasted, according to the contractor, for a space of 107 days. It is also necessary to notice that the engineer of the Local Board never, in so many words, extended the time for the completion of the contract, though more than once he stated to the contractor that the latter would be entitled to indulgence both in respect of the delay and his expenses incurred in consequence of it. It would be tedious as well as unnecessary to go through the correspondence which ensued between the contractor and the engineer. Suffice it to say, that the engineer certified for a smaller sum than that which the contractor demanded, and thereupon, as was natural, the contractor sued the Board for the balance. The two questions which we mentioned at the beginning of these remarks then had to be decided by the Queen's Bench Division on a case stated by an arbitrator. And we may state at once that the Court held that the contractor was

entitled to damages in respect of the delay. "Upon full consideration of the facts, we are of opinion that the plaintiff will be entitled to recover damages from the defendants if it should be established in evidence that the plaintiff was prevented from proceeding with the work owing to unreasonable delay in the removing of the staging, without the removal of which he could not proceed"; and subsequently the Court proceeded to say "there is an implied contract on the part of the defendants that the removal of the staging should not be unreasonably delayed." This decision, therefore, accords with the rule which is deduced from some other older cases in Roscoe's "Digest of Building Cases," 2nd edition, pp. 55 and 56, where it is stated that "the main principle is that a person cannot take advantage of the non-fulfilment of a condition which has been caused by himself." The rule is still more clearly formulated in the case of Roberts *v.* The Bury Commissioners, where it is stated that "a builder may bring an action against his employer for preventing the completion of the work, and thereby causing him damage." It is true that the circumstances of the recent case are different from those which have preceded it, but when it comes to be examined, this same rule is at the bottom of this as of previous decisions. But it seems to point out this also, namely, that even if the engineer had given some definite extension of time,—as a month, for example,—yet had the contractor suffered damage in consequence of the staging having been delayed for an unreasonable time, such unreasonable time being the month allowed by the engineer, that even in that case the Board would have been liable. It is obvious, therefore, that as regards interference with the operations of a contractor, the law is in a favourable state to him, and it is equally obvious that employers who, by any act of their own or their agents, delay the progress of works, do so at the peril of having to pay damages to the contractor.

To turn to the second point, which may be briefly disposed of, we will again quote some of the language of the judgment:—"We think that such a dispute [*i.e.*, a claim for damages caused by unreasonable delay] is not a difference concerning a thing connected with the contract. When the parties contracted they never contemplated that the engineer would have to decide any such dispute. It is one arising from a breach of an implied contract which is not part of or necessarily connected with the contract under seal." In order to bind to the certificate or decision of an architect or Local Board, it was possible to argue that Roberts *v.* the Bury Commissioners applied to the particular fact of that or similar cases. For the future it is clear that whenever a contractor has been delayed in his work from any cause over which the employer had influence or control, he has a full and unfettered right to sue the employer for damages. It is, perhaps, as well, however, to point out that it does not necessarily follow that the employer is the person ultimately to bear the loss. In the present case the staging was in the control of Messrs. Brassey, and consequently subject to special conditions of any contract. If the delay in the removal arose from the default of Messrs. Brassey they would be the persons finally to pay, as the employers could recover from them. This, again, is a rule applicable to all sorts of cases, so that it is obvious that the recent decision of the Queen's Bench Division, upheld as it has been by the Court of Appeal, is one of the first importance to large classes of persons and professional men.

New Public Fountain at Redditch.—Some three years ago, when the ornamental enclosure on the Church Green was formed by public subscription, Mr. R. S. Bartleet, J.P., promised that as soon as there were waterworks in the town he would erect in the enclosure a fountain, at a cost of 200*l*. The East Worcestershire Water Company having brought their works to Redditch, Mr. Bartleet lost no time in redeeming his promise, and consequently a fountain has been erected at the northern end of the enclosure. It was formally presented to the town on Tuesday afternoon. The fountain has been erected, from designs suggested by Mr. Bartlett, by the Coalbrookdale Company. It is surmounted by a female figure pouring water from a pitcher, from a design by Mr. Wills. There are three distinct sources of water supply.

FORM-BLINDNESS.

Of the reality and prevalence of the defect known as *colour*-blindness there can be no question. We are reminded of it in many ways, —disastrously when the pointsman, misreading the signals, shunts one train into another; grotesquely, as when a learned professor appeared before his startled pupils in scarlet hose, believing all the while that he had selected garments of a quiet academic grey (a true story); and painfully when the senile or immature artist dyes his canvas with those aniline compounds which chemical science has of late years placed within his too easy reach. Of form-blindness we have not such clear evidence, it is true, but that the sense of appreciating form is widely deficient is a fair inference from the facts before us, and as disclosed by the history of art. We can not only point to nations which have possessed a predominant sense of the beauties of form, a sense which has manifested itself throughout the entire range of their fine and household arts, or, on the other hand, can adduce instances where this sense has been notably deficient; but we can, in addition, follow and examine the growth and decline, and sometimes the eclipse of this sense in the same nation.

A broad example is at hand in the comparison of ancient and modern pottery, the pottery of comparatively savage races with that of civilised races, and the pottery and domestic art of ancient and modern Greece, of Etruria and Italy. Bishop Butler, in a well-known passage, speculated upon the possibility of whole nations losing their reason, and the result at which he arrived is not reassuring. It is certain that nations and races, once endowed with the gift of producing and enjoying the subtle charms of graceful lines, and harmonious forms, may lose not only the gift of production, but all sense of the artistic value of the objects they once admired. It will help us to realise the force of the proposition if we trace in a few words the history of art in Great Britain. A wider survey would enable us to state the case with greater persuasive strength, but the corroboration of experience would be wanting, and to many readers the illustrations so used must be taken on trust. But confining our observations to works within reach of examination, the truth of the theory we are advancing may be the more readily checked.

The arts of the Romans were an importation in a completely developed condition, and on the departure of the Roman legions were bequeathed to the conquered Britons. It is not very clear how far or for how long a time the processes which had been learned from their conquerors were put in practice by those who remained masters of the soil; but the vicissitudes of occupation and the ravages of the hordes who were continually sweeping down upon the country all but exterminating its inhabitants, were inimical, not only to the growth, but even to the conservation of the inherited arts. The Saxon had but little artistic excellence to impart, and it is not until the close and continued commerce with Normandy which formed a channel for the influx of the art of Byzantium that any marked advance in artistic execution or the appreciation of art is discoverable.

After the Conquest and the "Normanising" of the country, the art of architecture and the many subsidiary arts which clustered round it, such as those of the goldsmith, the ironsmith, the embroiderer, and the rest developed with an amazing rapidity. And that the aptitude of the recipients for art in all its forms was considerable is seen in the fact that an original style of architecture, unlike, in many details, anything on the neighbouring continent, speedily arose, clothed with a gracious and distinctive beauty; and this beauty was in its earlier stages a beauty entirely of form. Colour which, in later ages was profusely added to architectural works to heighten their effect, was only called in aid as a sort of condiment to give zest to a decaying taste.

A type of the supreme excellence of form without the adventitious aid of colour is found in the queen of English cathedrals,—Salisbury. It is there seen how little the modern colour is required to the satisfaction of the eye; how well content we could be to dispense with it altogether, blunted as our senses may be conceived to be in comparison with the acute perception and exquisite enjoyment of lovely form, which may fairly be credited to those who could evolve from the quarry such a dream of perfect beauty as the cathedral in question We must bear in mind that the feeling which this work evidences, a refined sense of the beauty of line and surface, and a severe self-restraint in the use of ornament was a note of all the art of the Early and Middle Thirteenth Century, and that the highest satisfaction of the mind and eye was sought and found in simple forms of exquisite proportion and delicate and refined grace of sparing ornamentation.

In passing on to the Transition period we see an impatience of the severe simplicity of the earlier manner; but the desire for ampler freedom of elaboration is still limited, as in the beautiful early tracery, to geometrical forms, and the windows and canopy work of this transition period show the influence of the reserve and reticence, a legacy of the masters of the preceding style.

Passing onwards to the Decorated period, we can but see that the skill of the architects is in many examples getting a little the better of their discretion. The *tours-de-force* which mark this style are the result of a consciousness of power in dealing with constructive difficulties rather than a delight in beauty. The profuse and indiscriminating use of certain ornamental features contrasts unfavourably with the sparing but effective use of carving and sculpture by the Early English architects, and the shrine and canopy work, exquisite though it be, is marked by an inconsequent and embarrassing mass of ornamental accessories, piled on and exaggerated in size in a despairing attempt to produce an effect which was attained without effort in the companion works of the preceding style. In the period which passes under the general title of "Perpendicular," although it embraces at least three manners, reliance upon form as an element of beauty is almost entirely abandoned. No one will say that the four-centred arch is as beautiful as the lancet form, and no one, we should suppose, would deny that amongst four-centred arches those at Winchester, for example, are not only not beautiful, but go far towards being fairly called ugly. The style has its merits no doubt. It brought back a feeling for height and proportion which had been declining since the works of the early part of the thirteenth century, but beyond the beauty of that architectural "happy thought" the fan-tracery,—a beauty which would redeem the character of any age, the beauty of pure unassisted form was not sought after nor enjoyed. The "pride of life" and not "man's delight in God's work" differentiates this, in many ways, remarkable epoch.

The blight which speedily fell upon the art, after the problems which the fourteenth and fifteenth century architects had set themselves had been worked out to their solution, has been often told. And it is impossible to believe that if the nation at large, or the artists in especial, had preserved intact that fine sense of proportion, and the religion, one might almost say, which lives in lovely lines,—a sense which was at one time the happy possession of their fathers,—that they could have endured the coarseness and grotesquerie of the manner which soon came in vogue. And thus it is seen that by a steady decline, distinctly traceable, one of the most precious of artistic gifts had dwindled away, and the whole nation had, artistically speaking, in this respect lost their reason. Worse, however, was behind, and a worship of the ugly set in which can only be compared to some form of demoniacal possession. There is something not only sad, but shocking, in the persistence with which the caricaturists of a quite recent age dwelt upon and gloated over every form of human depravity,—mental and physical. They appear to have had no eyes for anything but what was to the last degree repulsive. Natural scenery was represented, or misrepresented, by them in a way which showed that its beauties were a dead letter, and if amongst the hideous masks which they uniformly placed upon human shoulders in their works an attempt to represent attractively the "human face divine" was made, it was only to cast a deeper stain of moral degradation over the whole. As these prints were addressed to and found favour with the nation at large, we may assume that they were enjoyed, or at any rate did not disgust the public who supported the "artists" by their patronage.

While the nation was thus "possessed," we know to what condition the arts in general had fallen. Contemporary prints and contemporary literature let us into some portions of the truth

as to the desecration to which the loveliest efforts of human genius,—the churches and cathedrals of our land,—were subjected, and we have before our eyes evidences of the hideous structures which were raised, not without complacency and mutual congratulations, by the descendants of the men who built Ely, York, and Salisbury.

We have, thanks mainly to a few earnest and religious minds, done much to bring the nation round to a condition of sanity in the matter of form, and to exorcise the demon which had for so long possessed the public mind. But the process of complete recovery will, in all probability, be slow and partial. There are happily abundant signs of a growing delight in the simple beauty of natural scenery and a growing ability to appreciate architecture of a severe and refined character, unassisted by garish adjuncts, and although it may be doubted whether among particular classes,—still too numerous,—there is any real power of discrimination between beauty and ugliness, grace and ungrace, yet it is not beyond a reasonable hope that the nation may regain its ancient gift and that "form-blindness" may cease to be a misfortune and a reproach.

MODELS.

An esteemed contemporary has lately described with felicitous accuracy "an artists' quarter" in Paris, a well-known artistic *restaurant* in the neighbourhood of the Batignolles. For those familiar with the incidents so well narrated, it is impossible not to recognise the faithfulness of the relation, while to those at a distance, acquainted with the details only through such literary descriptions of the life of foreign artists, a fresh incentive may perhaps be added, if any were needed, to the interest in foreign art which just now appears to be engrossing an almost over-abundance of our attention. The description of the artists' quarter, so ably brought before us in the *Pall-Mall Gazette*, shows us a state of society that is alone to be met with in Paris, the pleasant *camaraderie* of the French artist's life. It is true the old *Lépre*, the artists' dining-place in Rome, possessed in the Papal days some resemblance to the Batignoles *restaurant*, with this exception, that it was less exclusively devoted to painters than the Paris eating-house, and the model element was certainly absent, except, perhaps, on the Sundays and the *festa* days. It would seem, indeed, alone in Paris that the familiar understanding between the painter and his model can exist with anything like a correct and allowable propriety, and when we compare the thoroughly-understood position of the painter in Paris, and the perfect appreciation of the usefulness of the professional model, the willing admission by the painter of his utter inability to create his production without the assistance of the living example, obedient and humble minded enough to give up days and years for a small remuneration; when we compare this understanding that exists between the French artist and his model with the far greater distance which exists between the painter and his model in England, perhaps it is not unreasonable to trace in it something of the decadency in the life and vivacity of our painters' work, as compared with that which exists in the French capital.

Conventionally and sentimentally we in England are all disposed to acknowledge the value of what is understood as a model, and no term is perhaps more constantly made use of at our almost too frequent picture exhibitions than the term "lovely," "hideous," or "charming model," and artists are envied or derided according to the supposed want of skill in their choice of examples. Most people are aware that something or somebody to copy into the painter's picture is an absolute necessity, notwithstanding the existence of a famous old story which has been repeated so often that it has at length come to be believed, but which, in point of fact is altogether founded on error, that Guido, the Bolognese painter, in his attempt to realise what the world has rather hastily acknowledged as the realisation of perfect beauty used by preference, as the model for the loveliness of his Madonnas, his aged but obedient housekeeper. In our day, not only in Paris but in London, whenever the housekeeper, whether aged or not, was to be made use of as a model, it would be simply if the painter had the duty or was prompted by the pleasure of painting a housekeeper, and as such, according to the accepted type, she would be regarded as a fit subject.

So far the painter of the present day may indeed be considered intellectually as the superior of the painter of the past, who too often in this direction regarded with indifference what we now understand as realistic truth; at the same time it must not be forgotten that in the most poetical and ideal art of the past there is often shown a singular attempt, and sometimes with the utmost success, to realise in absolute perfection of imitation the most commonplace objects and incidents.

English artists complain more and more of the difficulty they find in obtaining appropriate models, and perhaps no more pernicious substitute is to be found than in that would-be aid which artists believe they obtain from the unprofessional model who from kindness, often perhaps from vanity, offers to "stand" or "sit" for certain characters, for which the painter believes his friend exactly "suited." We remember an eminent living painter once telling us that it required two people to make a good portrait; the painter who has his work to do, and the sitter who must also aid by being absolutely quiet and silent, a task sufficiently difficult to test the patience of most of us; perhaps a duty more difficult and more rare than the skill of the painter.

Reynolds has more than once been suspected of having exaggerated his historic deafness in order that he might enforce on his sitters that silence so conducive to the absorption of mind from which is produced the greatest work of the artist, be he painter, sculptor, writer, or musician. There are, doubtless, still living,—there certainly were not so many years back,—more than one of Lawrence's sitters who could recall as the feature of their sitting to the President, the monotonous sound of the painter walking backwards and forwards from his easel to the distance at which the artist's eye is able to "take in" his picture as a whole. The great portraits of the past, the stout solid burghers of Rembrandt, the proud patricians of Velasquez, the calm thoughtful heads of Vandyke and Rubens, the reflective portraits of Titian, and the life-like vivacity of Holbein's panels, how could these have ever been produced had not the sitters understood that as their share of the work silence was an absolute necessity? The observant eye can easily detect the depth of reflection in which the painter has caught the sitter as he sat wrapped in his own thoughts. The traditions of the art of sitting seem to have died out; brother painters understand the exigencies and the seriousness of the matter, and can give, when required, that hour or two of steady immobility which was productive of such masterpieces in the past. There are again certain sitters who, knowing that in the sculptor's studio one is not required to keep still, forget the very different circumstances of the case in the painter's studio, the consideration on the part of the sculptor of at least those seven views of the figure which Benvenuto Cellini laid it down as necessary to study closely, while the painter has to produce his effect of rotundity on a flat surface, and hence the necessity of the sitter remaining as far as possible during the sitting in the one position determined upon.

If, therefore, the experienced portrait-painter requires that his sitter should be absolutely quiet during the sitting, how much more necessary must it be for the model who sits to the painter in an attitude very often constrained and irksome. Hence the value that the artist attaches to and, the friendship he feels for, the accomplished model who occasionally is absolutely beautiful in his eyes owing to a thousand resemblances he perceives in the living nature before him, to his recollection of the almost divine inspirations of the great artists of the past.

There is a good *atelier* story told of the great French painter, Ingres, who while at work one day was asked by a poor and by no means well-favoured model to be allowed to sit for the nude on which he was engaged. Ingres, whose warm and generous heart was ever open to such appeals, agreed, and without even turning away from his work asked the model to strip; as he glanced round, and saw the nude figure before him, the tears started into his eyes at the perfection of what he beheld. That is the spirit in which the true artist admires the suggestive beauty of the well-proportioned human form,—as we well remember M. Taine, in one of his lectures, impressing on the students of the École des Beaux Arts, to whom he had told this anecdote as illustrative of the gratitude of the artist to the model who enables him through the long stretch of ages to enter into momentary communion with what Raffaelle once so piously termed "those divine souls of antiquity."

THE USPENSKY CATHEDRAL AT MOSCOW.

This ancient church is now invested with a renewed interest, from the fact of its being the scene of the coronation of the Czars of Russia. According to the *Vossische Zeitung* of Berlin, the church, which is under the title of the Assumption of the Virgin (*Uspensky—Soborr*), is situated in an open space, and by its architectural features exhibits a striking contrast to the buildings in the same part of Moscow, which, as a rule, are of Italian design. There is nothing very remarkable in the size or construction of the church, which was built by Iwan the Great, the founder of the Russian Czardom in the latter portion of the fifteenth century, shortly after his marriage with his consort Sophia, through whom he became, to a certain extent, the inheritor of the Byzantine imperial dignity. During two centuries all the buildings of note in that part of Europe had been erected by Italian or German architects and workmen, but Iwan attempted to complete the building with Russian labour. His patriotic scheme was, however, unsuccessful. Within a year the masonry which had been laid had to be taken down, and the Venetian architect, Aristotle Fioraventi, undertook the direction of the work, which was completed under his supervision in 1479. He brought with him Italian workmen, and spread much useful knowledge in the country. Amongst other branches of industry he improved the manufacture of bricks, and diffused more sound principles as to masonry than had hitherto been current in Russia.

The Assumption Church has come down to modern times in a fair state of preservation, the only restorations of note made having been the renewing of the vaulted roofing of the nave and the strengthening of the exterior walls by means of buttresses. Its design can hardly be described as partaking of the usual features of Russian ecclesiastical architecture, but rather as closely resembling the examples of the Byzantine school, which have been preserved. The portion of the church intended for the worshippers is square, and the sanctuary, as well as the four projecting chapels, is semi-circular. The external aspect of the building is that of a rectangular structure with five richly gilded domes surmounting the chapels and sanctuary to which reference has been made. The south façade is ornamented above the doorway with a colossal statue of the Virgin, but is in other respects of a simple character. The east side contains representations of various incidents appropriate to the title of the church, and the architectural ornamentation is of an effective kind. The principal entrance leads from the west side to the nave, and has a small projecting structure in front, the exterior of which is ornamented with paintings on gold ground of the Russian patriarchs, Peter and Sergius, the body of the former being interred in the church. The interior of the church is also decorated in the richest manner with figurative ornamentation. The decorations of the screen which divides the sanctuary from the body of the church is singularly rich. It displays in five rows the leading personages in sacred history down to the coming of Christ. The twelve principal festivals of the year are then represented, and finally the Christian Church with Christ, the Virgin, John the Baptist, and the twelve apostles. The church is rich in ecclesiastical vessels of different kinds. The throne used by the Czars of Russia during the Coronation ceremony dates from the year 1551, and is richly decorated.

The entire superficial area of the church is about 5,400 square feet, but on account of the arrangement of the interior, there is not accommodation for more than 600 or 700 persons. It is this fact which caused the proposal to be brought forward that the coronation of the present Czar should take place in the New Church of the Redeemer, which can hold 5,000 persons. This church, which was erected in memory of the deliverance of Russia from the French invasion, has only now been completed, and the ceremonial would really have been a dedicatory festival.

THE MASONRY AND CARPENTRY OF THE GREEKS AND ROMANS.

PROFESSOR C. T. NEWTON, C.B., delivered the fourth of a course of eight lectures* on the useful and decorative arts of the Greeks and Romans, on Friday, the 11th inst., taking as his subject "Masonry and Carpentry." He observed that in the present lecture he had to deal with two of the most useful arts,—arts which enabled people to obtain shelter from the weather, viz., the arts or handicrafts of masonry and carpentry. Those arts, as he need hardly say, were closely connected with architecture on the one hand, and with purely decorative work on the other. In the first instance he desired to say a word or two as to the condition of artisans generally in Greece, and as to the estimation in which artisans were held. In the poems of Homer the few artisans or skilled workmen who were noticed at all were put rather prominently forward, as if they were highly esteemed in their several crafts. We found mentioned by name several craftsmen, such as workers in metal and workers in wood. The lecturer was not aware, however, that any masons were mentioned by name in the Homeric poems; but Paris was described as building his own house with the assistance of masons, while the walls of Troy were believed by the ancients to have been built by two of the gods, and it was recorded that a disagreement about this work was the original cause of the quarrel between the Trojan dynasty and some of the gods, for it was contended that the two gods who built the walls were not paid their proper wages. We obtained in Homer the idea that the craftsman was a man very necessary to the community, and that he was regarded more or less as a *demiurgos*, or public servant, just as the physician in those days was a public servant who undertook to look after the health of the army. Of course it was to be concluded that in an heroic age such as Homer described the craftsmen would be very few in number, although their services would be very necessary. It was remarkable that Ulysses himself took rank as a carpenter, for Homer described how the king made his own bedstead, which was spoken of as being inlaid with ivory and other ornament, and supported by the stem of an olive-tree. Intracing the history of the Greeks down from the Homeric age to, say, the time of Pericles, we found in Attic writers of the period a fine distinction drawn between the craftsman and the full citizen, *i.e.*, the citizen who enjoyed the fullest privileges. The full citizen was a member of the Athenian public who was not only endowed with great privileges, but he had to fulfil certain high and imperative duties, such, for instance, as taking part in the defence of his country, and to prepare himself for this particular work by carrying on his gymnastic exercises. On the other hand, the man who was perpetually working at his trade could hardly be said to take any part in public affairs, or to have any forensic life. He stood at his stall and worked at his trade while those who were not obliged to maintain themselves by working as craftsmen took part in the public assembly. Probably in the greater number of cases the craftsmen or skilled workmen were not full citizens. They were either slaves or strangers whom the Greeks allowed to live in Athens and practise their callings, but without giving them the privileges of citizenship. The extensive works which were going on in the Periclean age naturally attracted large numbers of these foreign workmen, including both masons and carpenters. The trades followed by these artificers descended from father to son, but the hereditary transmission of trades was not so exclusive as to involve anything like caste, neither did we find that marked tendency to form corporations or guilds of craftsmen which we saw in Roman times, and which went on throughout the Middle Ages. Proceeding with the immediate subject of his lecture, Professor Newton said that unfortunately there was very little to be found in Greek or Roman writings as to masons and carpenters. He presumed that the German works which dealt with trades and crafts had brought together every passage from the ancient authors that could throw any light upon the subject. Such passages, however, were very scanty and meagre. There were, however, other sources of information, as in the monuments themselves. From the writings of Homer it was quite clear that there must have been workmen at a comparatively early period, capable of making the structures of polished marble, and the furniture, which were described by the poet. That the Homeric descriptions were trustworthy had been proved by the researches of Dr. Schliemann, whose discovery of the Cyclopean walls of Mycenæ and of the neighbouring fortress of Tiryns afforded a remarkable confirmation of some of the poet's statements. Cyclopean walls of this character were noticed by Pausanias as being regarded, in his time, as of remote antiquity. They derived their name from the belief of the ancients that they were built by the Cyclopes, a one-eyed race of beings of gigantic stature. These walls were really specimens of military architecture, those at Tiryns being as much as 27 ft. in thickness. Such walls generally contained internal covered galleries within their thickness, with loopholes from which to take aim at an enemy. Pausanias said of the blocks of stone of which the walls of Tiryns were built that there were none so small as to be conveyed by less than a pair of mules. He described stones 10 ft. and 12 ft. long throughout these walls, and the immense size of the blocks had been urged as proof of the great age of the walls. Modern writers on prehistoric man had invented the word "megalithic," and spoke of the "megalithic period" as that during which structures like Stonehenge and the walls of Tiryns were built. The lecturer thought it very probable that the earliest walls built in Greece were composed of very large stones. But on examining the examples of Cyclopean Pelasgic or other early masonry extant, it would be found that they were of two kinds, first of all those in which rectangular blocks of stone were used, laid in regular courses, though somewhat irregularly; and secondly, those which were of what might be called polygonal masonry, which was composed of stones with many sides and with many angles. At Mycenæ both kinds of masonry existed, and in both kinds the enormous size of the blocks was apparent. To convey those huge blocks up mountain sides, and to place them upon their proper beds must have been a very difficult operation mechanically, especially in times when, it might be assumed, the art of road-making was not much understood. The large blocks were often found fitted together imperfectly, leaving instertices in which other and smaller blocks were fitted. Walls of this character were regarded by Dr. Schliemann as belonging to the earliest period. After this early period of imperfect joints or interstitial stones, we came to a later kind of masonry, in which the blocks were carefully and solidly fitted together, so that the wall presented a perfect face. With this, however, there was a diminution in the size of the blocks. The polygonal masonry of the Greeks no doubt owed its distinguishing characteristic to the application of the law of cleavage, with which the Greeks must have been familiar. The lecturer said he referred to these points because they had an immediate bearing on the question of the age of the things discovered by Dr. Schliemann at Mycenæ and Tiryns, and at Orchomenos in Bœotia. He (Professor Newton) had ventured to ascribe those antiquities to a very early time,—as early as the year 1200 B.C. It might be said that it was only arguing in a circle to say that because at Mycenæ and Tiryns there were specimens of very old masonry, therefore the things found by Dr. Schliemann were old; but the lecturer contended that the opinion of the ancients themselves was worth a great deal, for they had a range of observation over deserted and ruined cities which we never possessed. But those of his hearers who cared to pursue the question would find it very ably discussed from the negative side in an excellent dissertation on the subject in the fifth volume of the "Classical Museum," by Mr. Bunbury. In the later period of masonry the chisel was very skilfully used. In the harbour of Cnidos are the remains of a mole, the blocks of stone composing which, the lecturer believed, from his personal observation, to have been fitted together in the same way as the walls of Mycenæ and Tiryns. When he (the lecturer) was at Cnidos, he was accompanied by an engineer, who assured him that one block on the top of the mole weighed at least 50 tons. To get such an enormous block into position with the simple mechanical means which the ancients had at command was no small undertaking. They had no hydraulic jacks, no steam power, but only such simple appliances as the pulley and wheel. Coming to the masons' workmanship exhibited in Greek architecture of the best period, the lecturer observed that the perfection of the joints was a marvel to behold, even at the present day. In building up a column composed of a number of blocks of marble or stone, the problem was how to place each drum, weighing perhaps, 2 tons or 3 tons, upon the bed prepared for it, with absolute exactitude; another problem was how to place in position a piece of architrave, say 18 ft. long (for such dimensions were adopted) without injuring it at the edge? Such feats were accomplished by the Greeks, and wherever one looked, whether at Athens, at Priene, or at any other of the sites famous for temples or other buildings, the fragments of architecture which remained exhibited the same beautiful perfection of the joints, called by the Greeks *harmos*. On careful examination of these joints it would be found that the outer edges or margins of the surfaces which were to come in contact were polished. These polished margins inclosed the rougher surfaces of the stones, which were sunk a little so as to allow the polished surfaces to come close together. Illustrations of this were to be seen in the British Museum in the marble tiles from the Temple of Artemis at Athens. Mr. Penrose, in his valuable work on the Parthenon, referring to the accuracy of the joints, expressed his inability to tell how the builders could have got the joints so perfectly true, but he suggested that a pin or pivot was fixed in the lower of two drums and a hole to receive the pivot made in the lower surface of the uppermost of the two drums, which was made to revolve upon the lower drum, and so grind the surfaces true. But, whatever might be said in favour of that theory, it obviously would not explain how the Greeks managed to get such perfection of jointing in such features as architraves, &c. Since Mr. Penrose's book had been published, an important inscription, in the shape of an order or law giving directions as to the construction of a temple, had been discovered. This inscription was really the architect's specification, and in it the point was very strongly insisted upon all through that every block of stone used for the temple should be prepared and dressed in a particular manner, and be subject to the approval of the surveyor appointed by the city. Constant reference was made in this specification to the polishing of the joints by the application of vermilion and a particular sort of oil to the surfaces of the joints. Although that inscription had been published in Germany by Fabritius, he had not, so far as the lecturer knew, proposed any explanation of that combination of oil and vermilion. A very interesting translation of the inscription was published in the *Builder* a few years ago,* probably written by Mr. Watkiss Lloyd, who was a very ingenious commentator upon Greek architecture. The writer threw out the hint that the vermilion was used for the purpose of ascertaining whether the two surfaces of marble, which were to be contiguous, were perfect planes. The mode of application was this,—Taking two drums of columns, which had to fit truly together, if one of the intended contiguous surfaces were covered with some conspicuous wet colour, with which the other contiguous surface were brought in contact by placing the stones one above another in their intended position, it would be readily apparent on separating the stones whether there were any inequalities in their contiguous surfaces. A similar process of working was followed, he found, by masons in the present day, so that here was an illustration of a method of work, probably invented by the Greeks, coming down to the present time from generation to generation of masons. The Greek builders used no mortar, but where the work was of the best character they used cramps either of stone or copper dovetailed into the work. The copper so used being of considerable value, there was no doubt that many ancient buildings had been ruined simply for the sake of obtaining the copper cramps. It was difficult to arrive at any conclusion as to the rate of wages paid to Greek masons, inasmuch as the evidence afforded by inscriptions, &c., did not throw any light on the question whether the rates mentioned included food and lodging. Proceeding to speak of Roman

* For report of the first lecture of this course, on "Mines and Metals," see p. 506, *ante*.

* See *Builder*, vol. xxxv. (1877), pp. 363, 413.

masonry, the lecturer alluded to the way in which the Romans used brick and rubble as a backing or filling-in to their masonry. Their mortar was of very great strength, due to the fact that in its composition they used *pozzuolana*, an earth found near Puteoli. The Romans built walls of brick, sometimes laid in regular courses, sometimes in a kind of *opus reticulatum*, contenting themselves with a mere veneering of marble or stone. With regard to the carpenters' work of the Greeks and Romans, there was very little that could be said, for hardly any of their woodwork had come down to us. It was evident, however, from passages in Homer's works, that even in the times of the poet there must have existed some very good specimens of inlaid woodwork, prototypes of that of which we saw representations on the earliest vases and on various ancient monuments. In the Archaic Greek room at the British Museum there were some chairs which were more elegant in form and more honest in construction than some modern chairs, for they were constructed with mortise-and-tenon joints. The Greeks were certainly acquainted with glue from the time of Homer, but, wiser than modern furniture-makers, they preferred to use the mortise and tenon. With regard to the coarser work of the carpenter, such as that required for the roofs of buildings, a good idea of it was to be gained from the roofs of the Etruscan tombs, many of which had been carved in the rock in evident imitation of timber structures.

ULM CATHEDRAL.

ON two previous occasions* we have given views of this remarkable building, at which restorers are now actively at work. With this issue we present our readers with a large view of the exterior of the cathedral as it will appear when completed.† A *résumé* of the history of the building, as well as a brief reference to the work of restoration, has already appeared in these columns. We shall, therefore, confine ourselves on this occasion to particulars interesting, in the first place, to the archæologist and the church historian, but at the same time of interest to the general reader. For the present cathedral has a history which reaches far beyond its foundation. The building which was the predecessor of the relatively modern edifice was the parish church of the district, and was known to the old Ulmers as the Church of Our Lady. When they laid the foundation for what is now the cathedral, they intended it to take the place of their old parish church. That old church, which was at the same time a Lady-chapel, stood in a depression of the ground formed by a diversion of the course of the river Blau, not far from an old Alemannic burial-ground outside the old as well as the more modern wall of the city. It is stated to have been a wooden building, dating from the seventh century, and was probably the mother-church of the district, the cradle of Christianity in that part of the country. Even at the present day, in that district, fragments of decayed timber (called Olm) are found in excavations, and local archæologists are of opinion that the name of Ulm may have been derived from the fact of that occurrence.

A great portion of the soil belonged to the church in question, which levied a tithe; and when the Alemannic estates, on which the church lands bordered, became a Frankish palatinate, and the kings, in order to strengthen their position, divided the inheritance with the Benedictines of the neighbouring powerful abbey of Reichenau, and the latter founded a settlement close by at the so-called Grüne Hof on the Pfalz, the parish church was probably placed under the patronage of the abbey. This connexion not only insured to it its estates, but also placed it under the ægis of the order, one of whose principles was that real civilisation could only be advanced by cultivating a taste for art. When it is, therefore, said of the old parish church by the chronicler Felix Fabri that, according to native tradition, it was a valuable building of ashlar stone, and that its like was not to be found in the whole of Swabia, the probabilities are that the abbots, Hatto and Witigowo, of Reichenau, in the ninth and tenth centuries, exerted a great influence upon its erection. But exterior as well as interior causes brought about in course of time a separation from Reichenau. The rupture between church and state under the last Salians and the Staufen emperors, the growth of trade and industry after the crusades and pilgrimages to Rome, the immigration of freemen from the country, and the restriction of the privileges of the nobility led also at Ulm to the development of a new principle, burgherdom. This change brought in its turn another. It became necessary to provide against attack from without, and the town was walled in.

In 1134, the city was taken by Duke Henry of Bavaria, the son-in-law of Lothar, and almost entirely destroyed. But under the ducal emperors of the Swabian house, the city arose from its ashes with wonderful rapidity, extended its outer walls, rose to the rank of a fortified post and an important centre of trade, conquered step by step, both by prudence and valiance, during the troubles of the Interregnum, the position of an imperial city, and overcame by public spirit the interior struggles between families and guilds, under the sceptre of Ludwig of Bavaria, the German king who, along with Charles the Great and the new founder of the city, Conrad von Staufen, lived most in the hearts of the Ulm citizens. The powerful influence which the Church had exercised, especially under the emperors of the house of Saxony, upon the State was succeeded by a reaction of the latter upon the former. A reformed, later a new monasticism began to counteract the secularisation into which the Benedictine order had degenerated. The superiors of Reichenau, who had been used to hold their court in Ulm as prince-abbots, and to waste their revenues, themselves admitted the Cistercians of Salem, Kaiserheim, and Bebenhausen, the brothers and sisters of the Order of St. Francis, and the Dominicans. The new orders did homage to the democratic tendency of the time, were severe upon pride and luxury, were the friends of the burghers, settled down among them, and taught them the new style of building,—Gothic,—in the sober spirit which corresponded to their whole intuition.

A witness of this style in its earlier character was partly the Franciscan church, called popularly the "Kirchle," which was taken down a few years ago, the western portion of which rested upon the old city wall. In 1239, the Minorite brother, Master Albert, built the convent of the order, dedicated to St. Damian, at Ulm. A year later, the citizens founded at the Upper Danube bridge the Hospital of the Holy Ghost. In 1271, mention is made of a citizen's house, the Steinhaus of Heinrich Kacgilin, near the market-place. The monastery of the Dominicans may have been built in the ninth decade of the same century, the remnant of which, the choir of the present Trinity Church, preserves in the tomb-stone of Otto am Steg, a favourite of Emperor Rudolph, the oldest identified stone monument of Ulm (1298). In 1286 we find the first documentary trace of building operations at the old parish church in a letter of indulgence granted to those who contributed towards its building or decoration fund. The work was carried on by the city, as a document of 1271 proves, in which the chief magistrate, Otto by name, the town councillors, and the burghers of Ulm call the parish church their parish church. It is probable that a municipal building committee existed long before that time. In 1292, a master of stonemasons, under the name of C., is first mentioned, as the master of a guild, at the head of a list of Ulm guild-masters. In 1348, the founder of Prague Cathedral, and so many other German monumental edifices, Charles IV., stayed at Ulm, when he granted to the citizens the privilege called the "Judenschatz," the revenues derived from which were expended in beautifying the town. The first mention of the merchants' hall, later the town-hall, occurs in 1360.

But the parish church was still outside the city walls. The abbots of Reichenau had even contrived in 1327 to incorporate it with their abbey, and placed a vicar there, who derived from the revenues only the portion necessary for his maintenance and the payment of the fees due to the Bishop of Constanz. The monk masters of Reichenau would not even bear the cost of repairs, leaving this care still to a municipal board and pious founders. The citizens of Ulm had obtained in 1300 of King Albrecht the privilege of levying taxes on all lands hitherto liable, even if they had been left to the clergy. They felt they had the power to sever the unnatural connexion with the abbots, demanded permission to transplant their parish church into the city, and obtained it. It was the time of the battles of Altheim, Reutlingen, Döffingen, when the Ulmers destroyed in one year eight castles of the nobility, which had been thorns in their sides, and successfully resisted a siege by the emperor. Charles had pitched his camp in the first days of October, 1376, at Elchingen. An old popular ditty says it had been told him that "Ulm would only be a morning meal to him." He was compelled to do without his breakfast, and to draw off from the cage containing the spiteful birds. As later in the Princes' War, the Ulmers levelled every building outside their walls that might serve as a shelter for the enemy, so determined were they in their resistance. Thus, the resolve to transplant the parish church into the city, or, rather, to build their cathedral, was, in the first place, suggested by political and military considerations.

The history of the present cathedral has been already given in our pages, and we need, therefore, say no more on that point just now.

* See pp. 173, 208, *ante*. (Feb. 10 and 17).

† The west tower of the completed Ulm Cathedral will rise to a height of 151 mètres (495 ft.); those at Cologne are only 143 mètres high. The Ulm tower is at present only 334 ft. high.

MARKET HALL, NEWARK.

AMONG the illustrations in our present issue will be found a perspective view of the interior of this proposed building, designed by Messrs. Saville & Son, and submitted in the recent competition, in which Mr. Bell's designs were assigned the first place. The hall, which is about 108 ft. long by 54 ft. wide, is simple in arrangement, and can be understood at once from the drawing. The entrance is gained by means of three large gateways, occupying the greater part of the frontage; the three doorways shown in the view at the opposite end were intended to afford access to the existing Town Hall, and correspond in shape and position to the present doorways in the Town Hall wall. The shops are 10 ft. 6 in. square, are thirty-two in number, and are ranged in two stories along the sides of the market, the central portion being left for portable stalls and gangways. The main roof is arranged to be constructed partly of wood and partly of iron, and to spring from iron columns fixed at the front ends of the divisions between the shops.

A COUNTRY HOUSE, BROMLEY.

THIS house has been built for Mr. C. F. Selby on the Southill Park Estate, Bromley, and contains, on the ground-floor, dining-room, 21 ft. by 15 ft.; drawing-room, 21 ft. by 15 ft.; billiard-room, 22 ft. by 17 ft.; kitchen, and good offices, with seven bedrooms and dressing and bath room over. The walls are built hollow on the exposed sides, and the roof is covered with Broseley tiles.

The builder was Mr. T. Crossley, of Bromley, the internal plumbing being carried out by Messrs. Dent & Hellyer. Mr. Aston Webb, of 19, Queen Anne's Gate, was the architect.

The drawing from which our illustration is taken is now at the Royal Academy.

Proposed Public Offices for Hanley.—The burgesses of Hanley have been interesting themselves in the question of providing public offices, law courts, and other accommodation for the town, as well as securing land for the purpose of erecting thereon at some future time an assembly-room. At a public meeting on the 7th inst. resolutions were passed against the proposals of the Town Council. The majority of the councillors, however, contend that for various purposes in relation to the public business of Hanley additional accommodation is required, and the subject has been brought prominently forward in consequence of the Queen's Hotel being in the market. There are, as usual, amongst the ratepayers some who totally object to any expenditure; others who think that an entirely new town-hall, containing assembly-room, courts, and public offices, should be provided; others, again, who deny the immediate necessity for an assembly-room, and feel that all that is required can be obtained by purchasing the Queen's Hotel. The views of the latter have at present prevailed, and a resolution has been adopted by the Town Council in favour of the purchase. But notice has been given of a motion to rescind this resolution.



C F Kell, Photo-l the castle St Holborn. Wyman & Son Printers Fetter Lane

A COUNTRY HOUSE: BROMLEY.—Mr. Aston Webb, Architect.



EXTERIOR OF ULM CATHEDRAL



S PROPOSED TO BE RESTORED.





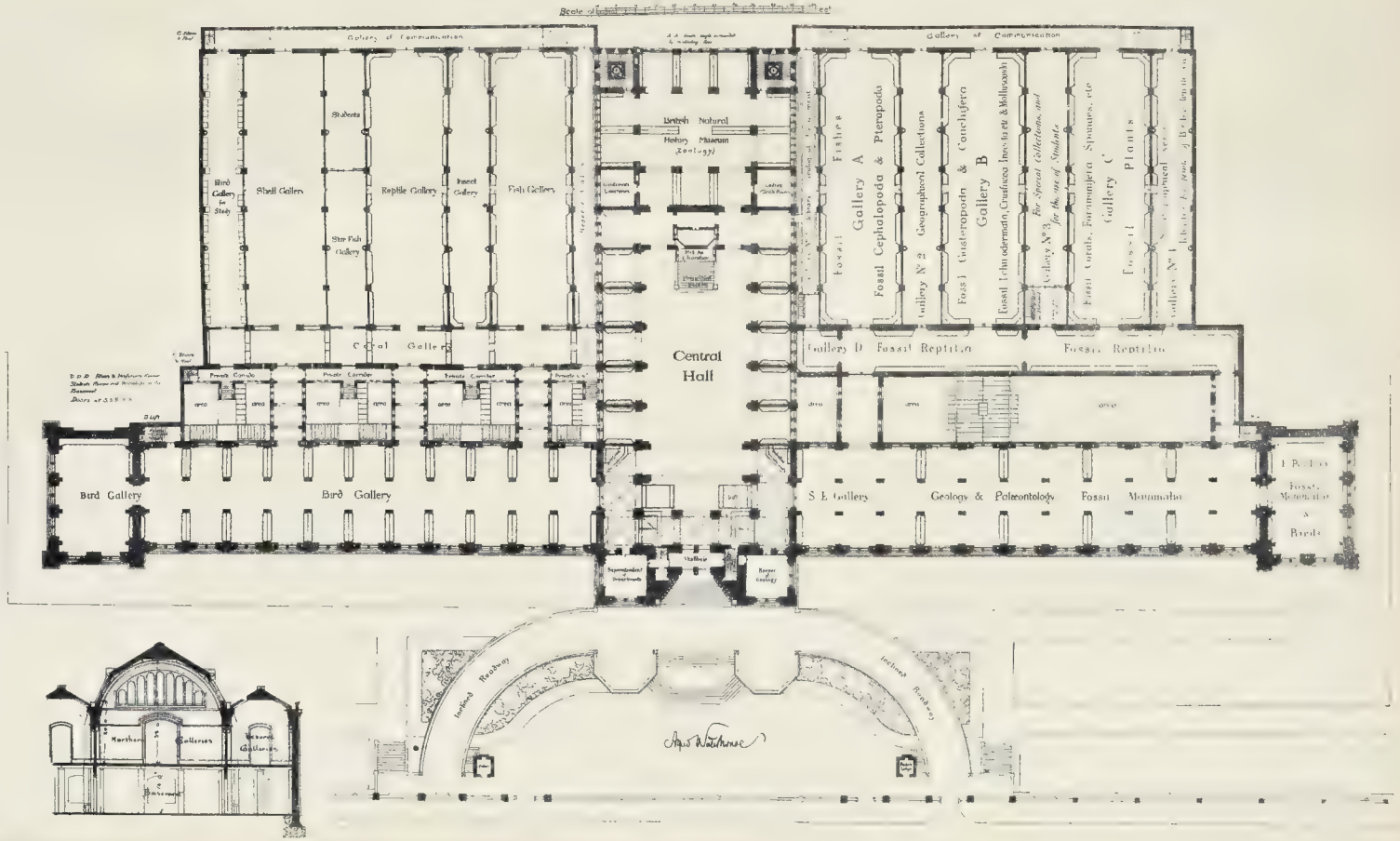
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MARKET HALL, NEWARK.— Competitive Design by Messrs. Saville & Son.

BRITISH MUSEUM (NATURAL HISTORY), SOUTH KENSINGTON.

Ground Floor.



C.F. Kell, Photo-Litho, Castle St. Holborn.

Wyman & Sons, Printers, Fetter Lane.

THE NEW NATURAL HISTORY MUSEUM, SOUTH KENSINGTON.

WE give a ground-plan of this Museum, showing the arrangement of the cases, &c. The lettering on the plan renders further description almost unnecessary, but we may, perhaps, usefully quote a few particulars given in Mr. J. Osborne Smith's paper on "Museums," published by us last week. The front galleries are each 278 ft. 6 in. long by 50 ft. wide. The six large northern galleries are 137 ft. long by 40 ft. wide each, and the six reserve galleries alternating with them are each 137 ft. long by 20 ft. wide. The whole of these twelve galleries are top-lighted. The Coral Gallery and Reptilian Gallery are each 200 ft. long by 17 ft. wide. The Central Hall is 170 ft. long by 97 ft. wide and 72 ft. high; the staircase is 20 ft. wide. This central hall, with its dozen recessed bays on either side, is intended to form an Index Museum or popular typical collection of natural-history subjects. This portion of the Museum is not yet fitted up, but the necessary fittings for carrying out the idea are in progress.

The building is set back about 100 ft. from the Cromwell-road. The length of the south or principal front is 675 ft., and the towers are 192 ft. high.

The small cross section in the left hand corner of the plate is taken through a portion of the Northern galleries.

The fittings have been designed by Mr. Waterhouse, A.R.A., the architect of the building, and are placed in positions specially arranged to receive them. Some have been executed in metal, but most of them are in mahogany. The doors are ebonised and strengthened by metal plates. Some of the galleries are fitted with table-cases brought from the British Museum. The wall-cases in the Northern galleries are arranged in bays about 17 ft. long. The side-lighted front galleries have pier-cases at right angles to the windows, on each side of a central gangway; these cases are about 15 ft. long by 12 ft. high, and of varying depth. The Coral Gallery is fitted with cases glazed on both sides and having glass shelves for the specimens.

A general view of the Museum was given in the *Builder* for the 4th of January, 1873, and a plan in the number for the 11th of January of the same year. In our volume for 1879 (p. 628) we gave a two-page engraving of the interior of the Central Hall or Typical Museum. Some sketches of details of the exterior will be found in vol. xlii., pp. 392-393.

CHINESE FISHING-STATIONS.

ONE of the most interesting of the foreign sections of the International Fisheries Exhibition at South Kensington is that occupied by China. Sir Robert Hart, K.C.M.G., the President of the Chinese Commission, has, in his capacity of Inspector General of the Imperial Maritime Customs, published an exceedingly useful catalogue of the Chinese exhibits, which gives, incidentally, a great deal of interesting information as to the Chinese fishing-stations and the economic and social condition of the fishermen.

The various Treaty Ports on the coast of China are all more or less important centres for fishing, but we are told that Swatow,—the fisheries of which place in particular have been fixed upon to be prominently represented in the present exhibition,—enjoys in itself, on a smaller scale, all the advantages which are distributed along the seaboard. Swatow was opened to foreign trade by the Treaty of 1858. It is situated at the north-eastern corner of the province of Kwangtung, in latitude 23° 20′ 43″ N., and longitude 116° 39′ 3″ E., near the frontier of Fukien. The river Han, which forms above Swatow a vast estuary, flows past the city, and, after many ramifications, joins the sea a few miles below the town. In the district of Swatow, T'at'oupu, commonly called Tatapou, and Haimên, are the most noteworthy stations for deep-sea fishing. Tatapou is situated on a branch of the river Han; Haimên lies, in a southerly direction from Swatow, right on the sea. Tatapou is of the first importance, for from this place all the other minor places of this district are supplied with the necessary fishing gear.

The work of the fishermen is most arduous, but they are described as robust and strong, and quite equal to their task. For the most part they live on the boats, and, as a rule, do not become rich. There are no benefit societies of any kind where the fishermen might insure their lives to provide for cases of accident, nor are there assurance societies where the boats and gear might be insured against the dangers and risks of the sea.

At Tatapou and Haimên the fishermen have from olden times formed themselves into a guild; they have their guildhall and their temple, the former for a place of meeting and entertainment, the latter for worshipping the gods before proceeding to sea. Models of boats, nets, and ropes are generally deposited in the temples as offerings to the gods, that they may protect the craft whilst exposed to the dangers of the sea, and bestow their blessing on the haul. At Double Island, at the mouth of the river Han, a temple has been built by the fishermen of the district. It forms a place of pilgrimage, whither they proceed regularly once a year, on the birthday of T'ien Hou, the Goddess of Heaven.

The fisheries of Ichang are remarkable as being situated nearly in the centre of China proper, at a distance of a thousand miles from the sea. Ichang is, as yet, the head of steam navigation on the Yangtze. The "Great River" is here about three-quarters of a mile wide in summer, and has a great depth of water,—over 150 ft. in places. The fishing divides itself naturally into three kinds (*a*), fishing in the river itself; (*b*), fishing in the numerous mountain streams which fall into the Yangtze in this neighbourhood; and (*c*), fishing in the shallow lakes and large ponds which abound in close proximity to the town. Fishing with the live otter (exhibit No. 1 in the Ichang collection) is perhaps entirely peculiar to this immediate neighbourhood. But few people at Ichang make fishing their sole calling, the work being carried on chiefly by small farmers, who combine with it other occupations.

The fisheries of Ningpo have their centre in the city of Ningpo, which stands on the River Yung, twelve miles from the sea, in latitude 29° 58′ N., and longitude 121° 22′ E.,—about ninety miles south of Shanghai. It is the point of convergence of an extensive river and canal system, and at the same time occupies a commanding position with reference to the Chusan Archipelago. Partly owing to the wealth and enterprising character of its population, and partly to its favourable situation, Ningpo is one of the most celebrated places in China for the extent and variety of its fishing industries.

The fisheries of South Formosa include those of the port of Takow, and of Anping, Lambay Island, the Pescadores Islands, and of the South Cape. The Island of Formosa is politically a part of the Chinese province of Fukien, from which it is separated by the stormy Formosa Channel,—about 100 miles wide. The exhibits from this group of fisheries are for brevity's sake termed the Takow Collection.

The exhibits in each of the four collections from Swatow, Ichang, Ningpo, and Takow are divided into distinct classes. Class I. (Fishing) includes in each collection nets, hooks, lines, spears, and other gear used in sea-fishing or fresh-water fishing, besides models of boats and cargo junks. One of the most interesting exhibits of this kind is included in the Takow collection, and consists of a model of a catamaran, or bamboo raft, as used at Anping. These rafts are the chief means of communication with vessels in the roadstead; no foreign-fashioned boat, when a "bar" is on, could live through the surf. In the Swatow Collection (No. 68) is a compass, *Lo ching p'an*, a very primitive article, used by fishing-boats and junks. It should be noted that in the Chinese compass, the arrow-head indicates the *south*.

Class II. is devoted to the Economic Condition of Fishermen. In the Swatow collection are exhibited a number of articles of apparel worn by the native fishermen. Exhibit No. 18 in this collection consists of a fisherman's hut, composed of a wooden frame fastened to the ground by means of heavy stones, and covered by a straw-roof. The separate mats are held together by bamboo poles. The hut contains the household articles used by fishermen. The floor is covered with a straw mat, on which is laid a second mat, of reeds. Exhibit No. 19 is the model of the Fishermen's Guildhall at Haimên before referred to. A few steps lead into the courtyard, which is flanked on either side by a row of buildings, in which are the kitchen and the secretary's rooms. In the middle of the yard stands the guildhall proper,—a two-storied structure. The lower story serves as the weighing-room. A staircase leads to the upper story, which contains the assembly-rooms. In front of the house, and sheltered by a latticed roof, stands a large platform, which in ordinary times serves for drying fish, while on festive occasions it becomes the stage for theatrical performances. Exhibit No 20 is a model of a fisherman's temple. In front of the building is a wide terrace. Within the building is the altar, with its idols and incense-burner. The inscriptions on the walls contain appropriate references to the fisherman's calling.

Class III. is devoted to the commercial and economic aspects of the Chinese fisheries, and includes a great deal to interest the visitor. In the Swatow collection is shown a stove for curing fish, with all the necessary implements. In the Ningpo collection is shown the model of an ice-house, the construction of which is most simple. It consists, in fact, of a kind of reservoir, with stone walls, generally 20 ft. high and 65 ft. long by 46 ft. wide, covered on both sides with thick layers of mud, and upon these walls rests a high and thick straw roof, supported on bamboo rafters. A flight of steps on one side leads up the wall to the entrance of the ice-house, which is a doorway cut through the roof and covered with a straw curtain. Through one wall, on a level with the gound, a door is likewise cut, by which the ice is removed. Gutters traverse the floor of the building, to allow water to escape. The ice is stored in alternate layers with straw mats. The fields around the ice-houses are covered with water, and every morning during the cold season, the ice, generally very thin, which may have been formed in the night on these artificial ponds, is gathered and stored in the house. When the reservoir is full of ice, a thick covering of straw is placed upon it. Although very simple, this system of ice-storage is stated to work admirably, and to effectually resist the intense heat of summer. A great deal, if not the whole, of their success is attributed to the nature of the earth which enters into the composition of the walls of the reservoir. It is a thick clayey loam, which never dries completely except on the surface, and is impermeable to heat and water. The supply of ice often keeps for years, and as in some winters the weather is so mild that no ice can be collected on the ponds or fields, a special law obliges the owners to have a three years' supply, and some of the ice-houses are kept specially for this reserve. The capacity of the ice-house is from 2,000 to 3,000 piculs each, but these are smaller than the common picul,* being one man's load, 80 instead of 100 catties. An ice-house costs from 300 dols. to 400 dols., including the land, measuring about two acres, which surround it. In the Ningpo collection there is also shown a window made of oyster-shell, and specimens of shells with images inside,—"Buddha shells." These curious shells were obtained in Hangchow, the capital of the province of Chêhkiang. The little image is produced by thrusting into the living shell-fish a small model,—of metal or clay,—of a Buddha or some similar object, and in course of time this becomes covered by the nacre. The details of the process are kept a trade secret by those acquainted with it.

Class IV. is appropriated to Fish-Culture, Class V. to Natural History, and Class VI. to History and Literature, including maps.

The decoration of the Chinese section is not the least remarkable feature of the exhibition. These decorations have been carried out partly by Messrs. Holland & Son, and partly by native workmen. Closely adjacent to the north wall, on either side, are two long scrolls bearing Chinese characters. Their meaning is told in the following lines:—"The fisherman propels his skiff on the vernal stream, leaving care behind on the shore. The soft notes of a lute borne upon the evening breeze strike his ears; the sun's bright rays pierce the mists of the hills." These scrolls, and also the "characters" on the side walls of the court, are the work of the Chinese Ambassador to England, the Marquis Tsêng, who enjoys the reputation of being one of the finest caligraphists in China.

* 1 catty = 1⅓ lb. avoirdupois; 1 picul = 100 catties = 133⅓ lb. avoirdupois. 16·80 piculs = 1 ton.

SHAM LEGISLATION.

THE INSTITUTE AND THE BOARD OF WORKS.

MR. STORY-MASKELYNE, in the House of Commons last week, asked the Chairman of the Metropolitan Board of Works whether the design for the vast building in the Northumberland-avenue, designated as the "Hôtel Métropole," had received the sanction of the Institute of British Architects, as required by the Act of Parliament.

Sir J. M'Garel Hogg, in reply, said,—The design for the Hôtel Métropole was submitted to the Institute of British Architects, as required by the Act of Parliament, but after due consideration the Board did not think it necessary to put the tenant to the expense of carrying out the alterations suggested by the Institute, having regard to the fact that the plans for the building had already been amended in accordance with the recommendations of the Board's Architect, who was himself then a member of the Council of the Institute.

This reply seemed to show such an extreme disregard for the requirements of an Act of Parliament that we turned to the statute, the Charing-cross and Victoria Embankment Approach Act, clause 30, and found the following, which, as it seems to us, gives the Institute no power to interfere at all:—"The architectural elevations of all buildings to be erected under this Act, fronting the new approach to the Thames Embankment, or fronting any street to be made under this Act, shall be submitted by the Board to the consideration of the Council of the Royal Institute of British Architects previous to the commencement of any such buildings."

What advantage is to result from "submitting" the elevations to the Institute we are unable to discover.

FOREIGN NOTES.

The Electric Light Abroad.—Following the example of England, the Austrian Government has issued an ordinance for the regulation of electrical installations for lighting and other purposes. It is necessary for companies before laying down an installation to obtain a formal concession from the local Government authorities in every case.

Copenhagen.—The celebrated Danish landscape painter M. Brendstrup died on the 3rd inst. in the Danish capital. He was born in 1814, and was a member of the Copenhagen Academy of Arts.——Dr. Christian Hansen, professor of architecture at the Copenhagen Academy, died last week at Hietzing. Like his eldest brother Theophilus, the celebrated architect of Vienna, he was a thorough representative of the Greek Renaissance. Dr. Christian had distinguished himself in his earlier career by discovering and reconstructing the Temple of Nike Apteros. He was also the architect of the University, the Natural History Museum, and the City Hospital of Copenhagen, and of the great Naval Hospital at Trieste.

Hungarian Parliament House Competition.—The competition which was opened last year for designs for a new Parliament House at Pesth has at length been concluded with the following awards. The four first premiums, which were each of the value of 5,000 florins, were adjudged respectively to the following competitors: (1) Professor Emerich Heindl; (2) Alois Hausmann; (3) Albert Schickedanz and Wilhelm Freud; and (4) Otto Wagner, M. Kallina, and Rudolph Bernd. Two other designs were purchased for 1,500 florins each. They were respectively by (1) MM. Fellner and Helmer, and (2) Chevalier von Förster.

Chester Cathedral. The Dean of Chester has just issued a statement of the funds contributed in Chester Cathedral during the year 1882 and the purposes to which they have been applied. Reverting to what has been done in the Cathedral, the dean says that the whole of the north wall of the chapter house has been rescued from its state of decay and danger. The repair of the outer roof of the south transept is now completed, towards which the Ecclesiastical Commissioners contributed 1,000*l.* Steps will now be taken to complete the vaulting of the east aisle, one bay of which was done several centuries ago. The total cost will, it is estimated, reach 700*l.*

THE VIENNA CITY RAILWAY.

IT is announced from Vienna that the English contractor for the Vienna city railway has given notice of his having raised the required first instalment of the capital for its construction, and it is accordingly expected that the first portion of the line will very shortly be commenced. The railway is to run above ground on viaducts, and will be very expensive.* The cost has been estimated at about 370,000*l.* per mile, which is considerably larger than that of the Berlin city railway, which cost about 240,000*l.* per mile to build. It is, however, just possible that the Vienna authorities may, at the last moment, take up a rival scheme, which will cause a considerable modification in these plans. Dr. Werner Siemens, who has already carried out several small electric railways at Berlin and elsewhere, has laid before the municipal authorities a project for a comprehensive network of electric lines for the Austrian capital. He proposes to make them of narrow gauge, and partly underground and partly above ground. In tunnels beneath the streets or on viaducts above them, Dr. Siemens proposes to run a constant succession of electric carriages, the electric current to move them being supplied from a series of central stations. The old part of Vienna,—the city, in the narrower sense,—lies high, and here Dr. Siemens proposes to carry the line from one side to the other through tunnels. In the other portions of the city he would erect viaducts. Dr. Siemens does not propose his scheme as one intended altogether to supplant that for which Mr. Fogerty has obtained the concession. He offers it rather as a supplement or improvement for adoption in the most thickly-inhabited parts of the city, and he wishes the Fogerty scheme to be carried out in the outer ring of suburbs. Dr. Siemens also proposes that some of the tramways, particularly those which run to the most distant and least populous suburbs where a steam railway would not pay, should be supplanted by electric railways, as these are more rapid and in other ways preferable to trams. Dr. Siemens claims for his electric railway that it is the only system by the help of which it is possible to pay the shareholders and to maintain a constant succession of conveyances starting at very short intervals. This latter arrangement is absolutely required in the middle of a large city, where long trains starting at long intervals would be of little service as compared with short trains or single carriages running at the most frequent possible intervals.

With regard to the cost of the undertaking, Dr. Siemens states that as against the steam railway scheme, costing 370,000*l.* per mile, his electric lines in the middle of the city would not require an outlay of more than 45,000*l.* per mile to construct.

* In vol. xlii. of the *Builder*, pp. 100, 104, we published fuller particulars of this railway, and gave a view of the central station.

NOTES FROM BIRMINGHAM.

SIR,—The experiment recently made by the Improvement Committee of the Corporation of letting their vacant land on leases for seventy-five years, *by auction*, has proved a remarkable failure, only one lot out of ten offered having found a purchaser, and in that respect forming an exact parallel to the letting at Wolverhampton a short time since. The Committee proposed to suspend the payment of the ground-rent during the first seven years of the lease, and to re-adjust the ground-rent payable during the remainder of the term, so as to include the payment of the amount so deferred, with interest at four per cent. per annum. This very liberal offer, however, failed to induce such biddings as the Committee were willing to accept for nine out of the ten lots put up (for one of which, a plot in Cherry-street, 1*l.* 5s. per yard was bidden), and they were consequently withdrawn. The last lot, a site of 300 yards area, for a proposed public-house, with a very large frontage, and the offer of a licence to be transferred, the buyer to spend not less than 3,000*l.* in building, was knocked down at 10s. 3d. per yard per annum. In contrast with the above may be mentioned a sale on the following day of thirty-seven lots of ground-rents (freehold) situated in and about the Monument-road, Birmingham, a purely residential neighbourhood, and subject to the usual fluctuations as regards letting. These were knocked down at prices representing an average of nearly thirty years' purchase, and so eager were all concerned, that the sale occupied less than an hour's time. One cannot help reflecting that the latter sale showed at least that money at the present time must be both cheap and plentiful; and the former sale showed that the Committee appear to have placed too high a value upon their plots. If the 1*l.* 5s. per yard may be capitalised at the same rate as in the latter sale,—thirty years' purchase,—it will show the value of the freehold to be 37*l.* 10s. per yard, a price at which most will agree it cannot be sold, and the Committee would, therefore, be wise in reducing their estimate of value, and get the land let, and built upon, when both rent and rates will be accruing to the town. It is estimated that on the land already let by the Committee new buildings have been erected of no less a value than 300,000*l.*, the whole of which, if the law is not altered, will revert to the town at the expiration of the leases. But there is just a possibility that the law as regards ground-rents of buildings may be so altered that leaseholders will have the option of buying the freehold. A Bill is, it is said, about to be brought into the House of Commons by Mr. Broadhurst to enable this to be done; and it cannot be doubted that it will receive a large amount of support; for any measure,—not a violent one,—which will have the effect of diminishing the area of great estates, and of adding to the number of small proprietors, must necessarily promote the general welfare of the community. The present system cannot fail if persisted in to help largely to bring about the ruin of the country. Again, when corporations are the lessors of land, as in this case, much better terms would be obtained if the leases were longer, or they might be perpetual. It cannot be expected that buildings of the same value and durability will be put upon land with only a seventy-five years' lease as there would be upon land with leases of a much longer duration. This is a matter which affects us all, but more particularly those of us engaged in building. The slovenly manner in which houses of all kinds are erected at the present time is a matter of notoriety and disgrace, and nothing would operate so effectually to improve the character of the architecture and workmanship as a feeling of permanence in possession would engender.

The bricklayers and carpenters of the Birmingham district have just had an advance of wages to the extent of one farthing per hour. The building trade, however, continues exceedingly dull here.

Another Board school was completed and opened on the 7th inst. in Foundry-road, so-called because it was formerly the road to the celebrated foundry and works of Boulton & Watt at Soho. The school is on a modification of the class-room principle, with a large hall for lectures and general meetings, and is to accommodate 1,000 children.

The Crompton-Winfield Electric Lighting Company have made an arrangement, which only requires the assent of the central authority to complete it, to lay down wires in certain streets in Birmingham, and to light with electricity the area bounded by Colmore-row, Bull-street, High-street, and New-street for a period of sixteen years, the first two years of which are to be allowed them to complete their arrangements.

The new branch of the King Edward School at Aston is now complete and opened. A similar branch was recently opened at Camp Hill, so that the scholars have the schools nearer their homes. This has caused the school in Meriden-street to be deserted, and the School Board have taken it for a Board school until new schools can be built.

There is an old proverb which says that "Every parent thinks his or her child the finest and best," and it has had an illustration recently in a lecture delivered to the Birmingham Philosophical Society, "On the Utilisation of Town Refuse, as illustrated by the Process adopted by the Birmingham Corporation." The lecturer, Mr. Councillor Tait, is a surgeon, and one of the members of the Health Committee, which has the carrying out of the work of scavenging and the removal of night soil on the pan system, and he became quite enthusiastic in describing its merits, especially as compared with water carriage, which he stigmatised at the outset as "the easiest, laziest, and therefore, on that account alone, the very worst that could be adopted." He then proceeded to state that Birmingham had become one of the healthiest towns in the kingdom, and having had to do with every

arrangement which had been put in force in the borough with that object, he did not hesitate to state that the most efficient means to that end was the present system of disposal of the refuse. The law having been put in force to prevent the fouling of the rivers, this system had been forced upon them after many expensive experiments. Only about two-thirds of the borough, however, is under this arrangement, the other third (presumably the wealthiest) having water carriage. Every year the Corporation collects 1,758,000 pails, the weight of whose contents is about 52,000 tons. This contains some 94 per cent. of moisture, and after the ammonia is fixed by sulphuric acid this is evaporated, and forms a valuable guano, which sells well to the farmers. The ash-pit refuse is sorted by hand, and the profits derived from rags is about 260*l.* per year, and from tinware, which is placed in a muffle and reduced to tin and iron, was 630*l.* 19*s.* last year. The rest of the ashpit refuse is burnt in specially-designed furnaces, and its heat raises steam, and evaporates the water from the night soil. The silicious clinker which remains is being used instead of sand for cement concrete in walls and flooring. The whole of the flooring (not cart-roads) to the new covered market at Smithfield is of this material, and several patches of sidewalk to streets in the borough are paved with it, and it wears very well. With more extensive apparatus and premises the committee appear to see their way to making a profit upon their labour, and some time ago they persuaded the Town Council to vote a sum of 27,000*l.* for that object. It is to be hoped some good features will be ultimately developed by the system, which is certainly an improvement on the old midden plan in the weekly removal before it has time to decompose and become a nuisance; but it is a plan not likely to be adopted by the author of the paper, or any one else who can afford the luxury of a water-closet. E. G.

CHIT-CHAT FROM PARIS PAPERS.

THERE is as eager a rush for the "first view" at the French *Salon* as there is at our own Academy; and though for one day the living pictures claim the greater share of attention, art quickly re-asserts its claims. "*L'or est une chimère*," sang Robert the Devil. But artists of the present day can tell a very different tale; gold is not a chimera, but a pleasant reality. It is curious, if a glance be taken at a very interesting and rare publication, "Le Bulletin de l'Alliance des Arts," published under the direction of Monsieur Paul Lacroix in 1845, and which gives an account of the "Valeur vénale des ouvrages d'art exposées au Louvre" (for thirty-eight years ago it was in the Louvre the *Salon* was held), to note the monetary difference in the awards to genius then as compared with now. Meissonier, whose pictures fetched most, had his "Corps de Garde," his "Partie de Piquet," and his "Jeune Homme regardant des Dessins," valued at 3,000 francs (120*l.*) each. Could he have foreseen what the whirligig of time was to bring about, and the sum his little "Napoleonic" *chef d'œuvre* would fetch at Christie's, he would have bought them in. At the Hôtel Bullion, a picture by Herrera the elder, worthy of a museum, sold for 3 francs 15 sous. A country scene, by Jules Andre, only brought the artist 300 francs. Baron sold his "Oies du Frère Philippe" for 500 francs. H. Bellanger was one of the lucky ones, he got 40*l.* and 60*l.* for his subjects. M. Belloc got 32*l.* for a portrait. Court got 120*l.* Benouville, the painter of classic scenery, only got a few hundred francs for his works, and landscapes with animals, by Rosa Bonheur, fetched 5*l.* and 6*l.* Brascassat, who was more fortunate, got 40*l.*, 80*l.*, and 120*l.* for his works. His "Cow attacked by Wolves" was valued at between 240*l.* and 280*l.*, and "infatuation" was the word used as a reason for such a sum. Calame had also his admirers. A Russian bought his "Orage" (Storm) for 280*l.* Compte Calix sold his pictures for 12*l.* and 16*l.* Corot sometimes found it difficult to get 20*l.* for a large canvas. The admirable paintings of Eugène Delacroix, his "Marcus Aurelius" even, did not find purchasers, and at that time Delacroix sold pictures for 20*l.* worth 4,000*l.* Diaz only asked 40*l.* for a portrait, 12*l.* for a landscape; and Hippolyte Flandrin, 120*l.*, sometimes 40*l.*, for a portrait.

It would take too long to quote the various sums mentioned by Paul Lacroix. Amongst others, such as 20*l.* for the landscapes of Français, 8*l.* and 12*l.* for Guillemin's Breton subjects, Paul Huet's great subjects 40*l.*; the "Death of Manoir l'Escaut," by Jean Gigout, 80*l.*; a fine landscape, by Troyon, 36*l.*; the "Auto da Fé" of Robert Fleury, 280*l.*, &c. We are now certainly a long way from the modest sums of those days, and one can measure by these citations,—dry, but eloquent,—the ground that in a commercial sense art has traversed since then.

Sculpture has more difficulties in the path of success than painting. There is a greater strain on the idealistic faculties, the work is harder, the pay less, and the incidental expenses are greater.

Talking of sculpture and of modelling, especially in copper and bronze, an hour spent in the *ateliers* of the Rue de Chazelles, where M. Bartholdi is completing his superintendence of the work of the colossal statue of "Liberty," which is to be placed on an island in the middle of the bay of New York, opposite Long Island, is most interesting. It is nearly ten years ago that M. Bartholdi commenced this work, and eight since a banquet was given by Americans and Frenchmen in honour of his idea. The work now approaches completion. All who visited the last French Exhibition must remember the gigantic head of "Liberty" exposed in the gardens of the Exhibition in the Champ de Mars. The arm which holds the torch, round which twelve people could easily stand, has already been to America and is back again. In six or eight months we shall see the statue standing erect. Now though only finished as far as the middle of the body, it overtops the neighbouring houses.

When one thinks the "Bavaria" at Munich is only fifteen mètres high, that the gigantic "Saint Charles Borromeo" is twenty-two mètres, that the Column Vendôme from the base to the summit is forty-four mètres, and that the statue of "Liberty" will be higher than this by two mètres and some few centimètres, one is astounded; the Colossus of Rhodes, taking the maximum of the proportions attributed to it by tradition, would have looked like a small boy beside this giantess, who will weigh (all calculated) 200,000 kilos.

Can one picture to oneself this enormous light-house, this statue (its head encircled with a crown of illuminated stars) rising like an "Adamastor" of safety out of the sea during tempests? It appears the wind sweeps across the plateau of Montsouris with violence equal to that which it exhibits in the Bay of New York, so it is perhaps at Montsouris they will erect the *nome*, and where all Paris can see, in all its prodigious height, this marvellous specimen of human handicraft ere they despatch it to New York. The ground of the "Ateliers" (workshops), Gazet Gauthier (where the works of the re-constructing of the Column Vendôme, the dome of the Opera, and the Vercingétorix of Millet were executed) has been sold, and the yards must be clear of all matter in six months: so in six months Bartholdi's "Liberty" will be complete, and that day the energetic and sympathetic author of the "Lion of Belfort" and the "Alsatian Vine-dresser" may rest on well-earned laurels, on the completion of one of the works of the century. Meanwhile the *ateliers* of the Rue de Chazelles present a most curious scene. On all sides are strewn gigantic fragments, and *silhouettes* of fragments, pieces of bust, drapery, arms, hands, &c. The carpenters and joiners are constructing a framework of wood, covered with lath-work, then a sort of impression of mould and wood called *gabarit*, on which the coppersmiths (or tinkers?) apply a piece of copper which they beat in a way to obtain an exact *silhouette* of the framework coated with plaster, and these fragments of statue, these pieces of copper, are united together, at certain distances, by ironwork round the interior bracing of ironwork. Thus, little by little, the statue is growing. The head is finished, the right arm is finished, and part of the body. Last summer twenty-five guests lunched in the calf of the right leg. The rest,—the bust, the shoulders, the drapery of the neck,—is still in the forge. But gigantic fingers (two *fore* fingers, two yards and a half long), are there already cast, and are leaning against the wall. It is like some fairy tale to hear the strokes of the hammers on the copper, and to see human beings, who, in comparison, look like so many dwarfs, building up this metal giantess.

Two steps away is the Parc de Monceau, where Spring is really making its appearance. Flowers, birds, children, in the pretty park, and a few steps off, this forge, where sixty human beings are carrying out this almost superhuman work under the eye of the energetic man who has given no little of his life and some of his own money to this work, which is to be his glory. M. Bartholdi is one of those valiant workers-out of an idea that criticism itself finds a pleasure in honouring.

THE CROMWELL-WILLIAMS FAMILIES.

DURING the fifteenth and sixteenth centuries it was the custom of aged and well-to-do people to have their effigies, names, dates of birth, and other particulars concerning them, deeply engraved on brass plates, which, after their death and burial, their relatives or friends securely fixed against the walls, or into stone slabs placed over their graves, within the churches. It was probably owing to this custom that the art of memorial brass engraving was brought to great perfection during those centuries. As, however, very many of the inscriptions on the brasses contained expressions or allusions contrary to the religious tenets professed by the Reformers and the Puritans, a great number of the brasses were removed by them, and probably many more were stolen, and sold as old brass. Hence it is that so few ancient brasses are now to be met with in churches.

In a gravestone forming part of the floor of the chapel south of the chancel in St. Helen's Church, Bishopsgate, London, there are two effigies on brass of a man and woman clad in gowns, such as were worn by gentlemen and gentlewomen towards the end of the fifteenth century, and under the effigies there is a Latin inscription on brass in black letter, which, translated into English, runs as follows:—

"Here lies Thomas Wylliams, senior, and Margareta his wife. The said Thomas died xvi January. MCCCCXCV., and the said Margareta died . . . MCCCC. . . . ."

Thomas Wylliams was not buried at this spot in the church, but in the nave, whence the gravestone was removed to where it now is, some years ago, when the church was altered and repaired. When he married Margareta he was a widower with two sons, Thomas and John, and one daughter, Katharine, and she was a widow with one daughter, Isabella. It is to be observed that as the date when she died is not filled-in in the inscription, it may be that she married again and was not buried in St. Helen's Church. That the effigies of "Thomas Wylliams and Margareta his wife," were engraved on these brasses before they died, and, therefore, are fairly good likenesses of them, there seems to be no doubt; but what I desire to call particular attention to is that if his portrait, as described on his brass, be compared with a good portrait of Oliver Cromwell, the Lord Protector, it will be seen that the two portraits remarkably resemble each other. Now this may well be so, for Thomas Wylliams was the younger brother of Jevan-ap-Morgan, of Lanishen, in Glamorganshire, who was the grandfather of Morgan Williams, the ale-brewer and innkeeper of Putney, who was the great-great-grandfather of Oliver Cromwell.

The Williams family of Lanishen were attorneys and accountants in South Wales. Such were the brothers Jevan-ap-Morgan and Thomas Wylliams, and such were their father, Morgan-ap-Howell, and grandfather, Howell-ap-Madoc. Jevan-ap-Morgan married Margaret, daughter of Jenkyn Kemeys, of Bagun, in Monmouthshire, whose son, Jevan Kemeys, built, and resided at, Cefn-Mably, in Glamorganshire. They had one son, William-ap-Jevan, and one daughter, who married John Morgan, brewer, of Cardiff. William-ap-Jevan was an attorney and accountant; he also was steward of the lordship of Glamorganshire, first for Jasper Tudor, Duke of Bedford, and afterwards for his nephew, Henry VII. He had two sons, Morgan-ap-William, who, coming to Putney in 1490, was thenceforth called Morgan Williams and John Williams. The latter was the ancestor of Lord Williams of Thame. Morgan Williams was brought up as an ale-brewer by John Morgan, who, in 1487, started an ale-brewery at Mortlake, in Surrey. At this time the king,—Henry VII.,—chiefly resided at the pleasant palace beside the Thames at West Sheen, now called Richmond, in Surrey. As he and his family were Welsh, so also were his servants of the household and yeomen of the guard, who, with their families, settled in the adjoining villages of East Sheen, Mortlake, Barnes, and Putney; and as their beverage was a peculiar kind of ale which could not be obtained in the

locality, John Morgan was induced to start the ale-brewery at Mortlake, as we have seen. In 1490 he and his wife's nephew, Morgan Williams, started another ale-brewery and an inn, which they called the Red Lion, in Putney. In 1493 John Morgan returned to Cardiff, and then Morgan Williams became sole proprietor of this brewery and inn, which he carried on until the lease expired in 1511.*

Returning now to Thomas Wylliams. About 1445 he came to London from Lanishen, and commenced practice as an attorney and accountant in the parish of Great St. Helen's, Bishopsgate. Here he married a lady named Daniell, by whom he had two sons and one daughter, as already stated, and with her he acquired some land at Potter's Bar, and a residence and some land at Edmonton, in Middlesex. Here, probably, she and his eldest son died, and were buried in Edmonton Church. In the summer of 1464 Sir Richard Woodville and Jaquetta of Luxemburg's wife were admitted by copy of Court Roll from the lord of the manor of Wimbledon to a mansion, called Upper Place, with eight virgats of land belonging thereto, situated on the east side of Putney-hill and the south side of the Upper Richmond-road, in Putney. Here they took up their residence, so as to be near their daughter, Elizabeth Woodville, Queen of Edward IV., when the Court were in residence at the palace at West Sheen. In 1470 Sir Richard Woodville being dead, Anthony Woodville, his son, succeeded to this copyhold, and here Thomas Wylliams's younger son, John Williams, who had been brought up as an attorney and accountant, became his steward. At this time a smith and armourer, named Richard Smyth, resided at Roehampton, in the parish of Putney. He was the younger son of William Smyth, who, with his brother-in-law, William Cromwell, came from Norwell, in Nottinghamshire, in 1414, and settled in Putney (see p. 601, *ante*). About 1473 John Williams married, in Putney Church, Margaret Smyth, the youngest daughter and heiress of Richard Smyth. It was by this marriage the relationship first commenced between the Williams family of Lanishen and the Cromwell family of Putney. This was twenty-one years before Morgan Williams, who was John Williams's great-nephew, married Katharine Cromwell, the eldest daughter of Walter Cromwell.

When William Cromwell and William Smyth came to Putney, a brother of the latter, named Richard Smyth, came with them, and settled at Mortlake. William Cromwell had one son, John Cromwell, and one daughter, who married William Michell, dyer, of Wandsworth. Their granddaughter, Margaret Michell, married the celebrated Sir Ralph Sadlier, who was Thomas Cromwell's clerk and secretary, and who in 1540 became one of Henry VIII.'s principal Secretaries of State, and then was knighted. William Smyth had three sons, William, Nicholas, and Richard; and one daughter, who married her cousin, John Cromwell. I may here remark that the latter, in 1461, 1 Edward IV., remised the lease of the prebend of Palace Hall, at Norwell, in Nottinghamshire, which was granted for three lives by a Prebendary of Southwell Church, to his grandfather, William Cromwell, who was the fourth and youngest son of the sixth Ralph de Cromwell of that county. Richard Smyth had two sons, Thomas and Richard, and two daughters. The five sons of the two brothers were brought up as smiths, farriers, locksmiths, and armourers. The two youngest sons succeeded (according to the custom of the manor) to their father's copyholds. One settled in Roehampton, as already mentioned, the other in Mortlake. The remaining three sons settled in Putney, where, as I gather from the Court Rolls, each had a smithy, an armourer's shop, a brewery, and an hostelry. There is no doubt that this family of Smyths by name as well as by trade were largely employed during the wars of the Roses in making arms and armour for the forces which the Barons then hurled against each other. A large portion of the population of Putney was also engaged on the river: some in catching fish, with which it then abounded; some in rowing boats and vessels with passengers and goods to and from London; and some in working the ferryboat to and from Fulham opposite. The High-street on both sides, from the Thames to Putney-hill, half a mile in length, was at this period lined with homesteads and cottages, large and small, scattered and in rows. The larger homesteads, two or three of which were divided into tenements, were occupied by the copyholders, their relatives, and their servants; and the smaller cottages by the general work-people. A crystal brooklet rippling over a pebble bed, with hawthorn bushes here and there dotting the margin, ran down the east side of Putney-hill and the High-street into the Thames, where the new bridge is being erected. The greater part of the water in the brooklet came from copious springs which first supplied a large oblong pond in the grounds of Upper-place. St. John's-road East now occupies the site of this pond. It was chiefly from this brooklet the inhabitants of the High-street derived their supply of water.

John Phillips.

* In 1542 Henry VIII. granted the Priory and Priory Church of St. Helen's, Bishopsgate, to Morgan Williams's eldest son, Sir Richard Cromwell, alias Williams, who was Thomas Cromwell's nephew, and Oliver Cromwell's great-grandfather. Perhaps it was owing to the relationship of Thomas Wylliams to them that the brasses of him and his second wife were preserved during the Reformation and Puritan periods.

THE IRON AND STEEL INSTITUTE.

The concluding sitting of the Iron and Steel Institute's annual spring meeting was held on the 11th inst., in the Hall of the Institution of Civil Engineers, Westminster, Mr. B. Samuelson, M.P., presiding.

Mr. J. E. Stead, of Middlesbrough, read a paper on "A New Method for the Estimation of Minute Quantities of Carbon, and a New Form of Chronometer." The author said it was impossible to determine with accuracy minute quantities of carbon by the ordinary colour method, owing to the colour of the nitrate of iron present in the material. Investigations on the colouring matter produced by the action of dilute nitric acid upon white iron and steel had shown that it possessed the property of solubility in potash and soda solutions, and that the alkaline solution had about two and a half times the depth of colour possessed by the acid solution. That being so, it was clear that the colour matter might readily be separated from the iron, and obtained in an alkaline solution, by simply adding an excess of sodic hydrate to the nitric acid solution of iron, and that the colour solution thus obtained might be used as a means of determining the amount of carbon, even when only so small a quantity as 0·03 was present. The paper then went at length into the method at present in use, the writer stating that he was engaged upon investigations which, he hoped, would throw some light on the true constitution of hard and soft steel, and he believed he would soon be able to lay the results before the Institute. The second paper went into the subject of a new form of chronometer, which he had used in the process described above, and which, he said, had proved very efficient, and had the merit of being extremely simple and easily constructed.

In the discussion which followed, the speakers generally recognised the importance of the method, as affording a new mode of determining the constitution of hard and soft steel, and a vote of thanks was accorded to Mr. Stead for his paper.

In the next paper Mr. W. S. Sutherland, of Birmingham, described a process of utilising gaseous fuel in the manufacture of iron. Whilst fitting on a feed valve to a locomotive about 1866 the idea struck him that it would be advantageous to weld the seams of boilers instead of riveting them; and he set about to consider how best to obtain the requisite heat and apply it economically and of uniform quality and concentration upon the parts to be welded. The required conditions, he found, were best fulfilled by the gas produced from a modification of Story's American water-gas producer. The gas is no more poisonous than coal gas, and the advantages claimed for it are its superior heating power, cheapness, and simplicity of application. It may be produced at a cost of 3d. per 1,000 ft., after paying for coal, labour, and plant, and a net profit of from 2s. to 3s. per ton can be made from the residuals. By mixing the gas and air thoroughly a powerful concentrated flame is secured, which, when it contains an excess of gas, has no tendency to oxidise the iron, and gives a soft mellow heat. The effects of explosions of mixed gas and air are prevented by simple means, and the method has been at constant work for six years without accident. The system, causing air and gas to mix and diffuse more perfectly, produces a higher temperature. The full effect of the heat can be produced directly it enters the boiler, so that complete combustion is secured at once. The first essential is that there should be an excess of gas in the mixture. The slightest excess of air, of fully combined carbonic acid or steam, infallibly burns the iron, makes it rotten, and the weld becomes a bad one. The experience of the author led him to get as much carbonic oxide as possible in his gas, and as little hydrogen and oxygen. If the process of making steel in the Bessemer process could be stopped just when the carbon becomes carbonic oxide and remained in the metal, a soft ductile metal just like wrought iron might be produced without having to add any speigel. Accepting Professor Graham's definition that steel is iron containing unoxidised carbon, and wrought iron is iron in which carbonic oxide is occluded, the author drew the conclusion that to produce a good, true wrought iron which would weld well, and in all particulars take the place of the best puddled iron, it would only be necessary to use the Bessemer converter, and instead of blowing raw air into it, blow Siemens's gas, which contains an excess of carbonic oxide. This process would be simply to produce wrought iron with all its good qualities increased, and certain dynamic considerations make it probable that this process would greatly facilitate the elimination of sulphur and phosphorus.

In the discussion which ensued,

Sir Henry Bessemer congratulated the reader of the paper on having laid the matter before the meeting with so much ability. In the early days of his experiments, he had tried several methods with a view of trying to get rid of their enemy phosphorus, but without success. Notwithstanding this, he had found that any metals that contained a moderate amount of manganese could be blown successfully into wrought iron, which was comparatively, if not absolutely, pure iron, sulphur and phosphorus being supposed to be absent.

Mr. Lloyd mentioned that he was acquainted with the case of a Birmingham manufacturer, who, having been paying to the Corporation of Birmingham 300*l.* per annum for gas, had erected small gas-works of his own at which he manufactured gas sufficient for his requirements at a cost of 100*l.* a year.

Mr. J. Lowthian Bell believed that water-gas would be extremely useful for domestic purposes, for it would get rid of a great deal of the nuisance consequent upon the conveyance of the coal, it would be free from smoke, and, most important of all, the economy in its use would be great.

Mr. Riley and other gentlemen followed, and Mr. Sutherland having replied, the Chairman moved him a vote of thanks for his paper.

A paper by Mr. Fritz Baare, of Bochum, Westphalia, was read on the coal-washing machinery employed by the "Bochumer Verein." The paper dealt with the machinery used by the Bochum Smelting and Iron Company in the manufacture of Bessemer pig iron. It had been found that coke which was poor in ash, and consequently containing but little phosphorus, was of more value for use as fuel than coke containing a higher per-centage of those ingredients, and to obtain the required low proportion there had been established at Bochum plant for the washing of coal on the Lubarich system, the whole of the machinery being worked by a steam-engine of 140-horse power. The washing process consisted in a regular rocking motion, imparted by up and down strokes of pistons to the washing water, a stream of which was supplied through an opening situated underneath a piston at the back of the apparatus, and regulated by a valve. This peculiar motion of the water favoured the separation of the particles of slate from the coal, and at the down stroke of the piston sufficiently raised and opened the bed of slate or of felspar to allow the particle of slate to pass through it and through the perforated bottom into the lower part of the trough, whence they were carried away. This method of washing had the effect of reducing the per centage of ash to about 3·6, and about 1,000 tons of coal per day could be washed in the plant described.

Stratford-on-Avon Waterworks.—Mr. Arnold Taylor, Local Government Inspector, has held an inquiry in reference to the purchase of land for the waterworks. The scheme was explained by Mr. Pritchard, C.E., of Birmingham.

THE DIAMOND FIELDS OF SOUTH AFRICA.

AT the meeting of the Institution of Civil Engineers on the 8th of April, Mr. Brunlees, president, in the chair, the paper read was "On the Diamond Fields and Mines of South Africa."

The author commenced by stating that Kimberley was situated in Griqualand West, about 700 miles north-east from Table Bay, and 450 miles inland from Port Elizabeth and Natal on the East Coast. Lines of railway were in course of construction from Table Bay and Port Elizabeth to Kimberley, and were about half completed. In Griqualand there were several diamond mines, the principal of which were Kimberley, De Beer's, Du Toit's Pan, and Bultfontein. In the Orange Free States there were also two mines, viz., Jagersfontein and Koffeyfontein, the first of which produced fine white stones. The mines were all divided into claims, the greatest number of which were to be found in the Du Toit's Pan Mine. Bultfontein came next. The deepest and most regularly worked was the Kimberley mine. The next deepest was De Beer's, which, however, was very unevenly worked. Then followed Du Toit's Pan and Bultfontein. The Du Toit's Pan mine ranked next in importance to Kimberley mine. Diamonds were first discovered in 1867 by Mr. O'Reilly, a trader and hunter, who visited a colonist named Van Niekirk, residing in Griqua. The first diamond, on being sent to the authorities, was valued at 500*l*. Considerable excitement was caused throughout the colony, and the natives commenced to look for diamonds, and many were found, among which was one of 83¼ carats, valued at 15,000*l*. In 1868, many enterprising colonists made their way up the Vaal River, and were successful in finding a good number of diamonds. The centre of the river-diggings on the Transvaal side was Klipdrift, and on the opposite side Pniel. In all there were fourteen river-diggings. Du Toit's Pan and Bultfontein mines were discovered in 1870 at a distance of twenty-four miles from the river-diggings. The diggers took possession of these places. Licences were granted giving the first diggers a right to work. In 1871, De Beer's and Kimberley mines were discovered, and, in 1872, Mr. Spalding's great diamond of 282¼ carats was found at the river-diggings. The mines were of irregular shape, and were surrounded by reef. The top reef was a loose shale, and had given great trouble from the frequent slips. Below this were strata of trachytic breccia and augite; the formation was then seamy to an unknown depth. Within the reef, the surface-soil was red, and of a sandy nature. The next stratum was of a loose yellow gravelly lime, and the third blue, of a hard slaty nature. This last was the real diamantiferous soil. Large stones had been found in the "yellow," but the working of this generally did not pay. Kimberley mine, however, had paid very well all through. The method of working in deep ground was determined by roadways running north and south. The soil was hauled up to these roadways, and taken to the sorting-tables. The roadways decaying shortly after exposure to the atmosphere, a system of hand-windlass was adopted, which worked very well for a time until horse-whims were introduced in 1873. The depth of the mines increasing, horsewhims had to give way to steam-engines in 1876. The first diggers treated on an average ten loads per day each party. At the present time, the least taken out by any engine, when fully employed, was 250 loads per day. The cost of working, with present appliances, the first 100 ft. in depth, was 3s. 6d. per load; the second 100 ft. (mostly blue), 5s.; the third 100 ft., 8s.; and the fourth 100 ft., 11s. Through scarcity of water a system of dry-sorting had to be resorted to for several years; but it was superseded by the introduction of washing-machinery, which was now generally employed. At the commencement, through inexperience, many serious mistakes were made. When the first diggers reached the bottom of the red sand, they thought no diamonds would be found in the next stratum. When, however, diamonds were found in the second stratum, the diggers had again to move the *débris*, and so also when the "blue" was reached. Some of the claims in the Du Toit's Pan and Bultfontein mines were irregular in shape. The other mines, however, had been properly and regularly laid out. One or two shafts had been sunk and connected with the mines by underground galleries. These galleries were convenient in the case of falls of reef. Labour, at first, was cheap; but from 20s. per month, wages rose to 30s. per week, and food. The yellow soil offered no difficulty in working, being loose and broken, but the blue soil required blasting. Several methods were adopted for extracting the soil and carrying it from the mine before steam was introduced. The cost of wood for heating purposes was a serious item, but good coal had now been found at 160 miles from Kimberley, costing 13*l*. per ton; another serious item of expense was the transport over natural roads only, costing from 18*l*. to 30*l*. per ton. The machinery designed by the author for this industry was described. In 1881, the author paid a visit to Kimberley, and found the industry a large one. The Post-office return showed the value of diamonds passed through the office in one year to be 3,685,000*l*. Illicit diamond traffic had hitherto been a source of great trouble at the Fields. It was a question whether this industry would ever cease; in any case there was no doubt but that it would last for over a century. It was believed that the main bed of diamonds had not yet been reached, and that the mines in operation were merely shafts leading to it. Now that the waterworks were finished, with a bountiful supply of water, coupled with the great boon of railways to the Fields, and the advantage of a law recently passed for the prevention of illicit buying, a great and prosperous future was in store for the diamond fields.

MOISTURE IN WALLS.

DR. W. HESSE, a district medical official at Schwarzenberg, has communicated to the technical press of Germany a simple process for the quantitative definition of the free water which may be contained in a wall. For the carrying out of this process it is necessary to have a number of small glass flasks with glass stoppers. These should be of about one-half to five-eighths of a cubic inch capacity and of known weight. A small portion of mortar sufficient to fill one of the flasks is taken from the internal surface of the wall by boring with a tool specially constructed, and also by scraping from the wall, a piece of paper being held underneath. After the removal of any large unporous particles, the flask is filled rapidly, and well closed with an india-rubber stopper. In the laboratory the flask itself, as well as the inner surface of the neck, is carefully dusted, the glass stopper is inserted and the flask weighed. It is then exposed in a drying-oven to a temperature of 212° to 230° Fahrenheit until the mortar is completely dry, this process usually taking several hours. The flask is then allowed to cool in an apparatus specially designed for the purpose and is again weighed. By deducting the weight of the vessel (as previously ascertained) the difference between the weight of the mortar before and after the drying is arrived at, and the percentage of moisture is thus established.

It is remarked that the mortar should not be exposed to the air more than absolutely necessary, and that consequently sifting is not to be recommended. In applying this test to inhabited rooms it is difficult to choose a spot for the trial referred to, and when any part of the wall is already broken such places can be utilised. As a general rule, such portions as are covered and are exposed to the sun's rays in summer or the heat of a stove in winter are to be avoided as not affording reliable data on the subject referred to. The best way, it is remarked, is to collect a number of specimens from the various walls of a room, taken at various heights, the principle of the test allowing of a number of trials being made.

From the results of numerous experiments made in his own district, Dr. Hesse has established the fact that walls of inhabited rooms (practically regarded as being dry) contain about 1 per cent. of free water, no matter of what composition the mortar may be. In Münich, the tests made by other scientific men prove that rooms more or less underground contain in their walls a proportion of moisture increasing with the greater depth arrived at. Thus near the ceilings in such case the quantity is less than near the floors, where the proportion is sometimes 15 per cent. or even more.

In his contributions to the press, Dr. Hesse has also referred to various facts of minor importance in connexion with his process. He acknowledges that it may not in all its details answer the requirements of analytical science but claims that it gives a practical man a method of carrying out easily and rapidly a great number of trials. The results arrived at are, he maintains, accurate enough to allow of the composition of walls being estimated in such a manner as to give some reliable *data* affecting the connexion between damp walls and the health of those who live in the rooms which they encompass.

THE MUNICIPAL IMPROVEMENTS AT COLOGNE.

WITHIN the past year one half of the middle portion of the building sites rendered available by the above works within the limits of the former boundaries, has been sold. In the last sale, the valuations were exceeded by 11 per cent. and the results as yet arrived at are said to have been much more satisfactory than could have been at one time expected. The bulk of the land sold has been acquired by inhabitants of Cologne.

As might be expected, building is being actively pushed forward in Cologne, and numerous structures of an ornamental character are being erected. Several plots of land which, on account of their proximity to the old fortifications, were of small value, have become choice building sites on account of the changes which are taking place. The works now in progress will, it is expected, be so far advanced before the conclusion of the building season that there will be a continuous line of houses between the old and new portions of the city.

Considerable progress has also been made with several sections of the new fortifications. Amongst the alterations proposed with respect to churches, special mention is made in the German press of the enlargement of St. Mary's Church in the Schnurgasse, as well as the internal decoration of the churches of St. Cunibert and St. Columba.

A monumental fountain is shortly to be erected in the Altenmarkt, of which the model has been on view in the Rathhaus. The design selected is that of Herr Albermann, of Cologne, whose monumental works at Bielefeld, Neuss, and Düsseldorf, have been approved by the public taste.

THE CAPE COLONY.

Two or three young fellows, discontented with their progress in London, are inquiring of us as to the probability of doing better "at the Cape." We cannot offer them any inducement to go thither; they had better stick to work steadily at home. A reliable correspondent, who has seen many ups and downs there, writing in April last, says:—"I am afraid there is very little probability of my making any change here at present, for never has the colony been known to be in such a deplorable state since '66; never were wages so low; never was there so little money to be handled. Business is at a complete stand-still, so much so that employers are discharging all hands but those absolutely necessary to carry on what little there is to be done. Consequently, what with the weekly influx of young fellows from England, who evidently labour under the impression that a fortune is to be picked up in the streets here (they soon discover their error), the whole colony is overflowing with men out of work, and quite unable to procure any either.

Even in the out-of-the-way place whence I write,—men,—gentlemen, too,—are continually applying to us for a bit of something to eat and a shake-down, many of them having tramped all the way from Durban,—170 miles,—in the vain hope of meeting with some employment, no matter what. The extraordinary variety of classes, all in the same sorrowful plight, is amusing, although shocking to see. Ex-officers, clerks (by the thousand), students, apprentices, mechanics; in fact, representatives of almost every profession and calling. It is terrible. Just fancy, an ex-commandant of an irregular volunteer corps,—a Cambridge graduate, too, of whom I saw a good deal during the Basuto war,—is now actively engaged in the neither dignified nor seemingly lucrative employment of cab-driving in P. M. Bay; plies between the railway station and the Crown Hotel, fare 1s! I hear it does not pay by any means, and that he intends changing his calling to that of a shoeblack, 3d. a shine! Such is life! What we want is another war, and if the Maritzburg

storekeepers were to send a deputation to stir the Zulus up a bit (they would not want much stirring), it would be the finest stroke of business they have done, or will do for many a long day."

NEW ST. MARY'S, BATTERSEA.

A NEW church in Albert-road, adjoining Battersea Park, was dedicated on the 5th inst. by the Bishop of Rochester. This is the fifth church designed by Mr. William White, F.S.A., at Battersea, for the Rev. Canon Erskine Clarke, the vicar. The title of "New St. Mary's" has been given to it with the view of its eventually becoming the parish church, in place of Old St. Mary's. It has been planned on a large scale, the extreme dimensions when finished being 180 ft. in length, and 105 ft. in breadth externally. The part now completed consists only of a portion of the chancel and south chancel aisle, which is eventually to serve for vestries. The sanctuary is separated from the chancel by a lofty arch. Both the chancel and its aisle are terminated eastwards with an apse, and around the apse of the chancel is an ambulatory, with an arcade of five arches, over which rise five lofty lancet windows. These windows, however, are only two-thirds of the height originally proposed, the design having been materially reduced on account of cost. There is a clearstory of two single lancets on each side of the chancel, each of them contained within a double-arched curtain rib. On either side of the sanctuary arch is a small arch connecting the chancel with the ambulatory, and over it is an open arcade connecting the sanctuary with the chancel. The walls and windows generally, and the arches and piers, are built of brick, with special-made mouldings, stone being used for the pillars, with carved caps and bases, some bands across the brickwork externally, and other details. The several kinds of stone used are the red Dumfries, the yellow Ham Hill, the green Wardour, and buff Chilmark. A corbel-table is carried round beneath the eaves of the roof. The ambulatory roof is vaulted in brick. In order to provide present accommodation for 400 persons, a temporary annexe has been built on to the west, and another to the north. The former is fitted with deal benches, which are proposed to serve for the permanent church, the remainder with chairs. Large accommodation is provided for the choir. The brick bases of columns at the east end show the future-finished level of the floor, which will rise altogether twelve steps from the nave. The depth of the foundation below the floor-level is from 12 ft. to 14 ft. The plan comprises a future "chapter-room" to the north-east for parochial and mission uses, conferences, and other purposes connected with the church.

DRY-ROT IN CITY CHURCHES.

ST. STEPHEN'S, WALBROOK.

SIR,—I am glad to see that a committee has been appointed by the Vestry of St. Stephen's, Walbrook, to take into consideration the state of the flooring of the parish church, and to prevent the extension of the dry-rot to the oak pewing. In 1881, whilst the internal repairs to the church were in progress under my supervision, I specially called the attention of the rector and churchwardens to the very seriously decayed state of the whole of the floors, and showed them that the dry-rot was gradually rising to the oak framing of the pews, and ere long would most seriously injure it if steps were not taken to remove the decayed work. By their direction I reported fully as to the means which should be adopted to prevent its spread, and at their request also gave an approximate estimate of the cost, but as the church had been closed for some considerable period, it was deemed desirable to defer the work for a time. In March, 1882, I again called particular attention to the matter in my paper on the present building, read before the St. Paul's Ecclesiological Society, pointing out the danger this fine work of Sir Christopher Wren was in. In May following I was again requested to report on its state. Since then I am pleased to find that my opinion has been endorsed in every respect by the report of Mr. Hansard, and whose approximate estimate of cost tallies exactly with the one I laid before the committee in 1881. It is pleasing thus to have one's views so entirely corroborated, but to me it is more particularly interesting to know that works are now to be executed which ought to have been done long since, and that means will be used to prevent the further inroad of so dangerous an enemy to the woodwork of the church. And if I may be permitted, I would urge upon the custodians of our other City churches the necessity of examining the floors and woodwork of the buildings in their care, for I fear that the church of St. Stephen is no exception; but in many cases, not only the floors, but the roofs also, will be found affected where the timbers are covered internally with plaster and externally with lead work.

THOMAS MILBOURN.

A PETRIFIED FOREST.

IN Sonoma County, California, a petrified forest has recently been discovered. It is situated on the estate of a large farmer, Mr. W. T. Hudson. One day as a nephew of that gentleman was out hunting he sat down to rest himself on what appeared to be the stump of an old tree. His attention was accidentally turned to the tree stump, and on examination he found that the material was completely petrified, that it was stone and not timber. Further investigation showed that similar petrifactions abounded throughout the neighbourhood. The grain of the original wood is still plainly visible, and there are plenty of indications showing that the trees from which the petrifactions have originated belong to the coniferous species. The stump on which the discoverer rested and made his discovery was 3 ft. 6 in. in diameter, and nearly 4 ft. high. The question of the origin of these petrified forests is one which is being discussed with interest by American geologists.

A JOINER'S SHOP AND ITS MANAGEMENT.

SIR,—There are "wheels within wheels" in the management of a workshop, of which employers, as a class, are by no means fully cognisant. It is presumed that the men are treated according to their merits as competent, expert, and reliable workmen. Unfortunately, the presumption is, in too many instances, totally erroneous. Favouritism largely prevails, to the detriment and direct injury of many thoroughly straightforward, industrious, and highly-competent artisans,—men, however, who prefer to "live through fear rather than through favour." It too often happens that foremen have their circle of acquaintances amongst the men employed in a firm, and in more than one instance it has been known for a foreman to accept "tips" from the men whom he has employed on his master's behalf. Also in the case of "improvers" receiving considerably more wages than they are worth in consideration of suitably "tipping" the foreman from time to time.

The foreman's favourites are certain to get the pick of the work, and if they happen to be very long over their jobs or make mistakes, all this is conveniently arranged by a little artful shuffling of jobs from one man to another. When it becomes necessary to discharge any of the men, the foreman takes particular care that none of his little circle of acquaintances are disturbed. The whole system is, of course, a thoroughly vicious and unfair one. Upon another point I would desire to call attention to the wholly unnecessary repetition of lines and sections when setting out on rods. A very considerable amount of time is absolutely wasted in this useless practice. Every machine-shop should have a "lift" from the mill or yard level to the upper shops. The absence of a "lift" implies a great deal of slow manual drudgery in carrying to and fro, up and down, the various materials and finished work. Greater attention should be paid to the proper seasoning, drying, shrinkage, &c., of work and material. For young joiners desirous of qualifying for responsible positions I would recommend the preparation of working drawings, plans, &c., pertaining to newel and open well staircases, and the projection of the rail from the plan in the case of a continued handrail; the various details in artistic doors and over-doors, mantelpieces and over-mantels, wainscotings and dados in the various styles; also the exact lines and cuts in a "hipped" roof, open Gothic, or Mansard, &c., pertaining to groined arches and niche coverings. To this end a good groundwork of practical geometry is absolutely essential.

M. A. F.

BUILDING PATENT RECORD.*

APPLICATIONS FOR LETTERS PATENT.

2,282. T. J. Constantine, London. Open fire portable cooking-range. May 4, 1883.

2,293. H. J. Haddan, London. Compound for rendering wood, &c., fire-proof. (Com. by L. Gimenez & J. Yrigoyen, Pamplona, Spain.) May 5, 1883.

2,303. S. C. Overton, London. Producing mural ceiling and other architectural hangings, decorations, &c. May 7, 1883.

2,305. S. Fisher, London. Manufacture of wall-coverings. May 7, 1883.

2,321. B. Hess, Bayreuth, Germany. Manufacture of artificial stone, &c. May 8, 1883.

2,352. E. S. Shepherd, London, and J. L. Aspinwall, Nanttle-vale. Manufacture of artificial stone and cement. May 9, 1883.

2,374. W. Wright & T. Holmes, Birmingham. Construction of garden frames. May 10, 1883.

NOTICE TO PROCEED

has been given by the following applicants on the date named:—

May 8, 1883.

55. M. Kellow, Merioneth. Cutting and dressing stone. Jan. 4, 1883.

254. A. Frank, Charlottenburg, Prussia. Manufacture of porous silicious material for building, &c. Jan. 16, 1883.

406. A. Bruckner, London. Material for carpet-lining. Jan. 25, 1883.

May 11, 1883.

74. J. Betjemann, London. Fire-screens. Jan. 5, 1883.

102. G. D. Peters, London. Facilitating the action of spring-rollers for window-blinds. Jan. 8, 1883.

152. W. P. Thompson, Liverpool. Hydraulic and other cements, mortar, artificial stone, &c. (Com. by MM. R. Bosse and P. E. Freise, Brunswick, Germany.) Jan. 10, 1883.

414. G. Coates and A. Coates, Rawtenstall. Grinding, polishing, or facing stone, slate, &c. Jan. 25, 1883.

1,802. P. M. Justice, London. Brick-making machinery. (Com. by C. Chambers, Philadelphia, U.S.A.) April 10, 1883.

1,821. T. J. Baker, Newark. Chimney-tops and ventilators. April 10, 1883.

2,242. F. G. Glaser, Berlin. Apparatus for catching soot from smoke in chimneys. (Com. by C. A. Petzold, Berlin.) May 2, 1883.

ABRIDGMENTS OF SPECIFICATIONS.

Published during the Week ending May 12, 1883.

4,138. G. Nobes, London. Deodorising and disinfecting apparatus. Aug. 30, 1882. Price 6d.

This consists of a tank holding the disinfecting fluid, which is connected with the supply cistern, and on operating the valve or discharge-pipe of the latter a certain proportion of the disinfectant mixes with the water.

4,423. W. R. Lake, London. Composition for the preservation of wood, stone, &c. (Com. by A. Bugolich and P. K. Smith, Melbourne.) Sept. 16, 1882. Price 4d.

This can be used as a paint, and consists of oil perfectly refined, and shellac, resin, powdered white and blue vitriol, chromate of potash, crushed bees'-wax, and crushed garlic, which are added to the oil when the latter is near the boiling point.

4,430. J. Imray, London. Water-closets. (Com. by R. H. Lecky and J. Hay, Pittsburg, U.S.A.) Sept. 18, 1882. Price 6d.

The pan of the closet is made in one piece, with the service cistern at the side of it. The bottom valve is inclined downwards, and is worked by toggle levers. The water from the cistern enters the pan through apertures in its neck.

4,438. J. W. Andrews, Whittlesea. Blind roller furniture. Sept. 19, 1882. Price 6d.

A lever is pivoted between two lugs formed on the blind roller bracket, and the cord, after being wound a suitable number of times round the end of the blind roller, passes over a roller in the upper end of the lever, and down behind the same. The lever is so formed that the cord can be jammed between the lower part thereof and a bevel on the face of a bracket, and when the weight of the blind comes on the top of the lever the cord is jammed in this place. A releasing cord is attached to the lower end of the lever, by which it can be pulled away from the face of the bracket, and the cord allowed to hang free, so that the blind can be rolled up or let down.

4,462. J. McPhail, London. Chimney-tops, &c. Sept. 19, 1882.

The chimney top has two outlets, which branch off at opposite angles from the main shaft. Each outlet is cut off at an angle of 45 degrees. Above the centre, between these two outlets, is pivoted a double cover fitted with vanes, so that when the wind strikes one of them it is immediately closed down over the weather outlet, leaving the other one wide open.

* Compiled by Hart & Co., Patent Agents, 186, Fleet-street.

THE SCULPTURE FOR ST. GEORGE'S HALL, LIVERPOOL.

WE understand that Mr. Stephens Lee, the sculptor whose designs for the bas-relief panels at St. George's Hall were selected in competition some time ago, has received final instructions to proceed with the work, for which he is to receive 5,000*l*. This, however, is subject to the first example being perfectly satisfactory, as the Town Council reserve the power of determining the contract at that stage.

THE LAND TAX.

AN interesting paper was read by Mr. W. E. Evans, at a general meeting of the Surveyors' Institution, on the subject of "The Land Tax: its Assessment and Redemption."

The tax, he said, appears to have had its origin in the feudal system which prevailed in the reign of Henry II. In 1798 a scheme for the redemption of the tax was introduced, and the tax, which had hitherto been annually voted, was made perpetual, subject to redemption, to enable the plan to be carried out. The tax is levied on all quit-rents arising from manor, lands, tenements, quarries, mines, mills, works, woods, tithes, tolls, and all hereditaments situated in the parish. In places where the tax is properly assessed, the poor-rate is usually taken as the basis. The proportions payable by each county and town are fixed by the Act; and these quotas are subdivided into quotas for divisions, and these again for parishes. The quota for each parish cannot be varied; consequently the incidence of the tax, which originally was theoretically, if not practically, equal, has, owing to the much greater development of property in some places than in others, become very unequal, the rate necessary to raise the quota varying in parishes in large towns from ¼d. to 2s. in the pound, and in agricultural districts from about 2½d. to 1s. The collectors are not, if practicable, to exceed the quota; but if from the increase of the value of property the assessment cannot be apportioned at any equal pound rate without exceeding the quota, or if from any unavoidable cause the assessment exceeds by 5*l*. or upwards the amount required, the excess is to be applied to the redemption of a part of the tax chargeable upon the parish, the net quota being reduced by the amount redeemed. The price of redemption was originally the purchase of so much stock in the Three per Cents. as would yield a dividend of one-tenth more than the amount of tax to be redeemed; this price has since been reduced, and the terms now are that the money to be paid, or stock to be transferred, must be sufficient to yield an interest or dividend less by 17½ per cent. than was required by the Act 42 Geo. III. c. 116. For instance, supposing the land tax to be redeemed is 10*l*., and the price of stock par, the money payment would be 366*l*. 13s. 4d., less 17½ per cent., or 302*l*. 10s., being 30½ years' purchase. The exact sum actually to be paid depends on the price of stock in the second week after the date of the contract. The consideration for redemption can be satisfied in several ways. Firstly, by transfer of stock to answer the whole consideration at one time, or by instalments within two years; by payment in money in one sum, or by four equal instalments within two years; by transfer of stock by instalments exceeding two years, but not exceeding 16 years, no instalment to be of a less amount than 100*l*. stock; or by payment in money in similar instalments, no instalment being less than 60*l*. The money is paid to the receiving officer of the district, and the land tax is exonerated from the quarter day preceding the day of payment. The land tax can be redeemed by those in possession or by those in remainder, reversion, or expectancy; in fact, by any person having an interest in the premises. It will be evident that it is always advisable to redeem the tax on any land which it is probable will at a future time develope in value more rapidly than other land in the same parish; as, for instance, a part of a parish in such a situation as to be likely to become building land, or under which mines are supposed to exist. On the other hand, upon house property, or other fully-developed property, on which the land-tax is already properly assessed, it is not generally desirable to redeem, if there is any undeveloped property still remaining in the parish, the increase of value of which may in future years reduce the pound rate; but the extinction of the charge may be by some considered an equivalent for any possible future small decrease in the amount. Mr. Evans thinks it worth consideration whether a scheme for the compulsory redemption of the tax might not be desirable.

CHURCH-BUILDING NEWS.

Balderton.—The parish church of Balderton, near Newark, was reopened on the 4th inst., after restoration. The project of restoring the building was set on foot by the Rev. F. V. Bussell, vicar of the parish, shortly after his appointment to the living in the year 1879, and the onus of the work has fallen upon his shoulders. The outlay has been upwards of 3,090*l*. In November, 1881, the committee invited tenders for the work, plans having been drawn up by Mr. James Fowler, architect and diocesan surveyor of Louth. Mr. S. B. Burton, of Newcastle-on-Tyne, was selected to carry out the work of restoration, and in February, 1882, operations were commenced and continued up to May, 1883, a period of fifteen months. The cost of the work has been as follows:—Nave and tower, 2,570*l*.; chancel, 520*l*.; making a total of 3,090*l*. In addition to the above sum a new clock has been placed in the church tower by Messrs. Potts & Sons, of Leeds. The church is an exceedingly interesting building from the variety of its architectural features, its antiquity, and the particular beauty and goodness of the earlier work. It consists of a nave, and north and south aisles, with porches to each; a western tower and spire, and a chancel with north aisle or chapel, extending about half its length. The north porch and south doorway are now the only remains of the original Norman church, and, judging from the ornate character of the former, the church must have been one of considerable architectural beauty. This has been restored as a memorial to the late Mr. G. Harvey. On the inside there is an arcade of five arches on each side, the central one in each forming a window. These are filled with stained glass, the western one representing St. Giles, the eastern one Christ, the Good Shepherd. The western part of the north aisle has been entirely rebuilt, and a new window placed west of the porch, where originally there was a lack of light. This has been filled with stained glass by Mr. W. D. Warwick, "In memory of a little child." This window has been carried out by Mr. Daniel Bell, of London, and represents the Saviour in the act of blessing a little child. The walls of the aisles and tower were found to be so greatly dilapidated, on the removal of the plastering, as to cause the whole of the facing to be cut away and rebuilt. This has been done in Ancaster stone. The church is but little altered internally, except in so far as the removal of the flat roof of the nave is concerned, and the erection of the new high pitched one to the original lines, which is a very great gain of effect both externally and internally. The walls of the nave have been cleaned and restored, and the pillars and arches repaired; some of the former have been rebuilt, and most of them have had new foundations. A chancel arch has been added in place of the old timber gable. The roofs throughout have been renewed in red deal, that to the chapel being part of the old roof of the aisle, retained for this purpose. The aisle roofs are remarkably flat, but for this Mr. Fowler is not responsible, as the outer wall fixed the height on one side, and the nave roof on the other. They are covered with lead, while the steeper roofs have a covering of green slate. The old fittings, which are of a remarkably massive character, as well as being of singular design, have been grouped into two blocks in the eastern part of the nave, the remainder of the church being fitted with similar seats, which, for want of funds, are at present unfinished. The old pulpit has been cleansed of its paint and restored, and is now made of use in the church—it is fixed on the north side of the nave instead of on the south, as before. A good lectern stands on the opposite side. The church is heated by hot air; the apparatus, supplied by Messrs. Haden & Son, of Trowbridge, is in a vault under the east end of the north aisle. The chancel screen has been in part restored, but a further outlay is necessary upon this. It is of a massive character, well moulded, and of very good design. The chancel is most altered in appearance of any part of the building. A new and larger arch has been opened to the chancel, and the organ has been removed from the south side of the chancel into the chapel, and new stalls of oak have been placed in it: these have carved poppy-heads and elbow-rests. An oak reredos has been placed at the east end by Messrs. Cox, Buckley, & Co., and a new arched timber roof surmounts the whole. The whole of the ancient slabs have been relaid in the floors, and the remainder laid with plain tiles.

Sedgley.—After undergoing extensive alterations, the ancient parish church of Sedgley was re-opened for Divine service on the 11th inst. The church has been closed about three months, during which period the side galleries have been removed, the west gallery has been extended, the nave and chancel have been paved with encaustic tiles, the body of the church and the gallery reseated, and the whole of the fabric has been cleansed and painted. The organ has been removed from the west gallery, and when restored by Messrs. Nicholson & Lord, of Walsall, will be erected in the chancel. The improvements have been carried out at a cost of 1,200*l*. The sacrarium has been decorated by Mr. Walter Eggington, and through the efforts made by several lady members of the congregation some very handsome furniture has been secured for the sacrarium. The architect was Mr. A. P. Brevitt, and the contractor was Mr. John Hilton. The heating apparatus has been erected by Messrs. Evans & Co., of Wolverhampton.

Prestwich.—The work of strengthening the tower of this church is rapidly approaching completion. The most difficult and anxious part is complete, viz., undermining the foundation and substituting one of concrete, and the men engaged are now employed in taking out faulty stones from both sides of the tower walls and replacing them with new blocks, after which the walls will be pointed and the rehanging of the bells take place. For the latter event preparations are already taking place, the timbers upon which the bells used to hang being taken away and substituted by entirely new beams. The restoration is not confined to the tower, but extends to the roof and walls of the church, which are undergoing an extensive renewal.

Peckham.—On the 11th inst. the Ven. Archdeacon Richardson laid the foundation-stone of St. Mark's Church, Peckham. The site of the church is in Harder's-road, Queen's-road. The building, which will consist of a nave and two aisles, is intended to be built of red brick, with stone dressings. It will be provided with an organ-chamber, a vestry, and a heating-chamber under the vestry. The style is Early English. The total length of the church will be 114 ft. 6 in., and the width 67 ft. Mr. Charles Luck, Carlton-chambers, Regent-street, is the architect, and the building contract,—which exceeds 7,000*l*.,—has been undertaken by Mr. Manley, of St. George's-road, Regent's Park.

Stalmine.—It isi ntended to shortly proceed with the restoration of St. James's Church, Stalmine, Poulton-le-Fylde, Lancashire. In addition to other works, a new chancel, west gallery, &c., will be provided, and carried out from the plans of Messrs. Paley & Austin, of Lancaster.

Rochdale.—It has been decided, by a meeting of parishioners, to carry out various alterations in the fabric of St. Chad's parish church, Rochdale. These will comprise the extension of the church eastward, two bays being added, the erection of a clearstory in the chancel, the provision of a handsome new organ, &c. The extension will be carried out from plans prepared by Mr. J. Crowther, architect, of Manchester. The church was restored in 1857.

DISSENTING CHURCH-BUILDING NEWS.

Wandsworth.—The foundation-stone of the Lavender-hill Congregational Church has been laid. It is five years since the site for this church was purchased by the London Congregational Union. A commodious lecture-hall, with class-rooms, was built upon it, mainly by the efforts of the Rev. J. Guinness Rogers, B.A., and his friends at Clapham. The new church will adjoin the lecture-hall and school. Mr. T. Heygate Vernon is the architect of the church, which will cost 7,000*l*.

Stourport.—The memorial-stones of a Baptist Chapel were laid at Stourport on the 16th inst. by Mr. E. Baldwin, M.P., and Mr. J. P. Harvey. The building will be of Gothic design, and it is intended to accommodate 300 persons. The

builders are Messrs. Smallwood & Co., of Henley-in-Arden; and the architects are Messrs. Ingall & Hughes, of Birmingham.

STAINED GLASS.

Birmingham.—The east window in the chancel of St. Nicholas's Church, Tower-street, Birmingham, has just been completed. It contains the subjects of the Crucifixion, the Agony in the Garden, and the Betrayal, which are supported by light bases, in the centre of which are the Apocalyptic beasts, with the Agnus Dei as the central feature, and are placed underneath light canopies. In the tracery our Lord sits in majesty, adored by angels. The window was designed by Mr. T. W. Camm, and executed by Messrs. R. W. Winfield & Co., successors to Camm Bros., Birmingham and Smethwick. An aisle window, as a memorial to the late Mr. Mayou, is also executed by the same firm, the subject being the Raising of Lazarus, which occupies the centre of the three lights.

Calverley, Yorks.—A three-light decorated painted glass memorial window has just been erected in the antique church of this parish,—the situs of the celebrated "Yorkshire tragedy." The subjects are, centrally the Ascension, and on either side the Nativity and the angel announcing the Lord's resurrection to the Marys. The groups are richly treated, but are surmounted by very delicate white canopies, with enriched bordures and base. The window is in memory of deceased members of the family of Mr. Joseph Gant, of Greenhill House, Bradford, Messrs. Powell Bros., of Leeds, being the artists.

Hubberholme Church, Yorkshire.—In commemoration of forty-seven years' faithful service in spiritual charge of this parish, a painted glass window has just been erected in the church to the memory of the late Incumbent, the Rev. Wm. Richardson Metcalfe. The cost was defrayed by the parishioners and the deceased's successor the Rev. E. W. Brereton, M.A. The subject (occupying the three lights) is Christ's Charge to St. Peter. The window is by Messrs. Powell Bros., of Leeds, the treatment being in the late decorated style.

Books.

Electric Illumination. "*Engineering*" Series. Edited by JAMES DREDGE. Vol. I. London: Office of *Engineering*, 1882.

THE editor of this excellent record of the progress of electric lighting says truly that there is no industrial question which has engrossed, and is still engrossing at the present time, so much public attention. The extensive employment of this mode of illumination in streets and other places of public resort, as well as in private houses, has familiarised the world with its leading characteristics, whilst the electrical exhibition, at Paris and Munich, and in this country at the Crystal Palace and the Aquarium, have given a fair idea of the almost endless variety of mechanical combinations by which, with more or less success, the electric light can be obtained. The forthcoming exhibition at Vienna will still further add to our knowledge on so interesting a subject. In treating it in the work before us, Mr. Dredge has principally drawn from the pages of *Engineering*, which journal was one of the first to recognise it as one of the most important matters from an engineer's point of view, by freely opening its pages to the subject. The editor has been most ably assisted in his task by men familiar with it. Mr. Conrad Cooke, one of his collaborateurs, was the first to practically apply the electric light by installing it as a beacon on the summit of the Clock Tower of the Houses of Parliament. Professor Silvanus Thompson has explained in the simplest possible language, and yet without any sacrifice of scientific accuracy, the principles which govern the conversion of mechanical into electrical energy; in other words, the mechanical production of electric currents. He has also analysed the subject in a somewhat more advanced method. The chapter on the voltaic arc is written by Mr. M. F. O'Reilly, and contains a large amount of information, part of which has never before been published. The other chapters deal with generators, conductors, carbons, and arc, incandescence-arc, and incandescence lamps. An important part of the book, contained in an appendix, is that by Mr. W. Lloyd Wise, viz., the abstracts of patent specifications on subjects bearing on electric lighting. The history of what has been performed in this branch of science, as told in the book, would be quite sufficient to mark it as an important work. But it has been conceived and carried out in such a comprehensive spirit that we may confidently place it amongst the best books on the subject.

Miscellanea.

Stafford Post-Office.—For some time past the premises occupied by the Chief Post-Office at Stafford have been undergoing material alteration, and on the 8th inst. the new offices were opened to the public. The entrance is from the Bank-passage, and was formerly the private entrance to the postmaster's house. The public office comprises a room 20 ft. long by 15 ft. wide. Adjoining this room, and open from behind the counter at the Market-square end, is the stamping-room. The telegraph-room is situated on the first-floor. The ground floors are heated throughout by means of a hot-water apparatus, supplied and fixed by Messrs Rudge & Griffith. The plans were originally made by Mr. J. B. M'Callum (late borough surveyor), but during the progress of the work considerable alterations and variations had to be made to accommodate the parcels post requirements. The work has been carried out by Mr. A. F. Whittome.

A New Railway to Croydon.—A Select Committee of the House of Commons have unanimously passed a Bill authorising the construction of a new railway, commencing at Sanderstead, near Croydon, by a junction with the Croydon and Oxted branch-line of the London, Brighton, and South Coast Railway, now in course of construction, and terminating at Dulwich by a junction with the London, Chatham, and Dover Railway, over whose lines running powers have been granted into their Victoria, Holborn Viaduct, and intermediate stations. The construction of this line will give a new railway route to Croydon *viâ* the Chatham and Dover Railway; direct access into London over the authorised Oxted and Groombridge Railway; and a new route from London to Tunbridge Wells. It is intended to erect stations at Sanderstead, Hayling Park, Croydon, Mitcham-road, Thornton Heath, Norbury Park, Beulah Hill, and Norwood.

Inland Parcels Post.—The Postmaster-General has issued an official intimation that on August 1st he will be prepared to accept at any post-office in the United Kingdom parcels intended for transmission by the Inland Parcels Post, those exceeding 1 lb. in weight having to be prepaid 3d. in ordinary postage stamps; exceeding 1 lb. and not exceeding 3 lb., 6d.; exceeding 3 lb. and not exceeding 5 lb., 9d.; and exceeding 5 lb. and not exceeding 7 lb., 1s. The dimensions allowed for an inland postal parcel will be,—maximum length, 3 ft. 6 in.; maximum length and girth combined, 6 ft. Examples:—A parcel measuring 3 ft. 6 in. in its longest dimension may measure as much as 2 ft. 6 in. in girth,—*i.e.*, around its thickest part; or a shorter parcel may be thicker, *e.g.*, if measuring no more than 3 ft. in length, it may measure as much as 3 ft. in girth, *i.e.*, around its thickest part.

Wrexham Sewerage.—At a special meeting of the Wrexham Town Council on Wednesday evening last, under the presidency of the Mayor, Alderman Strachan, the Town-clerk reported the receipt of the sanction of the Local Government Board to the borrowing of the sum of 2,250*l.* for works of sewerage and sewage disposal, the works in question being undertaken to avoid a threatened action by the Chester Corporation for the alleged pollution of the Dee, and to settle the long-standing dispute between the Wrexham Town Council and Lieut.-Colonel Jones, the tenant of the sewage farm. Plans, specifications, and estimates for the work in question were then laid before the Council and approved of, and it was resolved to advertise for tenders for the construction of the works.

Exeter.—A life-sized statue in Portland stone has been carved by Mr. Hems, and placed in the niche in the main front of his new business premises. It is a statue of Art, and a creditable production. We understand that this is the first sculptured figure which has been erected in front of any public or private building in Exeter (or any church, save the Cathedral) for several hundred years.

Associations of Medical Officers of Health.—A combined meeting of the North-Western and Yorkshire Associations of Medical Officers of Health was held on the 11th inst. in the Manchester Town-hall. In the absence of Mr. Fox, Mid-Cheshire, president of the North-Western Association, Mr. Rayner, of Stockport, occupied the chair. Mr. R. Angus Smith, F.R.S. (Manchester), read a paper on "Water Analysis." Mr. F. Vacher (Birkenhead) contributed a paper suggesting the provision of tenement hospitals for infectious cases; and Mr. S. W. North (York) spoke of the need for greater detail in the census returns, so as to enable medical officers to ascertain the death-rate for small areas, and upon the necessity of improved supervision over the milk supply of large towns. Some discussion ensued upon the papers.

Water Supply of South London.—On the 26th ult., a Select Committee of the House of Commons, presided over by Mr. David Plunket, passed a Bill, promoted by the Lambeth Water Company, authorising the purchase of lands near Brixton-rise, and Crown-hill, Upper Norwood, on which lands it is proposed to sink wells and supply water therefrom. The Bill also sought powers to raise 375,000*l.* additional capital, but the Committee, in giving their decision, stated, that having regard to the report of the Committee on the London Water-Supply, they did not feel justified in allowing this company to raise any further capital, beyond what was absolutely necessary for the increasing demands for water in their district, and for this purpose they thought an increase in the capital of 75,000*l.* was sufficient.

Lichfield Cathedral.—Dr. Bickersteth, Dean of Lichfield, with reference to a suggestion made by the *Staffordshire Advertiser* as to the desirableness of general collections in every parish of the diocese in aid of the completion of the restoration of the west façade of Lichfield Cathedral, writes, "It has been suggested that an appeal to every parish in the diocese for aid towards raising this comparatively small sum for the completion of the beautiful façade of the mother church would be likely to meet with a favourable response, and if every parish in the diocese would contribute on the average only 2*l.* towards this work the desired object would be at once attained. If, unhappily, the needful funds for this purpose are not speedily supplied, the dean and chapter have no alternative but to suspend their almost finished work."

City Churches.—Mr. H. Wright, the hon. secretary of the City Church and Churchyard Protection Society, has addressed a letter to the Bishop of London, in which he says that the council of the society hears with great regret "of the proposal to desecrate the Church of St. Olave, Jewry, and to sell the site." The small attendance at the City churches he attributes, in great part, to the non-residence of the rectors, many of the rectories being let for offices. Mr. Wright goes on to say that there is "a reasonable possibility that there will be a return of population to the City," and that it is notorious that many of the new churches built out of the proceeds of the demolition of City churches under the Act of 1860 are very empty. The City churches, he says, have not had a fair chance.

School Board School at East Dulwich. On the 7th inst. a new Board school was opened in the Heber-road, East Dulwich, by Mr. G. C. Whiteley, one of the members of the School Board for London. The building has accommodation for 1,038 children, viz., 310 boys, 310 girls, and 418 infants. The cost of the site has been 2,460*l.*, and the cost of the building was 11,174*l.*; so that the total cost of building and site has been 13,634*l.* This amounts to a cost per head of the children accommodated of 13*l.* 2s. 8d. Mr. E. R. Robson is the architect of the school.

Land at Darenth for the Asylums Board. At the meeting of the Metropolitan Asylums Board on Saturday last, Sir E. Currie moved, "That, subject to the approval of the Local Government Board, the offer of Mr. J. I. Morton to sell to the managers 134 acres of land, adjoining the Board's property at Darenth, and known as the Gore Estate, for hospital purposes, at the sum of 13,175*l.* be accepted." Dr. Fowler seconded the motion, and it was carried.

Manchester Cathedral Restoration.—At a meeting of the churchwardens, held on Tuesday last, it was announced that the Dean of Manchester had forwarded a contribution towards the restoration fund of 500*l.*, which he had received from the Duke of Buccleuch.

Artisans' Dwellings for Liverpool.—At a meeting of the Liverpool City Council, on the 9th inst, Mr. T. Hughes moved that the Local Government Board be requested to approve of the undertaking by the Council of the rebuilding of the houses on part of the land forming the site of Nash-grove, cleared under the Artisan' and Labourers' Dwellings Improvement Act, 1875, and that the Board be also requested to dispense with the condition that the dwellings shall be sold. Mr. Hughes said it was quite clear that, having to spend 40,000*l.*, the Council would not like to have imposed upon them a condition that the buildings should be sold in ten years. Mr. J. B. Smith seconded the motion, which was carried.—Mr. T. Hughes next moved that the modified plans for the erection of dwellings upon the Nash-grove site, submitted by the engineer, be approved subject to certain further modifications as to the materials proposed to be used.—Mr. J. B. Smith seconded the motion.—Sir James Picton thought they ought to know more as to the details of the buildings. He would point out that all sanitary and economic conditions showed that just in proportion as they had the population thick upon the ground would the death-rate be large. They would find that in a few years the death-rate on these premises and the sanitary condition would be a very serious blot upon the city. A good many years back cottages were built at Birkenhead much upon the same principle, and they were held up at that time as model cottages. Now, if anyone went and looked at them, they would say the buildings were a disgrace to modern civilisation. In dwellings of this kind it was impossible to induce the same attention to sanitary conditions as they could in the case of people of a higher grade, and, therefore, he thought the committee were making a dangerous experiment. Mr. Yates said that the Birkenhead cottages arose from the action of some speculators, and because they proved a failure it was no argument against a public movement emanating from a sanitary authority. The committee had given the subject a good deal of attention, and considered it would be beneficial to the community and the Corporation to put up these buildings. The recommendation was agreed to.

New Zealand Timber Supply.—The United States Consul at Auckland, writing on the trade and industry of New Zealand, says it is estimated that the forests of New Zealand cover an area of not less than 20,000,000 acres, the forests on the Crown lands alone being estimated at 10,000,000 acres; about 5,000,000 acres are the private property of the white or European population, and the remainder is by the Maori, or native inhabitants. Among the many descriptions of timber grown, the *Kauri* pine is considered one of the most valuable; it is found only in the province of Auckland, and in that district it does not exist further south than the East Cape, and like the cedar, it is confined to the vicinity of the sea. The kauri forests cover about 60,000 acres of Crown land, and about 120,000 acres of private property. The trees often grow to a height of 200 ft., and measure from 12 ft. to 30 ft. in circumference; they are discovered occasionally with a rugged surface, and on being cut, the grain is found to be mottled. The kauri is exported largely in what is called "junk," the logs being squared with an axe, thus wasting a quantity of good timber. The annual output of kauri timber is about 110,000,000 ft., and the highest estimate of the amount of timber left in the kauri forests is 23,000,000,000 ft. The subject of conserving the kauri forests is at the present time attracting considerable attention throughout the colony, not only on account of the excellent timber it produces, but on account of the gum which exudes from the tree, and which for many years has formed the most valuable article of export of the province of Auckland.

The Corporation and Coulsdon Commons. The Coal and Corn and Finance Committee, on behalf of the Corporation, will take possession of Coulsdon Commons, and the ceremony of dedication will take place on Saturday, the 19th inst. It is understood that the Lord Mayor will request the Right Hon. G. J. Shaw-Lefevre, the First Commissioner of her Majesty's Works, to pronounce the words of dedication, and that a portion of the day's proceedings will be undertaken by the Lady Mayoress and other ladies. These commons add between 300 and 400 acres to the open spaces secured by the Corporation for posterity. —*City Press.*

Chimes, St. Mary's Church, Kidderminster.—The completion of the restoration of the church and the inauguration of the chimes, was celebrated on the 11th ult., by a banquet at the Town-hall, Kidderminster. For a long time the tower of the church has been in a dangerous state, and the bell-ringers have from time to time called attention to this. No definite steps, however, were taken until at a vestry meeting on March 2nd, 1882, at which the vicar presided, it was resolved to try and raise 1,000*l.* for repairing the tower and re-hanging the bells. On the same day the present Mayor (Mr. G. W. Grosvenor), was, at a meeting of Freemasons, elected Worshipful Master of the Lechmere Lodge of Freemasons. The connexion between these events will be more apparent when it is stated that the Mayor has since been the originator of a movement which has led to the Freemasons of this district presenting the church with a valuable set of chimes. The old peal of eight bells has been re-hung in a strong oak frame, with entirely new fixings, and three new bells have been added for the chimes, the whole of this work being carried out by Messrs. John Taylor & Son, bell-founders, Loughborough. The clock has been repaired, and refixed with new copper dial on the south front, and the old wooden one on the west front. A set of carillon chimes have been presented by the Freemasons of the town, which will play at every third hour, and are set upon the eleven bells, having a change of three barrels, two of which contain fourteen secular tunes, and the third seven sacred tunes. The old ting-tang quarters have been replaced by the Westminster chimes, and there is also a barrel for chiming 182 changes and rounds on the eight old bells. This work has been satisfactorily carried out by Messrs. Lund & Blockley, of Pall-mall, London. The cost of repairs for the tower and re-hanging the bells and the work to the clock is about 960*l.*, and that of the chimes (which is borne by the Freemasons) about 250*l.*

The Fairless Barber Memorial. — In memory of the late Mr. Fairless Barber, a prominent member of the Yorkshire Archæological Society, who was born at Rastrick, Yorks., in 1835, and died in 1881, a painted glass window has just been erected in Rastrick Church. The approved selection of subject by Messrs. Powell Bros., of Leeds, to whom the commission for the window was confided, is the laying the foundation-stone of the second or restored Temple at Jerusalem, as set forth in Ezra iii. In the decorated work above are two angels, one on each side, bearing a riband with the legend text, "The foundation of the house of the Lord was laid." In the base is the usual dedicatory inscription. The ornamented bordures and the treatment generally are in accordance with the church architecture, in the style of the Italian Renaissance.

A Memorial.—Soon after the notice of the death of the Rev. Arthur Rigg, which appeared in your columns, a few of his old pupils decided to erect a memorial to him. The memorial consists of a marble medallion, which has been skilfully worked out by Mr. J. S. Westmacott, sculptor, of 49, High-street, Eccleston-square. The committee would be very pleased if you could mention the fact, as the memorial is partly due to your article.—SAMUEL WORSSAM.

Prevention of Fires.—A public meeting will be held at the Society of Arts on the subject of the prevention of fires in theatres. The report of a committee of the Society which has for some time been investigating the question, will be brought before this meeting for its consideration. The precise date has not yet been decided, but it will be held the end of the present month. Further particulars will appear in future numbers of the Society of Arts' *Journal*.

The Skegness Public Baths, in Lincolnshire, which have been erected by a Limited Company, at a cost of 3,000*l.*, were opened on Whit Monday. They consist of hot, cold, Turkish, swimming, fresh, and salt baths, and will doubtless form a great addition to the attractions of this rising watering-place.

TENDERS.

For the erection of a country residence at Curdridge, Hants, for Mr. W. A. Way. Mr. T. Fleming, Waverley House, Southsea, architect:—

Light, Portsmouth	£1,735	0	0
J. Sign, Bishop's Waltham	1,648	19	0
W. Ward, Portsmouth	1,625	0	0
Green, Meonstoke	1,444	0	0
Stevens & Son, Southampton*	1,425	0	0
J. Howard, Portsmouth	1,383	0	0

* Accepted.

For alterations to the Lord Nelson public-house, Poplar. Messrs. Wilson, Son, & Aldwinckle, architects, 2, East India-avenue. Quantities supplied:—

Canning & Mullins	£2,297	0	0
Cox	2,245	0	0
Hearle	2,195	0	0
Mills	2,117	0	0
Hall, Beddall, & Co.	2,080	0	0
Staines & Son	1,984	0	0
Shurmur	1,944	0	0
Beale (accepted)	1,735	0	0

For Boys' Industrial Home, Forest-hill. Mr. Thos. W. Aldwinckle, architect, 2, East India-avenue:—

Pratt	£1,990	0	0
Stark	1,955	0	0
Palmer	1,950	0	0
Amer	1,890	0	0
Taylor & Son (accepted)	1,723	0	0

For alterations to the Green Man public-house, Stratford. Messrs. Wilson, Son, & Aldwinckle, architects, 2, East India-avenue. Quantities supplied:—

Staines	£1,340	0	0
Hearle	1,333	0	0
Beale	1,317	0	0
J. & H. Mills	1,269	0	0

For alterations to the Cabin public-house, Rochester-row, Pimlico. Messrs. Wilson, Son, & Aldwinckle, architects, 2, East India-avenue:—

Hearle	£773	0	0
Cox	715	0	0
Palmer	672	0	0
Canning & Mullins	658	0	0
J. & H. Mills (accepted)	639	0	0

For alterations to the Edinburgh Castle public-house, Strand, exclusive of pewtering. Messrs. Wilson, Son, & Aldwinckle, architects, 2, East India-avenue. Quantities supplied:—

Sage	£1,895	0	0
Drew & Cadman	1,590	0	0
Canning & Mullins	1,520	0	0
Cox	1,520	0	0
Lascelles	1,510	0	0

For lavatory, &c., at the Old Lambeth Workhouse. Mr. Thos. W. Aldwinckle, architect:

Cook	£200	0	0
Hearle	165	0	0
Crabtree	151	0	0
Brockwell	149	10	0
Mills (accepted)	144	0	0

For warming, by their new hydro-caloric apparatus, the main block of Haileybury College, Herts. Mr. C. B. Trollope, architect:—

J. Weeks & Co., Chelsea (accepted).

For finishing three houses, Upland-road, East Dulwich, for Mr. J. Marsden. Mr. Joseph Harris, architect:—

Clements	£400	0	0
Parrish & Hawker (accepted)	399	0	0
Cannell	370	0	0

For the erection of a tower, spire, gallery, staircases, &c., Barry-road Chapel. Mr. Charles Bell, architect. Quantities by Mr. Henry Lovegrove, Budge-row:—

Belham	£3,584	0	0
G. Green	3,555	0	0
Booth Bros.	3,525	0	0
Woodward	3,490	0	0
Staines & Co.	3,444	0	0
Eldridge & Co.	3,403	0	0
E. & J. Pickersgill	3,360	0	0
J. & C. Boyer	3,278	0	0
G. Goad	3,262	0	0
Allen & Sons	3,200	0	0
Holliday & Greenwood	3,095	0	0
Morter	3,050	0	0
Gregar	2,993	0	0
Smith & Sons, Norwood (accepted)	2,987	0	0

For the erection of Congregational Church, Steeple Bumpstead. Mr. Charles Bell, architect. Quantities by Mr. Henry Lovegrove:—

H. Cocks	£2,345	0	0
J. F. White	2,166	0	0
F. Alderton	2,009	0	0
Mason & Son	1,870	0	0
J. Bread	1,855	10	0
J. Choat	1,850	0	0
Gower & Son	1,798	0	0
J. & A. Brown	1,788	0	0
Marcus Brown	1,750	0	0

Amended tender, after sundry alterations:—

J. & A. Brown (accepted)	1,468	0	0

For alterations, additions, and repairs to premises at Edenbridge, Kent. Mr. Robert Ridge, Katherine-street, Croydon, architect:—

Jordan, Edenbridge	£379	0	0
Legg, Croydon	295	0	0
Head, Lingfield	278	0	0
Maides, Croydon	257	0	0

For additions to "Elmwood," Hackbridge, Surrey, for Mr. A. H. Smee. Mr. Richard Creed, architect:—

Stewart, Wallington (accepted)	£324	0	0

For rebuilding No. 16, Cheapside, Luton, Beds, for Mr. Chas. Lenton. Mr. Richard Creed, architect:—

Smart Bros., Luton (accepted)	£485	0	0

For certain works at Edge Grove House, Aldenham, for the Rt. Hon. Lord Rendlesham. Mr. T. Searancke Archer, architect:—

Jas. Burnell (accepted).

For alterations, &c., at No. 59, St. James's-street, for Messrs. Barton & Co. Mr. T. Searancke Archer, architect:—

Messrs. Bywaters (accepted).

For alterations and additions to Wade Court, Havant, Hants. Mr. M. N. Inman, architect:—

J. Suewin, Littlehampton-on-Sea*	£545	0	0

* Accepted.

For the erection of a new Wesleyan Chapel at Redfield, Bristol. Mr. Robt. Curwen, architect, 103, Palace-chambers, Westminster :—

Sharp & Graham, Bristol	£3,165	0	0
Estabrook & Sons	2,920	0	0
J. E. Davies, Bristol	2,773	0	0
Howell & Sons, Bristol	2,750	0	0
Cowlin & Son, Bristol	2,675	0	0
R. J. Crocker, Bristol	2,651	0	0
G. Humphreys, Bristol	2,639	0	0
W. Veals	2,594	0	0
Lewis & Edbrooke, Bristol	2,500	0	0
Harding & Vowles, Bristol	2,490	0	0
Wilkins & Sons, Bristol	2,470	0	0
W. Church, Bristol (accepted)	2,379	0	0
Walters & Son, Bristol	2,350	0	0

For building three shops in Chapel-street, Somers-town, for Mr. Hummerston. Messrs. Saville & Son, architects :—

Lamble (accepted)	£1,490	0	0

For alterations and repairs at No. 31, Stibbington-street, Somers-town, for Mr. G. Smith. Messrs. Saville & Son, architects :—

Hawkins	£427	0	0
W. Hawkins	393	0	0
Wicks	367	0	0
Lamble	359	0	0
Spencer & Co.	295	0	0
Royal	293	10	0

For alterations, &c., at the Old Foresters, Kender-street, Queen's-road, Peckham, for the New Westminster Brewery Company. Mr. H. W. Budd, architect :—

King & Son	£385	0	0
Pemberton	370	0	0
Bull	360	0	0
Lamble	359	0	0
Puck & Co.	355	0	0

For new schools and master's house at Pantygasseg, for the Trevethin School Board. Mr. E. A. Lansdowne, architect. Quantities by the architect. -

Bailey & Jones, Pontypool	1,695	0	0
Morgan & Evans, Pontypool	1,425	0	0
Parfitt, Pontnewydd	1,330	0	0
Foster, Abergavenny	1,275	0	0
Chapman, Pontypool	1,136	14	0
Burgnoyne, Pontypool (accepted)	1,080	0	0

For the erection of a new Wesleyan Chapel at Shanklin, Isle of Wight. Mr. Robert Curwen, architect, 103, Palace-chambers, Westminster :—

F. Cooper, Shanklin	£2,403	0	0
J. Burton, Ryde	2,196	0	0
G. Hayles, Shanklin	2,180	0	0
J. Newnham, Ventnor	2,005	0	0
Ingram & Son, Ventnor	1,970	0	0

For additional alterations to No. 11, Finsbury-square. Messrs. Wm. Reddall & Son, architects, 10, South-street, Finsbury. Quantities supplied :—

Pritchard	1,814	0	0
Atkinson	1,650	0	0
Woodward	1,627	0	0
Colls & Sons	1,620	0	0
Burt	1,530	0	0
Wood	1,410	0	0

Proposed infant school, Wouldham, Kent. Mr. E. W. Stephens, architect, Maidstone, Kent :—

Burgess, Snodland	£800	0	0
Naylar & Son, Rochester	787	0	0
Wallis & Clements, Maidstone	755	0	0
Gates, Frindsbury	740	0	0
West, Strood	735	0	0
Avard, Maidstone	735	0	0
Hammond, Aylesford (accepted)	690	10	0

For altering and converting stone bunks in corn-grinding room and workshops, at the able-bodied workhouse, Mary-place, Notting-dale, for the Guardians of Kensington. Messrs. A. & C. Harston, architects, 15, Leadenhall-street :—

Piersy & Co.	£394	0	0
A. G. Bolding	389	0	0
T. B. Seward	384	0	0
A. S. [illegible]	367	0	0
Higgatt & Brown	359	0	0
Lake & Co.	357	0	0
O. Fawkes	346	6	6
Thurston & Beardwell	338	16	0
W. Scrase	336	0	0
J. W. Bunning	306	10	0
A. Capsey	300	0	0
C. F. Kearley	297	0	0
H. Haynes	287	0	0
Campkin & Son (accepted)	270	10	0

For semi-detached houses, Shinfield-road, Whitley, Reading, for Mr. G. W. Palmer. Mr. J. Greensway, architect, 19, Duke-street, Reading :—

Higgs	£1,740	0	0
Sheppard	1,678	0	0
Bourton	1,670	0	0
East & Sons	1,665	0	0
Wicks	1,643	0	0
Searle	1,625	0	0
Strong	1,585	16	0
Denton ?	1,571	0	0
Woodroffe	1,540	0	0
Soffley	1,528	0	0
Botterill (accepted)	1,514	0	0
Winter	1,470	0	0

For alterations and additions to Audley House, New Barnet, Herts, for Mr. T. M. Harvey :—
Botterill (accepted), Reading.

For new church at Lower Dovercourt, Essex. Mr. J. R. Cutts, architect :—

Palmerston	£1,976	0	0
J. Grimes	1,940	0	0
Tyer	1,936	0	0
Brown, Son, & Co.	1,900	0	0
Bennett Bros.	1,786	0	0
G. Grimwood & Sons	1,690	0	0
Saunders	1,600	0	0
Dobson	1,595	0	0

For pulling down and rebuilding Nos. 10 & 11, Dean-street, Holborn. Mr. H. C. Boyes, architect :—
Gould & Brand (accepted).

For pulling down and rebuilding No. 17, Great Wind-mill-street, Haymarket, for Mr. J. E. Mortimer :—
Gould & Brand (accepted) £730 0 0

For house and workshops, Walthamstow. Mr. Wm. Palce, Upper Holloway, architect :
Thorne (accepted).

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VOL. XLIV. No. 2103. SATURDAY, MAY 26, 1883.

ILLUSTRATIONS.

Antiquities of Cyprus 708
Dover Seaside Orphans' Rest: Front Elevation 710
Residence for Mr. O. Hals, Osterdalen, Norway.—Mr. P. Lowzow, Architect 712, 713
Plan of Principal Floor of the Dover Orphans' Rest 715
Premises in Addison-road, Notting-hill.—Mr. Charles Grieve, Architect 717

CONTENTS.

St. Martin's-lane Improvements 697
Architecture among the Poets 698
Eve 698
The Wisdom of the House of Commons on Art and Architecture 699
The Purchase of their Houses by Leaseholders: Compensation for Improvements 700
Proposed Legislation on Building in France 700
Architectural Sketching and Sketching Trips: Architectural Association 701
The Architectural Association 704
Hygienic Congress at Berlin 704
The Late Mr Jos. Thompson, Architect 705
Proposed Free Library for Darlington 705
The Esplanade and Cliffs at Southend: Gift by Mr. H. A. Brassey M.P. 705
Norwegian Style of Building 705
Ruins of the Tomb of St. Catherine, Cyprus 706
Dover Seaside Orphans' Rest 706
Premises in Addison-road North, Notting-hill 706
The New Bridge at Spandau, near Berlin 706
The Archiepiscopal Palace and Chapel, Croydon 709
Whitgift's Hospital, Croydon 710
Some Recently-investigated Antiquities in Cornwall 710
Sale and Demolition of the Ancient "Cock Tavern" 721
Railway Statistics for the Year ending December, 1882 721
Fire at the Amsterdam Exhibition 721
New Panorama at Berlin 721
Croydon Church 722
The Charterhouse: London and Middlesex Archæological Society 722
Sketches Abroad 723
Edinburgh Architectural Association 723
Design in Art Schools 723
Felt Houses 724
Addition to the Orphan Homes, Headingley, Leeds 724
The Duty on Wood in Germany 724
Building Activity in Berlin 724
Prize of Building Land at Hendon 724
Builders Benevolent Institution 724
London Rides 725
Market Value of Gas shares 725
Rain Gauge Returns 725
Building Patent Record 725
"Looking Back" 725
Curious Discovery in Stepney Church, Pontefract 725
Compensation Case: Wilcoxon v. Metropolitan and District Railway Companies 726
Case under the Employers' Liability Act: Dixon v. Bleakley 726
Claim against Builders 726
Books: Weale's Rudimentary Series—On Clocks and Watches and Bells; Plumbing; On Walls and Wall-sinking; Details of Machinery; The Smithy and Forge; On Handrailing (Crosby Lockwood & Co.); Dictionnaire technologique dans les Langues française, anglaise, et allemande. Publiée par L. Toussaint. Japanese Marks and Seals (Sotheran & Co.) 726
Varnish 727
St. Giles's Cathedral, Edinburgh, and the late Dr. W. Chambers 727
Miscellanea 727

ST. MARTIN'S-LANE IMPROVEMENTS.

"To London, being chosen one of the Commissioners for reforming the buildings, wayes, streetes, and incumbrannces . . . . . and then went to his Majesty's surveyor's office in Scotland-yard . . . . adjourning till the 16th, when I went to view how St. Martin's-lane might be made more passable into the Strand."—JOHN EVELYN, *Diary*, 14th May, 1662.

FROM the above-quoted passage it will be seen that the scheme of the Metropolitan Board of Works, which has been sent up to the Lords, for the improvement of this thoroughfare is a heritage bequeathed by their predecessors of more than two hundred years ago. Evelyn speaks of the street which had been known as West Church-lane, leading northwards from Charing-cross to Cock and Pie Fields. In Aggas's map it appears as a green lane with but a few houses beyond St. Martin's Church and running along the western wall of the Convent Garden appertaining to West Minster.* The Cock and Pie Fields were covered with the now district of Seven Dials thirty years after Evelyn's appointment as commissioner: see his "Diary," *sub* 5 October, 1694. West Church-lane, built *circa* 1612, appears under its later title in the parish rate-book for 1617-18; the upper portion being known as the Pavement, with the road 3 ft. lower than at present.† Among its earliest tenants were Sir Theodore Mayerne, physician to King James I., who was living here in 1613; Sir John Suckling, the poet (1641); Sir John Finett, author of "Finetti Philoxenis," a treatise upon foreign ambassadors to England, 1656, and for his next-door neighbour Sir Benjamin Rudyerd. Howell sends a maiden copy of his poem "to Sir Kenelm Digby at his house in St. Martin's-lane," in 1641.‡ Prince Charles, son of King James I., gave for twelve years at a peppercorn rent of 6d. a year to Daniel Mytens, the painter, a house on the west side near those of Mayerne and Finett. Carew, son of Sir Walter Raleigh, twice lived here, from 1636 to 1638, and in 1664. Sir Hugh Platt, the most ingenious husbandman of his age, had a garden in St. Martin's-lane in the year 1606. Here also resided, on the western side, the great Earl of Shaftesbury (1675-77); Vanderdoort, keeper of the pictures to King Charles I.; Dr. Thomas Willis, physician, who died on St. Martin's Day, 1675; Archbishop Tenison, when vicar of the parish, 1683; and Ambrose Philips, the Whig poet, two doors from the "Old Slaughter's," 1720-25."

At the lower end of the Lane stood the earlier church, established here by King Henry VIII., where divine service was celebrated for the last time on the 11th of June, 1721, during the incumbency of Thomas Green, afterwards Bishop of Ely.* King James I. gave an acre of land for a burial-ground lying between Castle-street and St. Martin's-lane, to the south of Hemming's-row, originally stigmatised as Dirty-lane. The workhouse and the recent additions to the National Gallery cover the graveyard. At the south-western corner of Hemming's-row, so-called (1680) from one John Heming, an apothecary (see the overseers' accounts), Tenison, with the aid and advice of Sir Christopher Wren and Evelyn, established a library and common room for the parochial clergy. Evelyn writes, under date 15th of of February, 1684:—"A worthy and laudable designe. He [Tenison] told me there were thirty or forty young men in Orders in his parish, either governors to young gentlemen or chaplains to noblemen, who, being reproved by him on occasion for frequenting taverns or coffee-houses, told him they would study or employ their time better, if they had bookes." Tenison's school was lately rebuilt at the south-eastern corner of Leicester-square on the site of the then Sablonière Hotel, once a residence of Hogarth and his neighbour Dr. John Hunter.†

The obstructions of which Evelyn speaks in 1662 comprised the narrow courts, passages, and purlieus which were known as the straits of the Bermudas (*vide* Ben Jonson's "Bartholomew Fair"), Porridge Island, famed for its cookshops (*The World*, Nov. 29, 1753), and the straits of the Strand. Gifford, in his "Life of Ben Jonson," says that the Bermudas subsequently exchanged their appellation for that of the Caribbee Islands, happily corrupted by its denizens into Cribbee Islands, a style they retained to his day. Much of this rookery, whose character is sufficiently denoted by the names it bore, was removed about fifty years ago at the building of St. Martin's-place, Duncannon, King William, Adelaide, and other streets. Since known as Bedfordbury a further clearance was effected within the past few years by the Board of Works, and the curious must now look for its survival in the western side of the street which is designated Bedfordbury, and in such alleys as Cecil-court, containing an antique shop-front; Hop-gardens; Taylor's-buildings; and Peter's-court, leading from the Lane. At the "Hole in the Wall," now the "Marquess of Granby," by Taylor's-buildings in Chandos-street, Claude du Val was captured in Charles II.'s reign; he lies in St. Paul's Churchyard, Covent Garden. Chandos and Brydges streets, built *circa* 1637, commemorate George Brydges, Lord Chandos, ancestor of the magnificent duke, Pope's "Timon." Strype describes the former as "a place well built and inhabited, of great resort for the theatre there." In the now widened court between Chandos and Bedford streets may be seen the old premises of the "Black Prince" tavern. Most of the ground we speak of belongs to the Marquess of Salisbury. The tablet of May's-buildings, opposite Nos. 104-5 in the lane, and so-named from its builder, bears date 1739. The "Sutherland Arms" in the court was the head-quarters of "The Eccentrics," a club of beaux and wits.

We have already indicated how St. Martin's-lane was, from its earliest days, the residence of painters, artists, and professional men; an association that continued until the migration to Newman-street and the adjacent locality. The immediate vicinity, too, was distinguished in a like manner. Turner was the son of a barber of Maiden-lane. Leveridge, the singer, kept a tavern in Tavistock-street on his retirement from the stage; at No. 4, Tavistock-row, by the corner of Tavistock-court, recently pulled down, lived Macklin; being the house where had lived Miss Ray, a full account of whose disastrous end at the hands of her frenzied admirer, Macklin gives in the introduction to his "Love and Madness: a Story too True," 1822. Lord Sandwich first saw Miss Ray in one of the numerous milliners' shops of Tavistock-street when purchasing some neckcloths. This lady's history and her *liaison* with that nobleman are related at length in J. Cradock's "Literary and Miscellaneous Memoirs." With that one exception her conduct was a pattern of discretion, and, notwithstanding her equivocal position in Lord Sandwich's household, secured her the esteem and respect of all his acquaintance. Hackman shot his victim when waiting in the Piazza for her coach, after the performance of "Love in a Village." In an interesting passage, Boswell tells how he described every incident of Hackman's trial and sentence by Judge Blackstone to Dr. Johnson, who, on hearing of the convict's prayer for the mercy of Heaven, said, in solemn fervent tones, "I hope he *shall* find mercy." Then ensued that notable encounter of wit between the Doctor and Beauclerk as to the two pistols carried by Hackman. In No. 5, Tavistock-row, William Vandervelde, the younger, died, 1707, and ninety years later Thomas Major, engraver.* No. 13 was inhabited in turn by Zincke, the famous miniature-painter, Nathaniel Dance, and Peter Pindar, who here penned many of his invectives against his sovereign and the Royal Academy. Henrietta-street, built 1637, and named after the consort of King

* The garden, with seven acres, called Long Acre, of the yearly value of 6*l.* 6*s* 8*d*., was granted in soccage by the king's patent in 1552 to John, first Earl of Bedford, who built on the site of Southampton-street a town mansion, chiefly of wood, which remained until 1704.

† Confer the *Postman* for February, 1705.

‡ See "Familiar Letters." Edit. 1678, p. 393.

* For an account of the foundation of this church and the parish limits, see the *Builder* (article on Soho), p. 205, *ante*.

† The late Dr. Buckland discovered Hunter's coffin in the vaults of St. Martin's Church a few years since, when it was re-interred at Westminster by the Royal College of Surgeons.

* Smith's Life of Nollekens.

Charles I., can boast of Paul Whitehead, Laureate; of Samuel Cooper, miniature-painter; and McArdell and Sir Robert Strange, engravers. The last-named took for wife a Miss Lumsdale, who had concealed him beneath her hoop, "extending wide," * when he rushed into her house to evade pursuit after the ill-fated fight at Culloden. At "Rawthmell's" coffee-house, in this street, the Society of Arts was founded, 1754; and at the "Castle" tavern Sheridan fought and disarmed Mathews, his rival in the affections of Miss Linley. Kitty Clive, the favourite "Nell" of the stage in "The Devil to Pay,"—and according to Garrick there was much of the devil-to-pay in all her dramatic career,—lived at a house in Henrietta-street, where the new St. Peter's Hospital stands. In King-street, where Richardson places the closing scenes of "Clarissa," dwelt the father of Arne and Mrs. Theophilus Cibber. He was an upholsterer, the reputed original of the Quidnunc in the *Tatler*, and hero of Murphy's farce, "The Upholsterer, or What News?" With him were domiciled the four so-called Indian kings, their names, says Leigh Hunt, like a set of yawns and sneezes, who visited England to ask Queen Anne's aid against the French in Canada.† The father did his best to repress his son's love for music, and sent him to Eton; but all in vain, a muffled spinet was played in a garret when the family had gone to bed, whilst we have gained two such gems as "Water Parted" and "When Daisies Pied." Long-acre, first known as the Elms, and since 1612 by its now name, famous for coachmakers more than two centuries since, recalls to us Oliver Cromwell, who lived here as Captain Cromwell, 1637-43; Nicholas Stone, sculptor; Dryden, 1682-86, in the house facing Rose-street, the scene of his beating, who is entered in the rate-book as John Dreydon, Esquire, "an unusual distinction," writes Cunningham. Stothard, the painter, was son of a coachmaker in Long-acre. De Foe, in his "Journey through England," has a diverting account of the Mug-house Club in this street, celebrated for beer-drinking clubs of the kind when strife waxed warm between Whigs and Tories. Prior's "Chloe" lived in Long Acre, the wife, some say, of a private soldier, others have it of a cobbler, others of an ale-house keeper. "Everybody knows," says Pope, "what a wretch she was. . . . . Prior was not a right good man. He used to bury himself for whole days and nights together with a poor mean creature, and often drank hard." "I have been assured," says Dr. Johnson, quoting Richardson the painter, "that Prior, after having spent the evening with Oxford, Bolingbroke, Pope, and Swift, would go and smoke a pipe and drink a bottle of ale with a common soldier and his wife in Long-acre before he went to bed." Arbuthnot, after Prior's death, writes in a similar strain; he, Prior, and Pope could well have retorted the one to the other; the woman might have had wit and beauty, whilst the secret of these inequalities has been explained by Fielding.‡

In Salisbury-court and St. Martin's-lane the Royal Academy may be said to have originated, for here in turn its early members first came together as a society established by themselves. Probably no single artist, contemporary with Reynolds, was unconnected with the Lane as either a lodger, student, or visitor. Wilson, his landscapes once exhibited in a shoemaker's window of Long Acre; Gainsborough; Hogarth at the "Old Slaughter's"; Reynolds in his studio over against May's-buildings; Roubiliac, Bannister, Fuseli, Sir James Thornhill, Raimbach, N. Hone; Payne and Gwynne, architects; not to cite many others,—all shed a glory around this doomed thoroughfare such as no other street in London can claim. In his parlour here Beard, the famous singer, who first married Lady Harriet, daughter of James first Earl of Waldegrave and widow of Lord Edward Herbert (their union studiously ignored in the peerages), and then became son-in-law to Rich of Covent Garden Theatre, would entertain Rich, Quin, Woodward, and George Lambert, founder of the Beefsteak Club. "Old Slaughter's," on the right-hand going towards Charing Cross, remains to us in the pages of "Vanity Fair"; a large room to the rear of what was Powell's, one of the oldest colour-shops in the town, appears in the third picture of Hogarth's "Marriage à la Mode," with portraits of Dr. Misaubin and his Irish wife. We purposely mention this because Smith, in his "Life of Nollekens," and all after him, including even Peter Cunningham, speak of this picture as belonging to "The Rake's Progress." Moreover, Smith gives an explanation to the perplexing scene depicted by Hogarth which it cannot possibly bear. The Quakers' meeting-house, in Peter's-court,—itself on the eve of demolition,—marks the site of Roubiliac's studio, where he executed his first work in this country,—Handel's statue for Vauxhall Gardens. The studio subsequently became a drawing academy, attended by Reynolds, Nollekens, Taylor, McArdell, and others. Chippendale and Cobb, furniture-makers, had premises in that portion of the Lane which is now St. Martin's-place.

The King's mews were settled at Charing-cross in the reign of Edward I. In the year 1319 (13 Edw. II.), John de la Becke had custody "de Mutis apud Charryng juxta Westmonasterium"; in King Richard II.'s reign Sir Simon Burley was keeper of the king's falcons; Chaucer was clerk of the king's works and of the mews at Charing.* In 1534, the royal stables at Lomesbury (Bloomsbury) were burned; and the hawks being removed from Charing-cross, the premises were rebuilt for stabling the king's horses, *temp.* Edward VI. and Mary. In 1732, Kent rebuilt the southern façade, with three stone cupolas, the mews then occupying the whole of the modern Trafalgar-square and extending to the then junction of Cockspur-street with the Strand. Finally demolished in 1830, part of their site was reserved for Wilkins's National Gallery to receive the Angerstein and Beaumont collections, which had outgrown the rooms in Pall-mall.† The space in front, which the parishioners claimed should be kept open, became subsequently occupied by Sir Charles Barry's fountains (1845), Railton's column for Baily's statue of Nelson (1840-3), and Chantrey's equestrian figure of George IV. (1845). About the same time (1830), St. Martin's-place was laid out, Duke's-court and the old premises of the "Golden Cross" Inn were pulled down, and the grave-yard around the church assumed its present aspect.

ARCHITECTURE AMONG THE POETS ‡

KEATS is, in his few touches on architecture, in pretty much the same tune as his friend Shelley: he builds castles in the air, as in "Hyperion,"—

> "His palace bright
> Bastioned with pyramids of glowing gold,
> And touched with shade of bronzed obelisks,
> Glared a blood-red through all its thousand courts,
> Arches, and domes, and fiery galleries;"

and there is a fine touch, half historic, in regard to the musings of the nymph *Asia*:—

> "More thought than woe was in her dusky face,
> For she was prophesying of her glory,
> And in her wide imagination stood
> Palm-shaded temples and high royal fanes
> By Oxus or on Ganges' sacred isles."

An extraordinary idea is hinted in "Lamia," of the witch's mansion built up on sound alone,—

> "A haunting music, sole perhaps and lone
> Supportress of the fairy roof."

One pretty fancy in regard to the actual details of Gothic architecture, from the "Eve of St. Agnes," ends the list of Keats's architectural references:—

> "The carved angels, ever eager-eyed,
> Stared where upon their heads the cornice rests,
> With hair blown back and wings put cross-wise on their breasts."

Wordsworth, the opposite of Keats in many respects, builds no castles in the air, save in one poem among the ecclesiastical sonnets,—an allegory in which the Christian church is compared to a temple, in which was,—

> "Diffused in every part
> Spirit divine through forms of human art;
> Faith had her arch, —her arch when winds blew loud,
> Into the consciousness of safety thrill'd;
> And Love her towers of dread foundation, laid
> Under the grave of things; Hope had her spire
> Star-high, and pointing still to something higher."

The last line and a half has been often quoted, and illustrates, perhaps, the feeling which really was associated with lofty spires by their builders; at all events, by many generations of spectators. Mrs. Barrett Browning derives a different idea from the contemplation of the Florence Campanile ("Casa Guidi windows"):—

> "Here where Giotto placed
> His campanile, like an unperplex'd
> Fine question Heavenward,"—

the "question" being asked on behalf of Florence,—what high place *she* might not take whose artist had done this? Wordsworth's most marked and deliberate architectural illustration is in the three sonnets in reference to King's College Chapel, which form the most important poetical characterisation of Gothic architecture since Milton's famous passage in "Il Penseroso," and are almost equally well known and as often quoted. In opposition to this may be cited, however, a description in "The Excursion" of the old-fashioned country church interior, in what may be called the pre-Restoration period, which may recal to many the style of the parish church of their childhood, now in most parts of England altered out of all recognition:—

> "As chanced, the portals of the sacred pile
> Stood open, and we enter'd. On my frame
> At such transition from the fervid air
> A grateful coolness fell, that served to strike
> The heart, in concert with the temperate awe
> And natural reverence that the place inspired.
> Not raised in nice proportions was the pile,
> But large and massy, for duration built;
> With pillars crowded, and the roof upheld
> By naked rafters intricately cross'd
> Like leafless underboughs, 'mid some thick grove,
> All wither'd by the depth of shade above.
> Admonitory texts inscribed the walls,
> Each in its ornamental scroll inclosed,
> Each also crown'd with winged heads,—a pair
> Of rudely painted cherubim. The floor
> Of nave and aisle, in unpretending guise,
> Was occupied by oaken benches, ranged
> In seemly rows; the chancel only show'd
> Some inoffensive marks of earthly state
> And vain destruction. A capacious pew
> Of sculptured oak stood there, with drapery lined;
> And marble monuments were here display'd
> Thronging the walls; and on the floor beneath
> Sepulchral stones appear'd, with emblems graven,
> And foot-worn epitaphs, and some with small
> And shining effigies of brass inlaid."

An odd assortment of styles, and of simplicity with pomp, belonged to that typical parish church interior of the last century which is here so minutely and truthfully described. The column of Trajan with its sculptures,—

> "Group winding after group with dream-like ease,"—

forms the subject of a pleasing and thoughtful little poem among Wordsworth's later writings; and in a sonnet written at Bruges, he touches very happily upon the harmonising influence of old architecture and artistic treasures in a town:—

> "The spirit of antiquity,—enshrined
> In sumptuous buildings, vocal in sweet song,
> In pictures speaking with heroic tongue,
> And with devout solemnities entwined,
> Strikes to the seat of grace within the mind:
> Hence forms that glide with swan-like ease along,
> Hence motions, even amid the vulgar throng,
> To an harmonious decency confined,
> As if the streets were consecrated ground,
> The city one vast temple,—dedicate
> To mutual respect in thought and deed."

Yet this feeling, though true for modern life in some degree, seems to have had no existence for those who first built the architecture which, in its antiquity, soothes our minds and manners; witness such a story, among many others, as the ruthless slaughter of Beckett in the beautiful choir of his own cathedral. In his more passing references to architecture, Wordsworth, like Scott, has an eye for the effect of buildings as incidents in landscape:—

> "Where Rylstone's old sequester'd hall
> A venerable image yields
> Of quiet to the neighbouring fields."

> "A castle like a stately crown
> On the steep backs of winding Tees,"—

and he even (like Byron) transforms landscape into architectural images, as in the "Descriptive Sketches," the record of a tour in Switzerland,—

> "In solemn shapes before the admiring eye
> Dilated hang the misty pines on high,
> Huge convent domes with pinnacles and towers,
> And antique castles seen through drizzling showers."

Among more continuously worked-out architectural poems, may be named his sonnet, "Composed among the Ruins of a Castle in North Wales"; the poem on Sir G. Beaumont's picture of "Peele Castle in a Storm" (the poem is probably a great deal better than the picture), and the description, in "The Excursion," of the wonderful castle-building of the clouds after a storm; evidently a record, from

---

Let the hoop extending wide
Show what beauty ne'er should hide:
Stockings whiter far than milk,
Garters of the softest silk,—
Lady M. W. Montague.

‡ See the *Tatler*, No. 171; the *Spectator*, No. 50.
‡ "Journey to the Next World."

* Mews: a supposed corruption of the Latin *Mutare*; the birds being caged here when mewing (moulting).
† The portico is that of the Prince Regent's Carlton House.
‡ See pages 491, 528, 568, 628, *ante*.

Wordsworth's own experience, of one of those transcendent effects of nature which one sees once or twice, perhaps, in a life-time: the narrator was walking through mist on the hill-side,—

"When a step,
A single step that freed me from the skirts
Of the blind vapour, open'd to my view
Glory beyond all glory ever seen
By waking sense or by the dreaming soul!
The appearance instantaneously disclosed
Was of a mighty city,—boldly say
A wilderness of building, sinking far
And self-withdrawn into a wondrous depth,
Far sinking into splendour, without end!
Fabric it seem'd of diamond and of gold,
With alabaster domes and silver spires,
And blazing terrace upon terrace high
Uplifted; here, serene pavilions bright
In avenues disposed; there, towers begirt
With battlements that on their restless fronts
Bore stars,—illumination of all gems.
By earthly nature had the effect been wrought
Upon the dark materials of the storm
Now pacified; on them, and on the coves
And mountain-steeps and summits, whereunto
The vapours had receded, taking there
Their station under a cerulean sky.
Oh, 'twas an unimaginable sight!
Clouds, mists, streams, watery rocks, and emerald turf,
Clouds of all tincture, rocks and sapphire sky
Confused, commingled, mutually inflamed,
Molten together, and composing thus,
Each lost in each, that marvellous array
Of temple, palace, citadel, and huge
Fantastic pomp of structure without name."

No one, as far as we know, has ever tried to paint this cloud-vision of the "Excursion"; perhaps it could only be attempted by a painter who had himself seen such an effect. To come down to earth again, one more architectural touch of Wordsworth's may be mentioned, that in his sonnet on revisiting Oxford, where he has summed up the effect of the High-street in one line,—

"The stream-like windings of that glorious street,"—

which may possibly last longer than the street itself.

It is interesting to notice how strongly Longfellow,—a poet of the country which has no architectural past,—is drawn to the contemplation of the monuments of Mediæval architecture in Europe. Of Classic architecture he says nothing; his artistic turn and sympathy are essentially Mediæval. The one reference to American architecture is in "Tales of a Wayside Inn,"—a description of the New England type of house, of which we had a volume of illustrations before us some few years ago. A house,—

"Built in the old Colonial day,
When men lived in a grander way,
With ampler hospitality;
A kind of old Hobgoblin Hall,
Now somewhat fallen to decay,
With weather-stains upon the wall,
And stairways worn, and crazy doors,
And creaking and uneven floors,
And chimneys huge, and tiled, and tall."

That was, in fact, simply the English Jacobean house, rebuilt across the water by the emigrants. But in most of his poems Longfellow's architectural allusions are Mediæval, and he enters very fully into the Mediæval feeling, as in the reference to Strasburg Cathedral in "The Golden Legend," the answer to the heroine's question, "Who built it?"—

"A great master of his craft,
Erwin von Steinbach; but not he alone,
For many generations labour'd with him.
Children that came to see these saints in stone,
As day by day out of the blocks they rose,
Grew old and died, and still the work went on,
And on and on, and is not yet completed.
* * * The architect
Built his great heart into these sculptured stones,
And with him toil'd his children, and their lives
Were builded with his own into the walls,
As offerings to God."

In another scene we have a sketch of the cathedral by moonlight:—

"Lo! with what depth of blackness thrown
Against the clouds, far up the skies
The walls of the cathedral rise
Like a mysterious grove of stone,
With fitful lights and shadows blending,
As from behind, the moon, ascending
Lights its dim aisles and paths unknown!
The wind is rising, but the boughs
Rise not and fall not with the wind
That through their foliage sobs and soughs;
Only the cloudy rack behind
Drifting onward wild and ragged
Gives to each spire and buttress jagged
A seeming motion undefined,"—

like the seeming motion imparted to the Venetian structures by the water in Shelley's lines (page 628, *ante*). Longfellow has happily described too, in one picturesque line, the celebrated Pix at Nuremberg:—

'Like the foamy sheaf of fountains, rising through the painted air."

His sympathy with architecture is seen, too, in his tendency to draw illustrations from it, which is constantly apparent in his poems; one of the more prominent instances is the comparison of Dante's great poem to a cathedral:—

"How strange the sculptures that adorn these towers
This crowd of statues, in whose folded sleeves
Birds build their nests; while canopied with leaves
Parvis and portal bloom like trellised bowers,
And the vast minster seems a cross of flowers!
But fields and dragons on the gargoyles carved
Watch the dead Christ beneath the living thieves,
And, underneath, the fated Judas lowers!"

In the poem on Nuremberg he happily characterises the homely Meistersinger poets as,—

"Building nests in Fame's great temple, as in spouts the swallows build,"

and he devotes one short poem, "The Builders," entirely to an allegory representing life as a building:—

"All are architects of Fate
Working in these walls of Time.
* * * *
For the structure that we raise
Time is with materials fill'd;
Our to-days and yesterdays
Are the blocks with which we build.
Truly shape and fashion these,
Leave no yawning gaps between:
Think not, because no man sees,
Such things will remain unseen.
In the elder days of art
Builders wrought with greatest care
Each minute and unseen part,
For the Gods see everywhere.
Let us do our work as well,
Both the unseen and the seen;
Make the house, where Gods may dwell,
Beautiful, entire, and clean.
Else our lives are incomplete,
Standing in these walls of Time;
Broken stairways, where the feet
Stumble as they seek to climb."

Here there is a moral of double application, realistic and allegorical.

The fascination which Mediæval architecture, with its wealth of picturesque incident, has, for poetic observers, has seldom been better illustrated than in the beautiful and elaborated description of the interior of a cathedral in the best of Miss Procter's poems, "A Tomb in Ghent." It is interesting to compare this with Congreve's famous passage ("How reverend is the face of this tall pile," &c.), in order to realise how far more glowing, full, and true is the description of the modern poetess, though a writer of inferior general power, to the cold painting of the poet of the seventeenth century; how much better we understand the real beauty and poetic significance of Gothic architectural effect now: it is true that Miss Procter wrote from the point of view of a Catholic, but there is nothing in her description that would not appeal to most persons of at all a poetic turn of mind in the present day, independently of religious creed:—

"Dim with dark shadows of the ages past
St. Bavon stands, solemn and rich, and vast;
The slender pillars, in long vistas spread
Like forest arches meet and close o'er head *
So high, that, like a weak and doubting prayer,
Ere it can float to the carved angels there,
The silver-clouded incense faints in air.
* * *
There he would watch the rosy sunlight glow,
That crept along the marble floor below,
Passing, as life does, with the passing hours†;
Now by a shrine all rich with gems and flowers,
Now on the brazen letters of a tomb,
Then leaving it again to shade and gloom,
And creeping on, to show, distinct and quaint,
The kneeling figure of some marble saint;
Or lighting up the carvings strange and rare,
That told of patient toil and reverent care;
Try that troubled on the spray, and ears
Of heavy corn, and shedder bluish spears;
And all the thousand tangled weeds that grow
In summer where the silver rivers flow;
And demon heads grotesque, that seem'd to glare
In impotent wrath on all the beauty there.
Then the gold rays up pillar'd shaft would climb,
And so be drawn, to heaven at evening time.
And deeper silence, darker shadows fall
On all around, only the windows glow'd
With blazon'd glory, like the shield of light
Archangels bear, who, arm'd with love and might,
Watch upon heaven's battlements at night.
Then all was shade; the silver lamps that gleam'd,
Lost in the day-light, in the darkness seem'd
Like sparks of fire in the dim aisles to shine,
Or trembling stars before each separate shrine.

Grown half afraid, the child would leave them there,
And come forth, blinded by the misty glare
That burst upon him from the busy square."

The last lines remind one of the expression of the same contrast between the glare outside the cathedral and the stillness within, in the opening of Kingsley's "Saints' Tragedy":—

"All within is vast and tall,
All without is mean and small;
All without is harsh and shrill,
All within is hush'd and still."

This reposeful feeling of the great church interior, amid the din and bustle of the city, has probably appealed to the more sympathetic and melancholy temperaments among all generations of men who built great temples. The idea occurs more than once in the Psalms,—"Hide me in thy tabernacle from the strife of tongues" is another expression of the same feeling which prompted the whole passage quoted from Miss Procter, and which recurs from age to age.

Few are the poets of the present generation who have touched much upon Classic architecture; all our artistic associations have run so much into Mediævalism of late. Mr. Matthew Arnold, Classic as he is in style, has devoted his chief architectural sketching to his "Church of Brou," where there is an interior picture which is very fine, and which it is interesting to compare with Miss Procter's interior of St. Bavon, the rather because Mr. Arnold's picture is taken, so to speak, from a peculiar point of view, being an imagination of how the church would appear to the effigies of the pious dead reposing in it, if they ever woke to consciousness in their beautiful sepulchre:—

"So sleep, for ever sleep, O marble pair;
Or, if ye wake, let it be then when fair
On the carved western front a flood of light
Streams from the setting sun, and colour bright
Prophets, transparent saints, and martyrs brave
In the vast western window of the nave;
And on the pavement round the tomb there glints
A chequer work of glowing sapphire tints,
And amethyst and ruby; then unclose
Your eyelids, on the stone where ye repose,
And from your broider'd pillows lift your heads,
And rise upon your cold white marble beds:
And look around on the warm rosy tints
That chequer, at your feet, the illumined flints,
Say 'What is this? we are in bliss—forgiven:
Behold the pavement of the courts of Heaven.'"

Or if they should rather wake at night in the moonlit interior,

"Then gazing up through the dim pillars high,
The foliaged marble forest * where ye lie,
'Hush,' ye will say, 'it is eternity,
This is the glimmering verge of Heaven, and these
The columns of the Heavenly palaces.'"

There are few more delicately picturesque passages on architectural effect than this, rendered more interesting by the quaint and pathetic fancy attached to it. Mr. Arnold gives, in his beautiful little bit of antique called "The Strayed Reveller," hints that remind one very much of Mr. Tadema's pictures; the figure of Circe in her white robe in the portico, and the distant view of the temple glittering in the morning sun,

"Iacchus' white fane
On yonder hill."

We could have wished a poet so remarkably Greek in his sympathies and tone of mind had touched more often on Greek art and architecture than he has; he could hardly have done so without throwing a light of his own upon the subject. In some "Stanzas written at Carnac," in Brittany, he brings into effective contrast the Druidic and Christian monuments, seen together,—

"Behind me, on their grassy sweep,
Bearded with lichen, scrawl'd and grey,
The giant stones of Carnac sleep
In the mild evening of the May.
No priestly stern procession now
Streams through their rows of pillars old;
No victims bleed, no Druids bow;
Sheep make the furze-grown aisles their fold;
And o'er the glistening lonely land,
Rise up all round the Christian spires;
The church of Carnac, by the strand,
Catches the westering sun's last fires."

Mr. Arnold sees these as contrasting objects. Mr. Browning, in a remarkable passage in "Fifine at the Fair," too long to quote, compares the Druidic remains at Pornic with the church spire, in quite an opposite sense, finding, not the difference but the resemblance of the two objects, and their common origin; for the curé, he says, had ordered the overthrow of the Druid obelisk because its original meaning was still too prominent in the superstitions of the country-folk:—

* This connexion between trees and Gothic architecture seems ineradicable in the poetic mind. Lord Houghton returns to it in one of his poems, "Corfu," describing the trees—

"Making, with their thick-boss'd and furrow'd trunks,
Bases far spread and branches serpentine,
Sylvan cathedrals, such as in old time
Gave the first life to Gothic art, and led
Imagination so sublime a way"—

Pretty, but not true.

† Compare Longfellow ("Golden Legend")

"Upward steals the life of man
As the sunshine from the wall,
From the wall into the sky,
From the roof along the spire.
Ah! the souls of those that die
Are but sunbeams lifted higher."

* The same comparison again, it will be observed; the poetic mind cannot do without it, apparently, when touching on Gothic architecture.

"And there accordingly, in bush and briar it—'bides
It's time to rise again' (so somebody derides,
That's pert from Paris) 'since yon spire, you keep erect
Yonder, and pray beneath, is nothing, I suspect,
But just the symbol's self, express'd in slate for rock,
Art's smooth for nature's rough, new chip from the old block!'"

The one poet expressing the sentimental view of the matter, the other the archæological. Passing over for the present Browning, whose wealth of architectural illustration must be dealt with separately, we may notice that one of the best of the few recent poetical commentators on Renaissance architecture was Arnold's friend, Clough, whose beautiful idyll of modern life, "Amours de Voyage," the scene of which is laid chiefly in Rome, teams with picturesque touches of detail, though he expresses initial disappointment in Rome:—

"*Rubbishy* seems the word that most exactly would suit
. . . . .
What do I find in the Forum? An archway and two or three pillars.
Well, but St. Peters? Alas, Bernini has fill'd it with sculpture.
No one can cavil, I grant, at the size of the great Coliseum.
Doubtless the notion of grand and capacious and massive amusement
This the old Romans had; but tell me, is this an idea?
Yet of solidity much, but of splendour little is extant:
'Brickwork I found thee, and marble I left thee!' their emperor vaunted,
'Marble I thought thee, and brickwork I find thee!' the tourist may answer."

That is a curious tardy judgment overtaking the Romans, after many centuries, for their veneering way of building; so much of the outside splendour is gone, only the brick core left. Clough's reflections on these matters are of great interest, as those of a man of taste and cultivation, but innately sceptical in his turn of mind, and disposed to question and weigh the common enthusiasm for ancient monuments, as well as for other things commonly reverenced. Commenting, in the same poem, on St. Peter's, he finds that the architectural expression of the Christian faith,—

"Is not here, O Rome, in any of these thy churches;
Is not here, but in Freiburg, or Rheims, or Westminster Abbey
What in thy dome I find, in all thy recenter efforts,
Is a something, I think, more *rational* far, more earthly,
Actual, less ideal, devout not in scorn and refusal,
But in a positive, calm, Stoic-Epicurean acceptance.
This I begin to detect in St. Peter's and some of the later bits,
Mostly in all that I see of the sixteenth-century masters,
Overspill, of course, with infinite gauds and gewgaws.
. . . . .
No, great dome of Agrippa, thou art not Christian! Canst not.
Strip and replaster and daub and do what they will with the latter,
Here underneath the great porch of colossal Corinthian columns,
Here as I walk do I dream of the Christian belfries above them:"

but these latter seem only excrescences out of keeping with the spirit of Roman art, just as in the "stately Vatican chambers" the figures of the ancient gods and muses seem to have no relation to the modern uses of the place; where is the connecting link?—

"Utter, O some one, the word that shall reconcile ancient and modern.
Am I to turn me for this unto thee, great chapel of Sixtus?"

The last hint is not a bad one, for certainly in the genius of him who decorated the Sistine Chapel there was seen the blending of antique power with Christian feeling more than in any other artist of the modern epoch. But if we can connect the Roman remains with no special religious feeling, they at least, thinks Clough, can lift us in one way or another above ourselves,—

"Yet to the wondrous St Peter's, and yet to the solemn Rotunda,
Mingling with heroes and gods, yet to the Vatican walls,
Yet may we go, and recline, while a whole mighty world seems above us,
Gather'd and fix'd to all time into one roofing supreme;
Yet may we, thinking on these things, exclude what is meaner around us."

In Venice, too, Clough is better than any deceased English poet since Byron, though in a curiously different way; he is by comparison an "art-critic," and weighs the architectural meaning and effect of the buildings rather than their associations; he gives a brilliant sketch of the effect of the canals by moonlight, quite with an artist's observation:—

The south side rises o'er our bark,
A wall impenetrably dark,
The north is seen profusely bright;
The water, is it shade or light?
. . . . .
In planes of sure division made
By angles sharp of palace walls
The clear light and the shadow falls;
Oh, sight of glory, sight of wonder!
Seen, a pictorial portent, under,
O great Rialto, the vast round
Of thy thrice-solid arch profound."

Some of the questions of style are well touched on in the poem from which this is quoted, "Dipsychus," a philosophical poem in a framework of Venetian architecture; the suggestiveness of the combination of Gothic and Classic forms in much of the architecture does not escape Clough, but the most important passage bearing on style is one which comes in suitably just now, when there is a turn of the tide in favour of Classic forms; for it is a plea for the superior intellectual value of Classic or Renaissance architecture:—

"Come, leave your Gothic, worn-out story,
San Giorgio and the Redentore;
I from no building, gay or solemn
Can spare the shapely Grecian column.
'Tis not, these centuries four, for nought
Our European world of thought
Hath made familiar to its home
The classic mind of Greece and Rome;
In all new work that would look forth
To more than antiquarian worth,
Palladio's pediments and bases,
Or something such, will find their places:
Maturer optics don't delight
In childish dim religious light,
In evanescent vague effects
That shirk, not face, our intellects;
They love not fancies just betray'd
And artful tricks of light and shade;
But pure form nakedly display'd,
And all things absolutely made."

The remark as to the bearing upon modern taste of our familiarity with "the Classic mind of Greece and Rome," the effect of which we can never now shake off, touches on an element in the question of style which is often overlooked. We have eaten in modern days of the tree of knowledge, and can never again build with the unconscious inspiration of the Mediæval artists: men of wide literary culture, like Clough, are probably better aware of this than the architects mostly are.

In a concluding section we will see what our two greatest living poets, Browning and Tennyson, have to say upon architecture.

EVE.

As principal features in the commencement of the Bible our first parents occupy distinguished places in every series of subjects from the Sacred Record executed in painting and sculpture, many of which form part of the decoration of Christian edifices of worship. It was not, however, until the Italian school, by means of careful study of Nature and of the remains of ancient art, undertook the pictorial and sculptural illustration of sacred history that the ideals of Adam and Eve became such as could afford satisfaction to the observer, or harmonise with religious feeling; and from that time Eve has always been a favourite subject in art.

Among the many great men who, in the service of the Church, portrayed the various personages of Holy Writ, none were more successful than Raffaelle, who, indeed, may be said to have been and to remain foremost in his achievement of these representations. Thus, in contemplation of the subject of Eve, one naturally turns in the first place to his two noted versions of the Temptation which are so familiar to lovers of art, namely, to his picture in the Vatican, which exhibits our first mother as offering the fatal fruit to Adam, and to the other which is a composition engraved by Marc Antonio from a design, not a painting, by his great master. In the latter, although the story is not, perhaps, so fully told as in the other, the figure of Eve is peculiarly graceful in pose and contour. She rests against the perilous tree, one leg being easily and modestly crossed before the other, and, as may be observed is often the case in Raffaelle's works, and affording an evidence of the breadth of the quality of his art, the design of this figure is almost as well suited for the sister art of sculpture as for that of painting for which it was a preparation.

In the fresco by his great compeer in sacred art, among those contained in the ceiling of the Sistine Chapel, Eve reclines at the foot of the tree of forbidden fruit in one of those attitudes of vague vigour in which Michelangelo rejoiced. She is represented almost as a dreamer not taking any definite part in the temptation of her husband. She does not present the apple to him, but leaves it to his affection to associate himself with her transgression and partake of its perils.

Ghiberti, and many other of the distinguished artists of the period of the Renaissance, treated the subject of the Temptation in various ways; and especially the Serpent is presented under divers aspects. Chiefly, however, the Demon appears with a feminine head, indicative of Sin, which has, especially when the body is terminated by a snake's form, been assumed and accepted to be female: which idea has been amplified by Milton in one of the most powerful episodes of "Paradise Lost."

Apart from the after-disobedience of Adam, and in association only with her own, "the earliest born of womankind" has ever been naturally a most attractive subject for verse and the arts. The ideal, indeed, of such freshness of existence, innocence of virgin nature, and grace of female form may well possess a fascination well-nigh universal. Notwithstanding her youth, however, her title of mother of mankind has associated with her the idea of a certain amplitude of contour, insomuch that no other type would now be likely to be generally acceptable. The adoption of this character, for example, has been continued in modern art in the Eves of Westall, Baily, and Macdowell. Also it seems universal to consider her as of fair complexion, so that in all pictures she appears as *blonde* as well as *grande et belle*. Perfect purity of demeanour, and sweetness of expression, may, however, be accepted as attributes still more essential.

Excellently beautiful female forms and complexions are to be found which are slender and *brunettes*, and Eve came into life in a land of the sun, and we have no record of her complexion, and yet a *brunette* skin and a lithe slight Oriental form would not be in harmony with what has grown up to be our idea of Eve. There is more than one tradition that the hair of our Lord was light-brown or golden, but if there exist any with respect to the tresses of Eve it is obscure. Neither also would a *petite* Eve fulfil our impression of the first woman, which rather is that she was at least of full stature.

Michelangelo, if he had made a separate painting or statue of Eve, might have portrayed her gigantic, in accordance with some of his female figures in the Sistine chapel, whom Fuseli characterised as "moulds for generation." In fact, the figure in the great fresco of the "Last Judgment," which is conceived to represent her, bears that appearance. But we seem more ready to accept the sentiment of the gentle Raffaelle in his conception of the subject, who has represented Eve as a lovely and graceful woman of middle height, and of an age between eighteen and twenty, and yet, although so young, somewhat full of form, with hair of a light-brown, which later artists have enhanced in brilliancy by making it golden.

In most modern examples, also, she is portrayed with luxuriant tresses,—far longer than those with which Milton has gifted her. In his description of the first pair he speaks of Adam's hair as resting on his manly neck; while, on the other hand, the tresses of his young spouse reach no further than to her lovely waist. It might have been supposed that our great poet, who derived his chief inspiration from the Bible, might have selected to follow more nearly what St. Paul says in chapter ii. of his First Epistle to the Corinthians, that "if a woman have long hair it is a glory to her, for her hair is given to her as a covering." Even among ourselves at the present day women's hair is occasionally to be found so long as to reach to their feet, and, not by any means unfrequently, to their knees. Closely, however, as in our literature, Milton's sublime epic is associated with our idea of Eve, even the painters who have directly illustrated the poem have not thought themselves bound by his description in this respect, but have rather followed St. Paul's words, and, in some cases, have treated the hair of Eve not only as very luxuriant, but also affording a lovely natural veil.

The central event in the history of Eve is that which formed the fatal turnpoint from the first radiant happiness of Eden to the after trials of the outside world,—namely, her temptation and beguilement by the deadly serpent; and, forasmuch as thus in fearful attraction and sacred dramatic interest this incident is supereminent, it is no marvel that it has been so frequently sought as a subject for art. It affords, indeed, every essential for the purpose, concentration of interest, beauty of form and colour in the principal object, and the natura

sympathy awakened by the contemplation of innocence betrayed by subtilty.

Although this presents itself as the most enthralling incident in the history of Eve, it by no means stands alone in her life as yielding inspiration to art. Many other subjects are suggested by the affecting narrative of the loss of Eden in which she is ever the most interesting object, of which the most salient points perhaps may be cited as follow:—The first moments of the newly created Eve on earth in all the wonderment of sudden and strange existence; her first sight of herself, as set forth by Milton, in the placid mirror in her sweet garden of Paradise; then follows her presentation to Adam and the love of the first two human beings on earth; after this the record indicates her as again alone and tempted by herself and beguiled apart from her husband by the deadly snake; following on which comes her own temptation of Adam by offering to him the fatal fruit, and his partaking with her in the first disobedience and its penalty; and then their consequent expulsion from Paradise, while cherubim guarded the tree of life; in the outer world Eve soon appears as a mother with her two children Cain and Abel; and the closing scene is that of the afflicted first father and mother in anguish over the first murder.

The death of Eve is not mentioned in Genesis, and we have no information of the age to which she attained, beyond 130 years, which is afforded incidentally. In idea, however, she is only contemplated as young, never, at any rate, as aged. When she first appears on the scene, it is as the latest and loveliest birth of Nature, radiant in the joy of innocent fresh existence; and our last sight of her is as the stricken mother overwhelmed in distress over the body of one son slain by the other. Light and shade are so mingled in this sacred drama that no legend of romance, no narrative in the history of the world has had such attractions for the poet, painter, and sculptor as the Gospel story of beautiful Eve, of that fair being, whom, after their transgression, in Milton's words, her loving husband thus addresses,—

> "O fairest of creation, last and best
> Of all God's works,"—

and afterwards,—

> "How art thou lost!"—
> "And now to death devote!"

And then concludes,—

> "Bone of my bone thou art, and from thy state
> Mine never shall be parted, bliss or woe."

THE WISDOM OF THE HOUSE OF COMMONS ON ART AND ARCHITECTURE.

OUR legislators were largely occupied on Monday evening last on "Supply," the considerations entered upon including the voting of money for some objects connected with architecture, on which subject several members distinguished themselves by some of those enlightened and liberal opinions and criticisms which are always forthcoming on such occasions. Whether there are really no members in the House who have any common sense or knowledge about art, or any interest in it, or whether those who are qualified to discuss such subjects think it hopeless to argue, and content themselves with voting, we cannot say. The latter seems to be the probable explanation, as some of the voting went the right way, in spite of the extraordinary nature of the protests made against it.

The first subject touched upon was the voting of 100,000*l.* for the purchase of a site for the proposed new War and Admiralty Offices, which was opposed *sans phrase* in the first instance by Mr. Dillwyn, who objected that this was not a time to spend money on such a matter. Mr. Beresford Hope rightly pointed out how wasteful, inconvenient, and even unhealthy, was the higgledy-piggledy rabbit-warren of houses which constitutes the bulk of the present Admiralty Offices. It appeared, however, later in the discussion, that the great dread of the honourable member who opposed the vote was lest any attempt should be made to produce a beautiful building. The honourable member "had a horror of artistic sites and buildings." That new offices are unhappily necessary it might perhaps be useless to dispute; but that any attempt should be made to produce a fine building,—one that would be an ornament to the city and a source of pleasure and pride to us,—that is too much for Mr. Dillwyn to bear. The view is nothing new in the House of Commons. It is the average view of architecture which is prevalent in that atmosphere. Sir B. Leighton sang in the same tune, and hoped there would be "no waste of money in adopting a superfluously ornamental style of architecture." We like that "superfluously." Will Sir B. Leighton define for us what is "superfluously ornamental"? He will find it rather difficult, if he begins, to know where to stop. As a matter of fact, everything beyond a brick wall with holes in it to let the light in is superfluous; we might allow window-sills, to take the drip of the rain away, perhaps; but beyond that it would be difficult to find an external feature which is not superfluous practically. We should like to see a Committee of the House sitting on an architectural elevation of the new offices, and picking off the "superfluous" features: what flowers of art-criticism would be evoked! But, to speak seriously, what a miserable spirit is this that is here shown! There have been times and places, and those in the history of very practical and business-like states, when the necessity for having a large new building was considered an opportunity for doing something as splendid, as noble, as could be done, for the glory of the country or city, and for the pleasure and pride of its inhabitants. Now the only consideration is, "How cheap can we do it?" and indeed, if the real meaning of some of the speeches that are made on such topics in Parliament were put in plain English, it would be apparently "How ugly can we make it?" "How can we most effectually show our contempt for the notion of having any beauty or dignity in the external surroundings of our life, or for any consideration except the dullest and most prosaic provision for material needs?" Truly a noble way of looking at things. Let other nations care about encouraging the arts; let *us* show that we can provide the largest floor accommodation with the smallest bill to pay, and never mind how unsightly the result is. This spirit in Parliament is one at least, and one of the most prominent indications of the sad truth of Mr. Matthew Arnold's indignant invective against modern England, who—

> "Stupidly travels her round
> Of mechanic business, and lets
> Slow die out of her life
> Glory, and genius, and joy!"*

However, the members who are afraid of the new War Offices being architecturally fine may probably make their minds easy. There is plenty of evidence that the thing will be spoiled, if possible. The site is to be the one at Spring Gardens, on which the new building will almost necessarily be inserted in a patchwork fashion among old ones entirely different in scale and character, the new and old mutually injuring each other. It is true that there does seem now to be a very important economic advantage in the cost of the proposed site as compared with that at Great George-street: but why? Because the acquisition of the latter site was neglected, pottered over, and postponed till the value of the property rose to more than double that for which it might have been acquired when the ultimate necessity for new War and Admiralty Offices was first talked of. That is not the fault of the present Government, but it is the fault of the system by which these things are managed by successive First Commissioners, with no continuity of action, and no definite purpose; and it is too late, probably, to undo the mischief now. We may at least hope, however, that before the threatened architectural competition for the new buildings comes off, the site-plan which has been already put forth will be re-considered, and arranged so that there may be some chance of a homogeneous grouping of the whole building, instead of putting it down piecemeal among the old ones.

In a subsequent portion of the debate on Supply, other subjects connected with art turned up, in relation to which the same enlightened and liberal spirit displayed itself. In this portion of the debate Mr. Cavendish Bentinck, who poses as the æsthetic conscience of the House, and has even extended his beneficent instruction to ourselves, particularly distinguished himself in pushing his favourite argument, that we should sit down and do nothing, because all our art is so bad, and perhaps if we wait with our hands in our pockets art will come down the chimney to us, in time. While touching on this member's contributions to the debate, we may just advert to an angry letter from him, which we printed in the *Builder* for April 14th, elicited by our remarks about the decoration of the Central Hall of the Houses of Parliament. Any readers who understood the point of our remarks on that subject (p. 440, *ante*), would have perceived that the question as to the medium for decorating the remaining spaces in the Central Hall is not in the least affected by the fact that the Venetian school of painters executed paintings in oil in positions which would cause them to be spoken of (in the present language of art-criticism) as decorative paintings. The great painters of the Late Renaissance, and the Venetian school above all, had little regard for decorative relations between painting and architecture; they painted for pictorial effect *per se*. Decorative painting means painting conventionalised in style into harmony with architecture; and surface and material form elements in this harmonising process. What we said, and what we repeat, is that for decorative design placed in a spandrel of a Gothic vault, inserted between the architectural lines of the construction, so as to form practically a decorated portion of the architecture, and in an apartment decorated already with stained glass, gilding, and coloured tiles,—that under such circumstances mosaic is the only form of pictorial work which can have strength and brilliancy enough to hold its place as the high light in the decorative scheme, which is what the pictorial design in such a case always ought to be; and that oil-painting in such a position and amid such surroundings would be weak and ineffective, and would simply be killed by its adjuncts. It seems waste of space, however, to argue on such a point with a gentleman who has so strange a perception of the artistic fitness of things as to object positively, as he did in last Monday's debate, to the system of the architect being employed to design the furniture of the principal rooms, as in the Law Courts. We should have thought that any one who professed to be an expert on such matters, as Mr. Bentinck obviously does, must have known that it is one of the most desirable elements in completeness of effect in a really important building, that the furniture should appear to have a direct relation to the design of the building, and that the best possible way of ensuring this is to let the architect, if he is an able man with an interest in his work, treat the furniture in his own way. We feel pretty well assured that Mr. Street would have preferred to do so from mere interest in the matter, even without extra charge, than not to have done it, though that does not excuse the illiberality of the reference to the fact of "the architect being paid for it." It may be added that, owing to the turn which fashion has taken lately in what is absurdly called "art-furniture," it would probably have been very difficult to purchase ready-made, or even to obtain, on any terms, direct from makers, any furniture that would have been in keeping with the style of the Law Courts. And here we take leave for the present of the art-critics of the House of Commons.

We must, however, correct one misstatement as to facts made by Mr. Labouchere, who complained that in the accounts of the expenses in connection with the Law Courts there was a separate charge for the salaries of clerks of works, whereas, he said, "in private contracts the practice was for the architect to pay the clerk of works out of his commission." What does a member of the House of Commons mean by making such a statement, on a matter of which the truth can be so easily ascertained? The clerk of works is habitually paid by the owner, not by the architect, as Mr. Labouchere might have ascertained if he had made inquiries. But accuracy of statement seems to be regarded as of no account when there is any attack to be made upon an architect.

* "Heine's Grave."

Sad Death of an Architect at Southport.—The search for the body of Mr. Rawson, architect in the office of Messrs. Garlick, Park, & Sykes, Preston, who was drowned while attempting to swim across Pleasure-boat Hollow, river Ribble, with his clothes on, during the work of surveying in connexion with the Ribble Bill, has been reluctantly abandoned. A large body of men have been engaged in the search, but without success.

THE PURCHASE OF THEIR HOUSES BY LEASEHOLDERS.

COMPENSATION FOR IMPROVEMENTS.

A Bill has been introduced into Parliament for the purpose of enabling leaseholders to purchase the fee-simple of their houses. The fourth section contains the gist of the whole Bill, and runs as follows:—"Every person who shall be entitled to a term in any house or cottage within the meaning of the Act [that is, we may mention, any house and grounds not exceeding three acres in extent], whereof there shall on the date of application hereinafter mentioned be unexpired more than thirty years, if such term was created prior to the passing of this Act, or more than twenty years if such term was created after the passing of this Act, may apply to the County Court in which such house or cottage is situated, and, subject to the provisions of this Act, may acquire such house or cottage by purchase in the manner hereinafter provided." In one word, if this Bill becomes law, a power of compulsory sale in the interests of leaseholders would be created. When a question is definitely and clearly laid before the House of Commons in a Bill, it is clear that it has passed from the regions of mere academic discussion, and has become one which must be seriously considered.

The question whether leaseholders should be allowed to buy out their landlords, whether the latter be willing or not, depends on a single consideration, and that is, whether the public interest absolutely requires that leaseholders should, whether their landlords like it or not, be able to purchase their holdings. We pass by the matter of detail which is conspicuous in this Bill, that the benefit of it is restrained to the case of those who have thirty years of their term to run, if it was granted before the passing of the Act, and twenty years if the lease began after the Bill becomes law. Because, this seems to us an arbitrary and senseless distinction; for if a leaseholder has a right to buy out the landlord, he has it whether his unexpired term be ten years, or twenty years, or thirty years. Therefore, we come back to the cardinal question, Can such a compulsory purchase be justified? We have, as our readers may remember, from time to time pointed out the benefits to be gained by the dispersion of land, and especially land in houses, among a larger number of owners, and we pointed out the benefits which the Settled Estates Act was likely to confer in this way. We have, further, always pointed out the advantage to architecture of building on freeholds.

But it is impossible to perceive the paramount necessity which can justify the principle of the Bill which has recently been introduced into the Commons. It does not prevent the erection of houses by speculative builders, because it only allows leaseholders who have a considerable number of years of a lease to run to buy their houses. The utmost that it can do is to enable a limited number of leaseholders to buy their houses, and, therefore, presumably to cause the improvement of a certain number of houses. But this is too small a benefit to justify the passing of so strong and wholesale a piece of legislation as this, legislation which in practice must, as regards the tenure of houses after the passing, produce yearly tenancies, and thus give the tenant less security for his improvements, and less desire to improve his house than he has at present. Its tendency, also, is to destroy the confidence of the public in lands and houses as investments at all. Thus, assume a thrifty man of business erects two houses on a piece of freehold land, one he inhabits himself, and the other he lets to a tenant. If, after the passing of this Act he erects it, towards a twenty one years' lease he is liable to have his investment taken away. Thus, the proposal is as much against the interest of small owners as of large owners. In one word, the benefits to accrue from such a measure are not sufficient to justify the principle of compulsion of building applied to such cases as are touched by the Bill, or indeed to leaseholders as a class. We must look to reforms such as the Settled Land Act, and similar and probably stronger measures, to produce the diffusion of property, and consequently to the increasing of the number of Londons. And we may look also to another measure, which is one of a practical character, urgently required. That is a measure which shall give to tenants compensation for improvements of a permanent character which they may have made to their houses, and which shall prevent landlords asking from an outgoing tenant a larger rent, when the increased value arises from improvements done by the tenant himself.

It is contrary to every principle of justice that one man should gain benefits from the outlay and the money of another. Where such a principle is allowed to exist, as it does especially in regard to London houses, it is not only unjust, but it distinctly has a tendency to prevent architectural improvements of every kind,—sanitary, structural, and beautiful. It causes more frequent changes of dwellings than would otherwise take place, and this helps to extinguish the local feeling which is so much needed in London. It produces all sorts of bad and scamped work, and it tends to prevent leaseholders from purchasing their property, because when a landlord has nothing to do but to sit still and collect his rents he has no desire to sell his property. The principle that tenants are entitled to compensation has been sanctioned by the Legislature, and will this session probably be sanctioned again. And there is no difference in principle between giving compensation to a tenant who puts up a new barn on a farm, and to one who puts a new grate into a house. Both are permanent improvements, and both increase the value of the different sorts of property, one for the purposes of agriculture, and another for the purposes of habitation. The question is of greater pressing importance, because in some places it is the regular practice for landlords to give compensation in some form to tenants for their outlay, or else to defray the expense of improvement themselves. What is required is an Act which shall make the giving of compensation compulsory on landlords in the case of all dwelling-houses. Public opinion is ripe for such a measure. It is one of an equitable and proper character, and it leaves untouched the holding of property as an investment. Its tendency would be to cause, in some instances, property to be sold, but it would only have that effect when the landlord was averse to fulfil the duties but was willing enough to receive the benefits which arise from his position. Nor do we feel any doubt that such a Bill will shortly be introduced, and will ultimately become law; therefore we are inclined to deprecate crude and impracticable measures, as likely to retard the passing of desirable and necessary reforms.

PROPOSED LEGISLATION ON BUILDING IN FRANCE.

There are three projects of law before the French Assembly for the better regulation of private dwellings. Builder and lodging-house keeper are alike allowed too much liberty, and can freely let tenements that should never be inhabited. Even M. Gustave Jourdan, one of the chief functionaries of the Prefecture of the Seine, has demonstrated in his work entitled "Législation sur les Logements Insalubres," that the rules with respect to building of houses are imperfect. They do not touch those sanitary questions that are daily recognised as of more and more importance. The Paris Commission on Unwholesome Dwellings drew up some model rules or bylaws more than two years ago which should serve as a basis for legislation. M. Edouard Allard, architect, was the reporter for this Commission, but his project was revised by an administrative committee, principally for the purpose of introducing as few innovations as possible and of maintaining old errors. Finally, in the month of June last year, the project was again manipulated, this time by the Paris Municipal Council, so that it has now lost much of its original character. However, and in spite of many imperfections, the project will certainly introduce many improvements, when, as is more than probable, it becomes law. For instance, the space to be allowed round houses for the circulation of air will be much greater, and the size of yards and air-shafts is to be enlarged.

There is one reform of most urgent and self-evident necessity, which does not seem to have occurred to the originators of any of these projects. We would allude to those noxious little courts, that seem more like air-shafts, which are situated in the centre of huge blocks of buildings, and that serve rather as a means of propagating disease than of ventilation. They measure generally 3 yards to 4 yards square, and as the four walls that surround them are, as a rule, six or seven stories high, these yards recall in appearance the deep hole of a well, or at best an air-shaft. In the latter capacity they might be of some use were it not for the unfortunate disposition of the apartments. They are usually so contrived that both kitchen and closet windows open on to these little yards. Thus we generally find the closet window opens within two yards either opposite to or at right angles with the kitchen window. The latter is, as a rule, also open, and the hot kitchen fire serves to attract the air from the closet, where it mingles with the fumes of the dinner. Thus are the specific germs generated in cesspools and untrapped, unventilated drain-pipes, conveyed to and mingled with our food; for it must be borne in mind that no French closet is trapped, that French drain-pipes are not ventilated, nor are they efficiently flushed. To make matters worse, there is very often at the bottom of this shaft a common closet, reserved for the use of porters, servants, messengers, workmen, and others. As a rule, this closet is very foul, and sends up its fœtid emanations to the six or seven kitchens above. Nor is this all; we have often seen wire-gauze meat-safes hung up outside the kitchen windows, and this is perhaps the worst phase of the evil. The heat produced in cooking, especially on the surfaces of the meat, &c., is doubtless sufficiently intense to kill the germs that may have fallen on the food; but if the cold meat, that has not to be cooked again, is to be thus exposed to the air drawn out of the closets, what chance is there of escape? Well may the Englishman, unaccustomed to Continental travelling, find himself indisposed when he first lives abroad. Evidently a bylaw should forbid, in the future, the placing of closet and kitchen windows so close to each other. Also a proper and permanent opening at the bottom of these little courts should be contrived, so as to ensure a constant up-draught. As it is, the draught is slight and accidental, and we should imagine that the air finds its escape more easily through the kitchen windows and up the kitchen chimneys, than out by the top of the shaft.

If on no higher and scientific grounds, the presence of this grave defect in French houses should now be better appreciated, considering the lucid description given by M. Zola in his recent novel, "Pot-Bouille," of what, with graphic coarseness, he terms the *boyau* of the house. This minute court, where cook and scullery-maid shout scandal and abuse at each other as they fling down dirt and offal, is on several occasions depicted with the full force and revolting realism for which M. Zola has won a world-wide reputation. M. Zola's father was a skilled engineer, as the aqueduct of the Canal Zola, near Aix-en-Provence, can testify, and perhaps the son might have distinguished himself in a similar way had he not so early attained unrivalled success as the writer of novels which have, at least, the merit of running to thirty or forty editions. In "Pot-Bouille," M. Zola makes us feel instinctively the unwholesomeness of these little courts. It is unfortunate, however, that so realistic a writer was not acquainted with the technical defects which render these courts so dangerous to public health. The publicity he might give to such a grievance would go far to ensure its remedy.

In the project of law before us, mention is made of these courts. It is urged that they should be much larger than at present, and that where they do not communicate directly with the exterior air, an opening should be made in the lower part to create a constant up-draught. But, in all this, we find no mention of the danger that arises from the close proximity of closet and kitchen windows.

In other respects the project has much to recommend it. The unwholesome lowness of ceilings is prevented by the stipulation of a minimum height of 2·60 mètres, or about 8 ft. 7 in. This, even, is not to our mind high enough, but it would only occur, at the worse, in the *rez de chaussée*, which is always the lowest apartment of each house. Cellars on no account are to be inhabited, and roofs only where proper windows can be formed. Punishments for breaking the law are also very severe. Where an apartment or house, pronounced uninhabitable, is let in spite of such interdiction, the responsible householder is to be summoned before a magistrate and condemned to from one to five days' imprisonment, and a fine equal in amount to the annual rent value of the tenement in question. If the offence is repeated, the term of imprisonment is to be from five to ten days, the fine equal to two years' rent, and in no case less than 40*l*. When a house is unwholesome in consequence of surrounding circumstances, for which the

proprietor cannot be held responsible, the commune or municipal authority may purchase such house or houses and destroy such districts, to carry out public works of drainage, &c.

Apart from this the project of the committee, technically most competent to deal with the subject, there are two other Bills. The one is brought forward by the well-known deputy, and former working stone-mason, M. Martin Nadaud, whose name is familiar to many Englishmen as the author of a work on English Trade Unionism, while the other Bill is introduced by M. Emile Laurent, President of the Council of the Prefecture of the Seine. These various schemes are much alike in all essential points. They all three agree that the law of the 13th of April, 1850, decreeing the formation of the "Commission on Unwholesome Dwellings," must be modified in the sense that its stipulation must be rendered compulsory instead of facultative. The fact that law is optional has simply rendered it inoperative. During the first outburst of enthusiasm which followed the proclamation of this law, a vast number of commissions were appointed throughout France to watch over and report upon unwholesome dwellings. There were more than five hundred such commissions in 1858, but twenty years later there were only nine remaining, while now it is a moot point whether there be five or six commissions still extant throughout the length and breadth of the country. We know that the commissions on unwholesome dwellings at Nancy and at Bordeaux are working well, and that a similar body at Lille has acquired great influence. Of course, the Paris Commission has retained its former activity, but this is about all trace that remains of the law of April, 1850. It is now, however, proposed that at each centre of local government a Commission on Unwholesome Dwellings must be appointed, consisting of doctors, architects, engineers, and other competent residents. Further, it is urged that the Government should proceed against and inflict fines upon the Local Authorities who fail to carry out such prescriptions.

In conclusion, we would suggest that, simultaneously with the enactment of laws such as those to which we have briefly alluded, some effort should be made to define more clearly what may be considered an unwholesome dwelling. Any improvement, however slight, is welcome, but we have known so-called improvements that have only made matters worse. House sanitation is a science of which the French are notoriously ignorant. If some knowledge exists on the subject in the great centres, the profoundest ignorance still reigns supreme in rural districts. Hence perhaps the necessity for imperial measures; but laws should be accompanied by an active educational propaganda, so that the people may understand the benefits they are called upon to enjoy, and be at once able and willing to assist in the realisation of the hopes that animate an enlightened legislature.

ARCHITECTURAL SKETCHING AND SKETCHING TRIPS.

ARCHITECTURAL ASSOCIATION.

AT the last meeting of the Architectural Association, Mr. W. J. N. Millard read a paper on the above-named subject. After a few introductory observations, the author said,—

In choosing this subject, I have assumed that there are very many members of the Association who do care about being able to sketch, in spite of the fact that one still occasionally comes across individuals who, with a smile, inform you that they "never sketch," as though it were some species of light amusement quite beneath their serious notice, and declare that they would as soon buy photographs! I might perhaps rest assured on the point when I remember that for fourteen years the "Association Sketch-book" has been maintained by members, and still continues in at least as flourishing a condition, I think, as ever it was. Yet, if I were to rely for my audience on all the contributors to the "Sketch-book" for, say, the past two years and a quarter, *i.e.*, since the "New Series" began, I could only count upon forty, out of a body of young architects numbering nearly 900. Of course, I may be told that the whole body of "sketching" members in the Association is not fairly represented by the contributors to the "Sketch-book." Then, I will only ask whether they ought not to be so.

Now, since I venture to hold the opinion,—surely not an altogether strange one,—that architecture can only properly be studied from buildings, not from books or drawings alone, and that therefore no amount of mere office work can suffice, in place of travel, to produce a well-educated architect, it appears to me that the question of sketching becomes a matter of the greatest possible importance to every earnest student of architecture, and anything but a light amusement, particularly as I think it may be found that it implies something rather more than the mere making of sketches. At the very least, it must be an immense help to a man, in many ways, to have acquired the habit of producing intelligible representations of architectural forms, whether from the works of others or ideas of his own, since he is thus enabled to put his impressions on paper for himself. Nor do I see exactly how one can hope ever to acquire any thorough knowledge of architecture without some such power. Moreover, I cannot imagine that he could feel much real interest in architecture who did not *want* to be pursuing the study of it whenever he got the opportunity; and I should like to know how he can do so better than by sketching.

By architecture, I of course mean, at least for to-night, only the art of that name, not the whole hybrid business, usually so termed, comprising, so far as I am given to understand, nothing less than the entire profession of building-surveying, with a knowledge of the quality and market value of all kinds of material and labour sufficient for an enterprising contractor; a grasp of physical science, constructive formulæ and methods of calculation so essential to an engineer; acquaintance with "authorities" and skill in expounding the mysteries of easements and arbitrations, compensations and contracts, and cases of "ancient lights," such that a lawyer might envy; as well as a general capacity for conducting affairs of all sorts and especially anything to do with the management of property, insurance agency, or advertising; in fact, so many and such varied "accomplishments," that the wonder is, what room there can be left for architecture proper. Yet it is with this apparently insignificant, though really all-important, branch of the "business" only, that sketching has anything to do.

But again, beyond being of service to a man as a student and draughtsman of architecture, the habit of sketching must tend to bring out whatever artistic ability he may happen to be endowed with, to accustom his eye to appreciate delicacies of form, subtlety of proportion and beauty of composition, and all those niceties that go to make just the difference between the work of an artist and a "cobbler"; thereby to set him thinking and rouse his imagination; and in a word, to at once furnish him with ideas and give him skill and readiness in expressing them.

So, finally, it may prove of chief use to him as an architect, if, by that title, we understand an artist who moulds and fashions the forms and features of buildings, just as a sculptor moulds and fashions the forms and features of his figures, or a painter composes his masses of light and shade, and colour. Then if such he be, shall he be any less observant than either painter or sculptor, less ready to take note of everything that may have any bearing on his work, less in earnest about what he produces, or, in short, less devoted to his art? And what artist is "worth his salt" who is not devoted to his art?

It is not so much to those who are already accustomed to sketch, that I will presume to talk to-night, as to the younger members who have only just commenced to do so, or who are still but half inclined to begin, and to them I would say, A student who would become a sketcher cannot start too early. It should be the first thing he takes up, not the last, as too frequently is the case, since it may exercise an influence on all the work he ever does and may leaven, as it were, his whole future career. Who knows how much artistic power is lost to us, merely for want of its early cultivation? So many put off beginning to sketch until, as they say, they can go "a regular tour," as if such they say, they can go "a regular tour," as if such an occasion as that were not exactly the time when the power of being already able to sketch, is most indispensable.

Of course, everybody must learn to sketch by sketching, but it is almost pitiable sometimes to see men starting off on a tour of several months or more, it may be, who have yet to acquire facility, perhaps even to make their first attempt, in outdoor sketching; going, in fact, to learn how to sketch, with the certainty of losing much precious time in doing so, and with it half the benefit of their tour, simply because they have neglected to begin earlier, by spending Saturday afternoons and holidays occasionally, in trying their hands at whatever subjects happen to be nearest. Consequently, they so often return just as they are beginning to use their pencil with any real pleasure, dissatisfied with the small amount and poor quality of the work they have to show for the time they have been away.

With sketching, as with the language of a country you may be about to travel in, whatever little time is devoted to it before starting, is sure to be doubly repaid you on the tour. It stands to reason, then, that the sooner a student takes up sketching at any odd times, the better use will he be likely to make of subsequent sketching trips, to say nothing of the good work he may generally accomplish without going very far, if he be determined to make the best of what there is around him. At first, probably, he feels a trifle timid, especially if he knows nobody more advanced than himself to take him out sketching. In that case, let us suppose he starts off alone, on the sly, for some small village church that he has already been to have a quiet look at several times. Concealed under his coat is a brand-new sketch-book, which he presently produces,—if nobody is about,—and now he finds himself really going to make his first outdoor sketch. Before, however, he has fairly set to work at the little round-headed window or plain pointed doorway that he has modestly selected as a subject, he is startled by the sound of a horse and cart in the distance coming down the lane, and hastily thrusting the book into his pocket, he tries to appear just as though he was "not doing anything." The danger past he at length puts pencil to paper,—and rubs it out again. Nor is it likely that any previous training he may have had in drawing indoors, shading from the cast, or even knowledge of perspective, will prevent the awful suspicion from crossing his mind that, after all, he is only just beginning to learn to draw. Again, he is alarmed by voices of children on their way to school, or by a cow looking over the hedge, and it may take some little time before he gains sufficient confidence in his powers not to mind having people overlooking his shoulder, as they always will, even those who might be expected to know better. I think, however, he will invariably find that no artist will do so without first asking permission. By-and-by, of course, when he has become a confirmed sketcher, he will never hesitate, so long as his subject requires it, to incur the consequences of calmly planting himself on his little three-legged stool in the middle of a busy market-place or narrow thoroughfare, with the inevitable result of being immediately hemmed in by a curious mob, all trying to get front places at once, and all utterly regardless of the fact that the poor artist himself might prefer to have a peep at what he is endeavouring to represent.

Possibly, in choosing his first subjects, the beginner will be satisfied with nothing less than views of complete buildings, all the ivy perhaps, and the grass in the foreground included, usually involving a needless expenditure of black lead. In fact, the choice of subjects and points of view is one of the first and greatest difficulties to a beginner. However, whether his primary object be to learn to sketch or to become acquainted with a style, he will be wise to confine himself to single features and their details, drawn sufficiently large to explain their design, and with as few lines as possible.

It may seem a matter of trifling importance to suggest here, that reasonable care should be taken of every sketch made, from the very first, but I cannot help fancying that any one who has sufficient regard for his sketches to keep them clean and in order, named and dated, and is not given to tearing them up or to working from both ends of his sketch-book at once, will be all the more likely to produce work worth keeping. Even a poor sketch will contain something that renders it not altogether worthless to its author, though the actual making of it must be the point of chief value to him. Then he will be anxious to acquire what is understood as a "touch," *i.e.*, a distinct method of "shorthanding,"—for so it may be called,—with the pencil. He will have noticed perhaps, how, in good sketching, the lead is economised and made the most of, as though it were a precious

material,—which, as regards the sketch it really is,—every stroke being made to express as much as possible, and the white paper cunningly left between, apparently doing half the work of rendering the effect.

At first, nearly all beginners' sketches have a more or less curious "woolly" look, arising partly from the attempt to represent too much and a tendency to exaggerate unimportant points, but mainly from indecision and a very natural want of confidence, the lines not being laid each at a single stroke and then left. Practice on smooth paper with a good pencil will often help considerably to shake off this. By-and-by, most men, if they possess any aptitude for drawing at all, discover they have a "touch" of some sort, and, what is more, just as much their own as their handwriting, of which, in fact, it is but a species. They may try to imitate somebody else's, and by so doing may improve their own, gaining greater delicacy or sharpness, and so on; but, I think, if they feel a proper pride in their work, they will be thankful rather than otherwise that their method of drawing, whether they will or not, is, to a certain extent, characteristic of themselves, and they will rely more on continued practice than on direct imitation of another's style, in order to develop their own successfully.

By way of illustrating these remarks, I have borrowed the sketches you see on the wall, from some of my friends, Messrs. Baggallay, Stokes, Deane, Löhr, Hooper, Knight, Collier, W. and A. Pite, Conder, Wallace, and Sankey, to all of whom my best thanks are due, as well as to Mr. Arthur Street for the loan of three of his father's masterly sketches. I think you will find it interesting to notice how marked an individuality is shown in the style of each. In one point only might they mislead you, viz., into concluding that a good "touch" necessarily implies good drawing. This unfortunately, is not always the case, though the converse will general hold good. Far be it from me to undervalue quick rough sketches, because they are rough. A hurried sketch is always better than none at all, and it may be quite as valuable as a more laboured one, since only just what is wanted is given, and all the unimportant accessories omitted. As a drawing, too, in spite, perhaps, of a few slips, it is often more powerful and telling than a highly-finished performance, from the very fact of the artist having thrown aside for the moment his habitual carefulness, and revealed himself unconsciously. But for sheer carelessness in sketching, as in aught else, there can be no excuse. An architect may, of course, deliberately draw a building or a feature otherwise than it really exists, for the very excellent purpose of trying the effect of such alteration, and seeing how he might adapt or improve upon the original; but a beginner has first of all to learn to draw what he sees, and therefore, generally speaking, a sketch cannot be too accurate, so far as it goes. It need not by any means give all there is to be represented, as a photograph does, and very often it will be all the better if it does not, but simply conveys whatever particulars of form and construction the sketcher wishes to note, and for the sake of which he makes the sketch.

I know it is not good that a beginner should be started with the idea that he need never make finished sketches, since he may be thus led into a slipshod tricky style of work, and to imagine he can draw before that is really the case; but what I mean is, that I would be readier to forgive him for producing a sketch of a door or a window, say, with the form of the arch correctly rendered, but without the joints, than if he drew the arch distorted, and then jointed it up elaborately. The real danger to be avoided is that of losing the whole feeling of a design, by errors affecting the general proportions of it; and I know nothing so discouraging, in making a sketch, as finding one has unintentionally got it incorrect in this respect, especially as one knows that no amount of detail, however neatly "touched in," can atone for it. Rapidity in setting out the leading lines and points of a sketch before filling in the detail, is one important secret of correctly catching the proportions that the various masses bear to one another in perspective.

It may be said that the surest way of getting a thing correctly, is to measure it and draw it out to scale. No doubt it is the way to find out all about it, if that be worth ascertaining, and for showing it as it really is; but, invaluable as geometrical drawings are for such a purpose, they never show you what a thing really *looks like*, and this, rather, is what is wanted; in fact, in nine cases out of ten, almost all that is wanted. A student who goes out sketching architecture in order to learn to produce architecture of his own, cannot be expected to settle down at every subject he comes across and make a laborious archæological study of it. Now and then he may do so profitably, as in the case of work of unusual excellence, and for the special purposes of publication, or securing an authentic record; but to make a practice of this, would seem to be throwing away valuable time, since, whilst he is measuring and drawing out one thing with painstaking accuracy, he might be seeing a dozen others, and storing his mind with scores of ideas and suggestions for new work, the production of which is, after all, the real business of his life.

On the other hand, a perspective sketch is seldom quite complete enough for an architect without a plan and a few leading dimensions, if only to indicate the scale of the work, such as the width and height to the springing in a doorway or window, for instance. Mouldings and other details, too, are nearly always worth taking at the same time, sketched as clearly as possible. I may just mention here, that I myself have found colour-pencils most useful in taking details. Supposing the plan of a jamb be drawn in red, the arch-mould can be distinctly shown in its right position over it in blue, the outline of cap in yellow, and so on, instead of their being dispersed all over the sheet or several sheets. These pencils are also often very useful for indicating the colours of materials, even if they do not match them. The "knack" of scraping mouldings with the machine called a cymagraph, may be admirably suited to the work of an archæologist, who, of course, is nothing if not accurate; but an architect who wants to be able to draw mouldings for himself, will surely do as well to trust to his own hand and eye, guided by a few leading dimensions, when drawing profiles of existing work. How can he expect otherwise to produce good mouldings of his own? It may be natural enough for those who find a difficulty in drawing in perspective, to advocate a student's measuring, on the plea that it teaches him accuracy and care; but it has always struck me that if he be careless by nature, he will learn to measure and draw no more carefully than to sketch. To do either well, requires the habit of accurate observation; but though a man of ordinary intelligence can take a dimension correctly, and any average mechanical draughtsman can rule a fine line or strike it with a compass, it needs more than this to draw a thing as it appears. It needs a firm hand rightly guided by something better than a T-square,—by a correct eye,—and answering to every turn and shade of feeling in the artist's mind. Even in such matters as construction, jointing, &c., which perhaps furnish the strongest reasons for architects making measured drawings, old examples are so frequently more curiously or historically interesting than actually useful to us, that we may generally obtain all that is worth our having in a sketch. We may unreservedly admire the skilful use made of the means and knowledge that were then possessed, but nobody supposes we can afford now-a-days, with other materials and methods, to go on everlastingly constructing our work exactly as they did centuries ago. The "old men" would be the first to laugh at us if we did! They tried to do the very best they could in every way under the circumstances, and the present age naturally expects us to do no less in our altered circumstances.

By this time, then, I should hope we have come to clearly recognise that what a modern architect has to do is to produce *modern architecture*, not reproduce ancient!

Now that the "Gothic Revival," as a mere "Revival," is over, and has had its "History" written, there is perhaps but little need to be reminded of this. At the same time we see that one of the most remarkable points about the "Revival," if not its strongest point, was the almost strange enthusiasm with which its followers were inspired. The remains left to us of the style might partly account for this, but a further stimulus was given by the effect it had itself, in making many and many a man really care for architecture, as an art, who would otherwise have dragged out his existence as a mere mechanical draughtsman or soulless surveyor of building operations. Of course it did not make artists of them all, that was impossible; but it set them sketching, and awakened whatever in them lay of undeveloped artistic power. And though they confined their studies mainly to one period, and expended on a single style the enthusiasm they owed to their whole art, yet this was better, a thousand times, than the almost utter indifference to all art, against which their movement was so emphatic a protest. It was the breaking up, as it were, of the ice, and an assertion again, in these days, of the fact, that there *is* such a thing as an art of architecture, to be practised.

And now that we are enabled to perceive there is more art "in heaven and earth" than in the thirteenth or any other century only, how much wider is our field for study! The whole range of architecture is open to us. The refinement of the Greek and the splendour of the Byzantine, the strength of the Gothic, the playfulness of the Saracenic, and the finish of the Renaissance, have each its lesson for us. What excuse have we if we fail to take full advantage of it?

So far as my experience goes, a young student starting on a sketching trip, often looks forward to enjoying it more thoroughly than he probably will in reality. What I mean is, that besides the possible difficulties and disappointments in learning to sketch well and easily, he will be almost certain, if he cares about architecture at all, to start with a preference for the work of some particular period, and will be constantly offended by coming across a mass of work that he dislikes. But I fancy the older he grows, and the more he sees, the broader he will find his views become, and he will then be amused to catch himself looking back on the days when he either totally ignored or violently denounced any work earlier or later than a certain century, and even allowed himself to be quite "put out" about it. He will learn to see through mere detail, and discern the work of an artist of no matter what date; and as he becomes more and more able to do this, so will he find his pleasure in the study of his art ever increasing, since he will be continually at every turn meeting with so much more wherewith to enrich his mind. Many a bright conception will he then begin to perceive in what he had called "debased" work; and by cultivating the power of seizing on the best points of a thing and making the most of them, instead of frittering away his time and trying his temper in the unsatisfactory task of mere fault-finding, he will probably come to the conclusion that, though the latter is the easier, the former is by far the more profitable employment. One advantage, at least, of travelling alone is, that no precious time need be lost in useless discussion about what is and what is not worth seeing and sketching. As a matter of fact, I suppose no two minds ever were quite agreed about the exact merits and demerits of any work of art,—it would be absurd to expect that,—but the value of it to each, as an artist, must chiefly depend upon what good he can get from it. And if the student looks at the work he meets with in this light, and is able to form a habit of making up his own mind about it, independently, I think he will be likely to gain more from what he studies, than if he sits down to it, only from a vague notion that it is the "correct" sort of thing to "go in for," or because others do so. My own feeling is, that he should be always on the watch for anything that suggests an idea to be worked out, or furnishes a *motif* that might be developed or applied in practice; in other words, that he should be constantly designing when out sketching, and imagining what might be made of his subjects. Studying fine architecture should, of course, be his mainstay, both for refining his taste and inspiring him with the desire that he too may, in time, do something good, that will live; but it is not from the works of great masters alone that instruction is to be gained. Besides all that they teach, there are to be found, in the designs of thousands of humbler artists, any number of brilliant, and perhaps not a bit less original, ideas, though but half worked out, it may be, or unskilfully treated, which, nevertheless, another mind may lay hold of and bring to perfection. By thus developing and adapting from previous attempts, architects seem to have progressed in all ages, and consequently may be reasonably expected to do so in future.

There is no need for the student to rely entirely for his subjects, on buildings of great size or importance. If he keeps his eyes open, he will be always noting, in quite ordinary examples, all manner of simple, inexpensive, and unpretentious ways of getting good composition and pleasing effects in every-day sort of work, just such as is likely to be of more immediate

service to him than cathedral façades or apsidal chapels. Unfinished buildings, again, often afford a splendid chance for exercising his faculty of imagination, a source of strength, indispensable to every artist, though often neglected. Let the student, then, not forget to employ not only his hand but his *head*, remembering that sketching is, after all, but a means to an end, and that an accumulation of sketches and examples is only useful so long as the power is not wanting to turn them to account; whilst, at the same time, the cleverest by nature will produce little of real value unless he be careful to put something into his head.

As to methods of sketching, I have assumed that the beginner will, for some time at least, stick to good lead pencil and smooth paper, until he feels more or less master of his materials. To one who has made himself master of his pencil, the use of the pen and brush ought soon to come easily, and powerful aids he will find them, each in its way, whether he employ them separately or combine their work in the same drawing. With a wash, a mass or surface may often be rendered in a few minutes more truly than by hours of labour with the point, whilst with a pen, the forms may be sharply accentuated, and the detail indicated to its proper scale, by a few quick touches, just at the points that require to be emphasised. After a time, then, the sketcher will probably do well not to neglect any of these implements; in fact, if he has any artistic feeling in him, he is not likely to rest content without testing their powers. He will be wanting to give more complete rendering of his subjects than is attainable with pencil alone.

This brings me to the question of water-colour sketching for an architect, which, I think, ought not to be looked upon only as regards its being of use to him in preparing perspective drawings. The question should be, Will it make him a better architect? If he cultivate an eye for beautiful form and lovely colour in nature, will he make better designs? If he care to catch the sweep of a cloud or the outline of a mountain, will he produce better mouldings or more picturesque sky-lines? If the colour of the sea or the tints on an old wall in sunlight have any charm for him, will he decorate a room more harmoniously or design a better pavement? The man who thinks he will, is pretty sure to try water-colours as soon as he feels strong enough; the man who thinks otherwise had better not make the attempt.

I can imagine many asking how and when they are to go sketching. One hears of pupils being exhorted to do so in their fortnight's summer holiday. Some there are who respond to the appeal, but is it to be wondered at if the majority do not jump at the opportunity very enthusiastically, and only discover afterwards when they have become paid assistants, and are more tied than ever, how invaluable it would be to them? If average parents and guardians could but be brought to look upon sketching trips otherwise than as pleasant "outings," and could only be induced to entertain the notion of their proving a profitable investment of time and money, instead of meeting the suggestion with a smile of incredulity, they would surely stipulate for a more equal division of the pupil's time between office work and the out-door study of his art. As a mere mercenary speculation, they might find that the latter would return interest at as good a rate, at least, as the capital, in many instances, sunk in the pockets of the practitioner who undertakes "To teach and instruct, to the utmost of his skill and knowledge, the aforesaid pupil in the art and profession of an architect, in consideration of the above-named sum," and undertakes in addition "To allow him one fortnight's holiday in each year, at such time or times as he may think proper."

I know of no more striking instance of a "good investment" in the way of sketching trips, than that related in the Life of the late Sir Charles Barry, by his son, Dr. Barry, a book to be read by every young architect, at the very commencement of his career. It tells us how, when coming of age, he inherited a modest sum of money and deliberately determined to devote it to an architectural tour. With your permission I will quote the following passage. "He saw that his only chance of developing the power and satisfying the desires of which he was conscious, his only chance of gaining a thorough grasp of his art, and taking a high stand in his profession, lay in foreign travel. Without it he might have had the certainty of a respectable position and sufficient emoluments in his profession; with it he took the risk of delay and difficulty, and the chance of a noble career. The choice was not likely to cause him much hesitation. He decided at once, and kept to his decision firmly in spite of the natural remonstrances of his family, who felt the risk, but did not understand the necessity." "It seemed madness to risk on it so much of his slender resources." We then get a glimpse of him on his travels, "one day of which" [to use his own constant expression] "was worth a year at home."

The following passage, too, is interesting to us, relating how, when in Greece, "A change and growth of artistic power in him struck his fellow-travellers. Before he left Rome his drawings had been only careful and elaborate, now there began to show itself in them that indescribable power of insight and imagination which distinguished the true artist from the mere draughtsman." "Laboured and ineffective drawing gave place to a bold and masterly grasp of the leading lines and the general effect of the scene represented. The progress once begun, never ceased."

Of the necessity for travel that Barry felt then, we ought to have no manner of doubt now. Every day it seems to be more generally understood, that the first thing necessary for good architecture is, that the architects must be artists. Good designs are not to be produced by accident, any more than good pictures or good sculpture, but by men endowed with artistic ability, who have taken all care to cultivate it to the utmost. If, in the practice of this many-sided profession of ours, we must some of us despair, as well we may, of making ourselves equally masters of all the various branches at once, at least let us never forget that, though surveying may be done by a surveyor, engineering by an engineer, contracts drawn up by a lawyer, and property looked after by an estate agent, architecture can be produced *only* by an architect. No one can take his place in that, and on him alone it depends whether the work is worthy to be so called. Nor need we wait for the revival of any more styles, or even the production of a new one. That will take care of itself. To begin with, it is not so much the style that is wanted, as the men!

THE ARCHITECTURAL ASSOCIATION.

AT the ordinary fortnightly meeting of this Association, held on Friday, the 18th inst., the President, Mr. E. G. Hayes, in the chair, Messrs. G. W. Thomson, E. M. Rashdall, S. H. Hunter, and H. Field, were elected members.

The list of members proposed for officers and committee during next session (1883-84) was read, Mr. Cole A. Adams being nominated as president, and Messrs. H. H. Stannus and F. E. Eales as vice-presidents.

Mr. W. J. N. Millard then read a paper on "Architectural Sketching and Sketching Trips," the substance of which we print.

The Chairman, in inviting discussion upon the paper, said the subject was one upon which Mr. Millard was very well qualified to treat, as was evidenced by his sketches. Mr. Millard had done well in dwelling on the value of sketches as against mere photographs. Photographs were no doubt most useful aids to the study of buildings, but they could never replace sketching as a means of understanding a building, for the very act of sketching involved an amount of observation that would impress the salient points of a building, and even its details, upon the mind of the student in a way that no photograph could do. As to the value of noting the proportions of a building when sketching it, proportion was a study the value of which, as an aid to sketchers, could not be too strongly insisted upon. It was truly lamentable sometimes to see sketches which, though elaborately and beautifully executed as mere drawings, were devoid of accuracy as regarded the proportions of the buildings delineated. Such sketches were almost absolutely worthless. Mr. Millard seemed to speak somewhat disparagingly of measured drawings, but surely architects who desired to produce effects in brick and stone would find it most useful to them to measure and plot in geometrical form all old work which pleased them or was likely to afford them hints for modern work. The necessity for making measured drawings of this kind certainly would not supplant the need for sketching in the wider sense of the word.

Mr. Stannus said that Mr. Millard's paper was teeming with shrewd practical observations such as could only be the outcome of study and experience. As regarded the question of sketches or measured drawings, probably Mr. Millard would not deprecate sketches in which the measurements were indicated by figures rather than by strict geometrical delineation. When a sketcher sat down opposite the building he intended to sketch, the first thing he would do would be to make a perspective sketch, so that he first of all obtained the result of the building as a whole; and it was only after he had drawn the result that he saw the way in which that result had been brought about. By the term "drawing" was meant something more finished than a mere sketch, and measured drawings were only necessary, perhaps, for the sake of archæological accuracy. The man who simply made a thumb-nail sketch of a building as a whole, without sketching the detail, would be a pretty sketcher, nothing more; while the man who made nothing but measured drawings would lose the consideration of the result as a whole. He begged to move a vote of thanks to Mr. Millard for his able paper.

Mr. J. A. Gotch, in seconding the motion, said it was his belief that architects who said "they did not sketch" ought rather to say that they could not sketch, because hardly any one who could sketch was able to abstain from sketching, so fascinating an occupation was it. The young sketcher would generally find out for himself the best way of working. No very definite system of working could be laid down for sketchers, for the method that would suit one man would not suit another. Of course there were many things not worth measuring. As to photographs, they were of great value as an aid to the architect, but only, of course, as supplementary sketches. With regard to choice of materials, he (Mr. Gotch) was a strong advocate for the use of pen-and-ink. The sketcher knowing that he could not rub out an ink line, got into the way of being very careful, while producing rapidly-executed sketches, expressing all that was wanted with but few lines. The user of the pencil in sketching, feeling that he always had a refuge in india-rubber, was likely to be less exact in his observation than the user of the pen. Ink lines could not be rubbed out, but pencil lines were always of a more or less fugitive nature. As to accuracy in sketching, there could not be too much of it, although Mr. Millard seemed to think otherwise if he (Mr. Gotch) rightly understood him. In his first essays the young sketcher could not spend too much time in getting things accurate. Just as it was much better to have a few facts, and digest them well, than to have a mass of half-digested facts, so it was much better to have half a dozen sketches thoroughly worked-out and matured than twenty slip-shod sketches of which it would be impossible to distinguish the head from the tail six months hence. It was very useful for the young architect to occasionally regard sketching as an aid to archæology, and, when he saw anything of interest, to put it upon paper; in that way he would get to understand the methods by which it was produced and the spirit which animated its producers. With regard to pupils, he thought it would be a very wise thing and a very just thing for principals to send their pupils out sketching during office-hours, — as, in fact, part of the routine of their regular work.

Mr. Baggallay said they had known Mr. Millard for a long time as a most prolific and artistic sketcher, and they now knew him as a most truthful one. A great deal had been said about measured drawings. He was not quite sure whether he understood the author aright, but he certainly did not understand him to say that the sketcher should take no dimensions. He rather understood him to convey the idea that it was a waste of time to spend a week in measuring a whole building; at any rate, to any one who had obtained the power of drawing. There seemed to be, in most cases, little reason for such immense accuracy. One did not want to put up the building again as it was; all that one wanted to obtain was the design and the leading features. For that purpose surely the making of a perspective sketch was infinitely better than measuring the whole thing up? By all means let the sketcher make all necessary notes as to materials and everything else. With regard to the Architectural Association "Sketch-book," it was started by some enthusiastic sketchers some

fifteen or sixteen years ago, and it had been in a very prosperous state ever since. But the committee were very anxious that the Sketchbook should not only keep up its character, but that its character should be raised. But that was hardly possible so long as it remained the fact that out of the 900 members of the Association there were only about forty contributors to the Sketchbook. Surely that small proportion of members did not anything like represent the number who might, if they would, contribute good sketches to the Sketchbook? He invited the members of the Association generally to send in sketches, which would be very carefully considered by the Sketchbook Committee, and the best of the sketches submitted would be selected for reproduction.

Mr. A. B. Pite said he had always been accustomed to regard as two great masters in the art of sketching the late Mr. Burges and the late Mr. Street, and he knew of no better guide to the young sketcher than Mr. Street's first lecture as Professor of Architecture at the Royal Academy.* He sincerely hoped that every young architect who wanted to sketch would take that lecture and learn it by heart, for it was really worth it. In the Association's Library was Mr. Burges's book of architectural drawings, the preface of which ought to be read to the Association in public at one of the ordinary meetings. Another great master of sketching was Pugin. Mr. Millard had recommended members to read the life of Sir Charles Barry. He (Mr. Pite) would recommend them to read the "Recollections" of Pugin's life, by Ferrey. For his own part, he could say that he never read such a soul-stirring book for a young architect. Pugin was an enthusiast, almost a firebrand, and the record of his career was most inspiring. The young sketcher should remember that the first point to which he should pay regard was that of having a definite object in sketching. It was of no use for a young man to go on a sketching tour determined to admire everything beautiful and to sketch everything he admired. It was his (the speaker's) firm conviction that life was far too short for eclecticism in architecture. There were points in every style worthy of being sketched, and even in early British and Saxon remains there was much to engage the sketcher's attention. But as young architects they must have a fixed object in life. They would never be architects if they sketched everything they saw. As to measured drawings, he was not fond of them,—he had not patience enough to make them; at the same time he was convinced of their value. As to pupils being sent out to sketch, if he had his way he would send the principals out for that purpose.

Mr. Cresswell observed that Mr. Waterhouse and other architects of authority had insisted upon the value of water-colour sketching as an accomplishment for an architect. The power to wield the brush effectively was no doubt a great aid to the architect, for the possession of the power was not only calculated to promote rapidity of sketching and drawing, but it enabled its possessor to indicate colour, which was in itself as much an element in architecture as form was.

Mr. W. H. Atkin Berry said he was convinced that sketching might be, and often was, carried too far. There was sketching and sketching, and it behoved them as architectural students to go in for the right variety of the article. It should be remembered that they were intended to be architects of the present day. It was of no use saying that an architect must be an artist and nothing more. The architect who expected to succeed in his career must lay himself out to meet the practical requirements that the age imposed upon him, and to do that he must do something else besides sketching. He thought that one of the great dangers which threatened young architects was to be found in the practice of making sketches for show. Young architects would do far better if they went and made just such sketches as they thought would be of service to them in their work, together with notes as to construction, &c. Measured drawings were often to a great extent shams, and they frequently involved a lamentable amount of useless work. Evidence of this was afforded by most of the measured drawings sent in from year to year for various medals and prizes. They were supposed to be made on the spot, but they were taken home and "faked up" before being sent in for competition. Such work was dishonest.

* See *Builder*, vol. xl., p. 202.

The discussion was continued by Messrs. Sirr, Petrie, Reeve, Conder, H. H. Kemp, and Hooper, and the thanks of the meeting having been voted to Mr. Millard, that gentleman made a few observations on some of the points raised, and the meeting terminated.

HYGIENIC CONGRESS AT BERLIN.

THE tenth general assembly of the German Association for Public Sanitation and of the Association of Hygienic Science took place last week at Berlin. On the evening of the 15th a social reunion took place in the rooms of the Architects' Association, and was attended by the principal members of the Congress as well as by the committee of the Hygienic Exhibition. Amongst those present were Dr. Varrentrapp and Dr. Spiess (from Frankfürt), Dr. von Erhard (Burgomaster of Munich), Herr von Winter (of Dantzig), Herr Andreas Meyer (of Hamburg), Professor Bœhm (of Vienna), Dr. Graf (of Elberfeld), and Dr. Günther (of Dresden). The total number of members of the Congress was 345.

The Prussian Government was represented at the opening meeting, on the 16th, by Herr von Gossler and several leading members of the Government medical staff. In welcoming the assembled visitors, Herr Duncker (the burgomaster of the city) remarked that Berlin, with its enormous population within a comparatively limited area, was in itself a subject of interest to the Congress, and expressed the hope that the visit of the members to the Osdorf establishment would result in the sanitary arrangements of the capital being approved as to the method of disposing of the sewage.

After Herr Hobrecht had been elected to the presidential chair, and other business of a formal character had been disposed of, Dr. Wolffhügel (of Berlin) commenced his remarks upon the hygienic testing of the quality of water for drinking and domestic purposes. In the course of his address he laid down the principle that the estimating of the degree of purity of water was facilitated by the comparison of its analytical composition with that of water of established purity from the same district and obtained in the same manner. In order to have the necessary data for such comparative observation, he advocated the necessity of pure natural waters being subjected to uniform analytical processes. Dr. Thiemann supported these views, and Professor Orth suggested the establishment of fixed limits for impurities in water. Herr Kunze urged upon the Government sanitary authorities the necessity of devising a practical system of testing. After a brief discussion the meeting separated, and the afternoon was devoted to a detailed examination of the Hygienic Exhibition.

The second day's proceedings were opened by Professor Rudolf Virchow, who had but just returned from a journey to Italy, undertaken after his late illness. The subject of his remarks was "The Purification of Cities and the Employment of their Impurities." It will be remembered that the eminent professor was the prime mover in the Berlin sewerage scheme, and that he has reported officially on several occasions to the Prussian Government upon that important question. He commenced by reminding his hearers that he had always occupied an intermediate position between the various extreme schemes, and alluded to the modifications which Capt. Liernur had now adopted in the method of drainage associated with his name. He condemned all systems which were founded upon the storage of sewage matter for any length of time; the air being thereby infected and serious danger to the public health ensuing. He referred to the difficulty of getting the principles of drainage as now adopted in towns to be accepted in the country, and attributed to the neglect of common precautions in rural districts the greater virulence of epidemic diseases in country districts as compared with towns. After contrasting the drainage requirements of small and large cities, he expressed the opinion that the introduction of fecal matter into public water-courses is in all cases of doubtful advisability, and is only permissible when the current is of a suitable character. Even in such instances special arrangements respecting disinfection and the formation of sediment are necessary. He further advocated the exercise of skilled official control over the pouring into the rivers of street and domestic water, asserting that in warm weather fermentation takes place, serious danger to health being thereby caused. He expressed his opinion that open water-courses in cities of 100,000 inhabitants and upwards should be free from the introduction of such matter as had been referred to; and reminded his hearers that it is a mistake to suppose that fast-flowing streams carry everything away.

He then alluded to the utilisation of sewage for agricultural purposes, and remarked that Berlin had, in this respect, made greater progress than had been the case elsewhere, although the arrangements were still, to a certain extent, of an experimental character. After some closing remarks in detailed reference to the relations between the promoters of sewage utilisation and the sanitary authorities, Professor Virchow's paper was discussed, and a resolution was favourably received to the effect that the question is not at present sufficiently matured for legislative intervention.

Dr. Emmerich, of Munich, advocated the principle that air and water in motion were the best and cheapest methods of disinfection, and a general discussion ensued, in which Dr. Varrentrapp and other sanitary authorities took part. In his final remarks, Professor Virchow said he failed to see the force of Dr. Emmerich's theory that the movement of water destroyed the living organisms in drainage liquid; experiments made by the Government having resulted in the fact having been established that within one cubic centimètre of water (·061 cubic inch) taken above Berlin from the Spree, 10,000 germs, capable of development, were found. At the city itself the number was 950,000; below Berlin, 4,800,000; and at Charlottenburg as many as 10,180,000. While not claiming for his own theories absolute infallibility, he reminded his hearers that far-reaching conclusions should not be deduced solely from laboratory experiments.

In the afternoon the members of the Congress visited the sewage farms in connexion with the Berlin drainage arrangements.

At the third and concluding meeting on the 19th, the principal subject for treatment was the question of artificial illumination. Dr. Ferdinand Fischer, of Hanover, gave comparative details as to various systems of lighting with special reference to the force of light, the cost, and the generation of heat induced. He recommended in a special manner the hygienic normal lamp of Schuster and Baehr. Solar oil and petroleum cause the smallest accumulation of heat in a room; gas distributes more warmth, and therefore causes the air to be less good. While he considered that solar oil and petroleum had been proved to be the cheapest illuminating agents, he remarked that for public lighting there only remained a choice between the electric light and regenerative illumination, the products of combustion being carried away.

Dr. Hermann Cohn, of Breslau, who also spoke on the subject, stated that cases of blindness, resulting from the electric light in the same manner as might be induced by snow or sunlight, could not be proved. He claimed, from a hygienic point of view, that in any artificial lighting the rays must not fall direct on the eyes. Referring to the use of gas in schools, he remarked that one gas-jet was only sufficient for four children, and stated that the flame should be prevented by globes or shades from injuriously affecting those sitting near it. Taking, as a basis, the fact that there could not be too much light, he expressed his opinion that the introduction of the electric light into schools was only a question of time. He also stated his conviction that the electric light was specially fitted for use in occupations involving the worker being close to the light, as in the case of watchmakers, &c. In conclusion, he said that the motto of hygienists on this point should be Goethe's celebrated words,—"More light."

Herr Herzberg, of Berlin, gave a summary of the methods of illumination adopted within and around the Hygienic Exhibition, and expressed his conviction that if a powerful, intense, and cheap light were required for exterior illumination, there should be no internal system of lighting resorted to by which the products of combustion remain in the room.

After a short debate the proceedings came to a termination. During their stay the visitors saw the principal objects of attraction in and around Berlin, the whole of the 18th being specially devoted to that purpose.

THE LATE MR. JAS. THOMSON, ARCHITECT.

WITH sincere regret we hear of the death of Mr. James Thomson, who for many years conducted a considerable practice as an architect. Mr. Thomson was born on the 22nd of April, 1800, and was the son of Mr. David Thomson, of Melrose. As a lad he resided in Lambeth, and at the age of fourteen was bound apprentice for seven years to Mr. John B. Papworth (architect to the King of Wurtemberg), and after serving his time became his assistant for some few years. He was twice married, on the second occasion to Miss Anne Hudson, in 1838 (daughter of Captain Hudson, R.N.), who survives him. He was one of the earliest members of the Royal Institute of British Architects, being elected in 1835. The following list of his architectural works will show the way in which he was engaged:—Cumberland-terrace and Cumberland-place, Regent's Park, about 1827, for the late Mr. W. M. Nurse; new buildings, Clement's Inn; Polygraphic Hall, King William-street, Strand, now "Toole's" Theatre, 1833, lately rebuilt by Mr. Thomson's son, Mr. John J. Thomson; the Polytechnic Institution, 1838, and theatre adjoining to seat 1,200 persons, 1848, for Mr. W. M. Nurse; Union Bank of London, Argyll-place; alterations to Derbyshire Bank, and several houses at Derby; Grittleton House, Wilts, 1840-1860, for Mr. Joseph Neeld, M.P.; public hall and market, Chippenham, 1848, for the same gentleman; Royal Hotel, Tenby, 1848, for Mr. E. Morgan; Alderton Church and village, for Mr. Joseph Neeld, M.P.; restoration of Leigh-de-la-Mere Church, Wilts, for Mr. Joseph Neeld, M.P.; the laying out of Mr. Roy's estate at Notting-hill, west of Ladbroke-road; Russo-Greek Chapel, Welbeck-street, 1863, for Russian Embassy; grand staircase, Charing-cross Hospital, 1870; additions to Warren Wood, 1873, for Mr. C. Butler; and many other town and country residences. Mr. Thomson was a Liveryman of the Loriners' Company.

PROPOSED FREE LIBRARY FOR DARLINGTON.

ON Wednesday a special meeting of the Committee appointed at the last meeting of the Darlington Town Council was called in the Council Chamber to receive further information from Mr. A. Pease, M.P., in reference to this proposed gift to Darlington. It will be remembered that, in pursuance of the wishes of the late Mr. Edward Pease, Sir Joseph Pease, M.P., as one of the executors, had offered to erect and furnish Free Library buildings. We understand that Mr. A. Pease gave the committee complete information with reference to the proposal, and placed drawings before them showing the site and general plan of the buildings. These have been prepared by Mr. G. G. Hoskins, architect, Darlington, who has made the most of the site, and has designed a building suitable in every respect to the purpose. The site offered by the Messrs. Pease is on the large vacant piece of ground in Crown-street. The Free Library would be erected at the north end of the plot, and the main entrance would face directly up Crown-street and towards Northgate, whence a capital view of the Library could be obtained. The buildings are extensive, and would doubtless form a striking architectural feature in the town.

The proposed buildings extend 100 ft. by a depth varying from 88 ft. to 66 ft., and the ground-plan shows a commodious porch which leads into a vestibule almost co-extensive, thence into a large public space; immediately facing this is a semicircular counter for the librarian, at which books will be delivered to borrowers. To the right is a lady's reading-room, 21 ft. 6 in. by 16 ft., and further in the same direction is a large general reading-room, 50 ft. by 30 ft. To the left of the vestibule is a committee or writing room, 21 ft. 6 in. by 16 ft., and a students' room, 37 ft. 6 in. by 30 ft. Immediately behind the librarian's desk, and running parallel with the general reading-room, is the library, 52 ft. by 30 ft. Behind the library are arrangements for heating-chamber, yard, coal-house, &c. Lavatories are supplied in various parts of the building, and the arrangements are of the most convenient character. We trust that there will be no hesitation in the town adopting the Free Libraries Act, and accepting this splendid gift placed at its disposal, and that the marked unanimity and appreciation which was shown by the Town Council at its last meeting will be reflected in the town at large, and that soon the capital of South Durham will be freed from the stigma of being behind every important town in the North in not having a Free Library.

THE ESPLANADE AND CLIFFS AT SOUTHEND.

GIFT BY MR. H. A. BRASSEY, M.P.

THE improvement and ornamentation of Southend, with the view of increasing its attractiveness as a seaside resort, has for some time past engaged the attention of the local authorities, and a presentation has just been made to the town which will give a considerable impetus to the work. An arrangement has been entered into between Mr. H. A. Brassey, M.P. (brother to Sir Thomas Brassey), and the Southend Local Board, by which Mr. Brassey undertakes to convey to the Local Board all his rights and interest in the Esplanade, Cliffs, Green, and Prittlewell-square, in Southend, which are his inheritance in fee simple, and free from all incumbrance whatever. The Local Board agree with Mr. Brassey's stipulation to hold the property transferred to them upon trust, and to preserve and keep the same as pleasure-grounds for the benefit of the inhabitants of Southend and the district. The cost of laying out the property is estimated at about 10,000*l.*, and under the agreement the Local Board are bound not to charge upon the estate more than two-fifths, or 4,000*l.*, of the cost of restoring and laying out the property, and of the entire expenditure Mr. Brassey undertakes to pay one-twentieth. Mr. Skipsey, who laid out the Scarborough Cliffs, together with their drainage and sloping, has been selected to superintend the works, and at last week's meeting of the Local Board a resolution was passed requesting Mr. Skipsey to furnish a report as to the most desirable way of laying-out the cliffs. The Local Board have likewise undertaken the repairing and extension of the pier, and at the same meeting a resolution was passed appointing a special meeting of the Board to report upon the necessary repairs and extensions to the pier and its approaches, with the view of tramcars being enabled to run upon it as at Southport.

NORWEGIAN STYLE OF BUILDING.

FROM olden times Norway, with its Vikings, was well known and feared in all parts of Northern Europe. Hardy and skilled in war, fighting for gain and honour, they invaded foreign countries, plundering as they went along as far as the coasts of the Mediterranean. Their own country was poor and mountainous, and the kings and chiefs necessarily turned towards the larger and richer countries, longing to try their strength against their warriors, and to bring home laurels in the form of booty, prisoners, and tales of heroic deeds, which have been handed down to us to-day in their Sagas. Having thus seen other countries of a more advanced culture than their own, the taste for the beautiful was comparatively early awakened, resulting in a desire to give shape and form to their thoughts and ideas, which was most successfully carried out in the well-known and characteristic art of Norwegian wood-carving. Owing to the imperfect implements and tools of that age, the granite was too hard and difficult a material for building and ornamental purposes, and the large forests had to render the necessary material instead. In the time of the Vikings Norway could scarcely boast of any architecture. No temple was required for their religious ceremonies. The heathen Norsemen worshipped and sacrificed to their gods in the open air, and thus there was no need for any monumental buildings for this purpose. Their dwellings were plain, generally consisting of but one large room with an earthen floor, in the middle of which they built a rude fireplace and made a hole in the roof to allow the smoke to escape. It was their ships that they first attempted to beautify with ornaments, and here their fancy had free scope. All kinds of ornaments, which had their source principally in their warlike exploits, were employed. Dragon-heads, emblems of their legends, were generally used to strike terror and dismay among their enemies.

In A.D. 872 the whole of the country, which up to that time had been divided into many small kingdoms, was united into one by Harald Haarfager, and with this a great change came over the country. Greater safety for life and property was insured, and more attention was paid to the resources of the country. After the introduction of Christianity about the year 1000 by King Olaf Trygvason, a more developed state of society was established. The first church was built in A.D. 996 of timber, on the same spot where now stands the celebrated Trondhjems Cathedral. During the long struggle between Christianity and heathenism no progress was made in the building of churches, and the second church was not finished until 1050. This church was, however, built of stone. About this time Norwegian wood-carving made considerable progress, and many of the timber churches were decorated with ornaments of this kind. Romanesque leaves from the twelfth century, interwoven with dragons biting their tails, were largely used in these ornaments, especially for church porches. Models of these are now to be seen at South Kensington Museum. The projecting rafters and the gabels ended in gaping dragonheads, which were also used as ornaments in the woodwork of the roof inside. The legends kept up those fantastic dragon figures, and they may still be seen in some of our secluded mountain districts. In these early wooden churches the walls were constructed by the timber being raised on its ends; the outside was covered with deals to protect the inmates against the great cold. The nave was supported by wooden pillars, and rose considerably above the side aisles. In this upper part circular openings were cut out to give light. Round the whole structure went open galleries, the roof of which reached close up under the eaves of the roof of the side aisles. These galleries were used as a place of meeting for the congregation in unfavourable weather. In the construction of the façade of these galleries was used the peculiar Norwegian style of small wooden carved pillars, with circular arches. On account of this system of combined roofs the exterior of the churches became somewhat pyramidal, which, however, was broken by the introduction of carved dragonheads, projecting from the gables. The ridges of the roofs were ornamented with open woodwork of various designs. No separate tower was included in the above combination of buildings, but on the topmost roof an attempt at a spire was made. Of these ancient and interesting structures there are still a few preserved, of which the churches in Borgund and Hitterdal are well known to English tourists in Norway.

At the same time, considerable progress was made in the architecture of the dwelling-houses and other buildings on the farmsteads, which were distributed around a large open square. Each building had its separate use. The number of rooms increased, and they were now provided with wooden floors. Other improvements, such as fireplaces of masonry, windows, &c., followed later. One-storied houses were, however, retained for several centuries, and this particular style of dwelling-houses, with their peculiar interiors, to which the pointed roof gives great effect, is still to be found in different parts of the country districts. It is only within the last century or two that two-storied houses have come into use, and are now rapidly supplanting the old ones. The same kind of open galleries which were used around the churches were also used in front of the old dwelling-houses; the roofs of these galleries, however, were a continuation of the main roof. Later on we find in houses of two stories, and especially at the well-known *stabur* (store-houses), these galleries continued all round the second story, and generally projecting beyond the lower story. This, in connexion with the projecting roof, gives the old Norwegian houses their characteristic appearance. The above-mentioned storehouses are raised about 4 ft. from the ground, and rest on wooden pillars.

During the last centuries little or no attention has been paid to the ancient Norwegian architecture in the construction of new houses; but it is a pleasure to report that during the last thirty or forty years a great revival has taken place. Many of the Norwegian architects, and especially Mr. Christie and Mr. Trap-Meyer, have done great service by re-introducing the old Norwegian style, in which many new buildings have now been built and decorated, and Norway will again respect and appreciate its old timber architecture.

In considering the later and more modern architecture, we must strictly distinguish between the town and the country. In the town the houses are built on the system of flats, and are usually either three or four stories high. Brick is now by law the material for building in town. Plain brick elevations are very rarely seen. Nearly all the houses are plastered with cement as a protection against cold and rain. The last fifty years have also developed a stucco architecture, which gives the broad streets and the houses a bright and clean appearance. All larger houses have a principal staircase and a kitchen stair, which are common for all residents in the house, and run from the cellar to the top floor. Each family has, as a rule, one flat, with the sitting-rooms to the street, kitchen and bedrooms to the yard. Norway has no institute for architects, and the students are obliged to have recourse to foreign countries. Germany is much frequented for this purpose, and has thus brought to Norway the Renaissance style, very similar to the architecture of Berlin. But in the country timber architecture is still used for churches and dwelling-houses. The plan of the residences is, as a rule, simple. In the middle of the house a lobby or small hall is arranged, which forms the means of communication between the rooms arranged around this. As the price of timber is cheap, and rates of wages are low, we find, as a rule, that the houses are built larger than required for actual use. Some rooms are only used for social gatherings. Particularly is this the case with the indispensable large drawing-room or saloon, which is only used on festival occasions and for dancing. On account of the long and severe winters, open fireplaces, as used in England, would not give sufficient heat. Stoves of iron or stone are used instead. Easy access is likewise obtained between the different rooms through doors leading direct from one room to another to avoid the cold air in the lobby. Thus a suite of rooms is obtained, which is found to be very convenient and comfortable. Carpets are seldom used, but the floors are painted and varnished, wainscoting is arranged in the best rooms, and the walls are covered with deals, which are painted or covered with painted canvas. The ornamentation and decoration of the houses outside are obtained through the projecting head-pieces of beams, the projecting roofs, and the elegant open verandahs.

The present design of a Norwegian modern timber-house presents a large and more than usually comfortably-arranged residence in the country. It is now in course of erection at Osterdalen, which is the most eastward and almost the richest valley in Norway. Usually the houses are not built in the bottom of the valley on the bank of the river, but some distance up the mountain slopes, whence a good view off is obtained for many miles up and down the river Glommen. This house will form the main building in a large group of houses which comprises the residence of Mr. O. Hals. Through a large and well-planted open place between the many houses we come to the entrance of the house. In the winter the soil freezes 3 ft. to 4 ft. in depth, so the foundation must be laid in to this depth. The 3 ft. thick foundation of stone forms the walls for the cellar, which is used for storing all kinds of food, which is not here likely to freeze. It also contains ironing-room, mangling-room, scullery and safe-room under the hall. If we enter the house through the main entrance we come to the hall, which is decorated and divided by wooden pillars connected with round arches. The floor will be fitted with English tiles to harmonise with the high wainscoting and the painted ceiling. In front of the hall is an open verandah which extends 4 ft. into the house and forms a place of shelter. From the hall we enter the larger parlour, whence we pass into the main verandah and into the large garden. As the drawings show, this room is carried 4 ft. out beyond the building, and has small side windows from which is a pretty view of the river. In one of the broken corners is an open fireplace for use in the mild weather in the spring, and in the other a stove for the severe cold in the winter. Wainscoting of wood is arranged here as in the other rooms, and the ceilings are of ornamental woodwork. In the dining-room the sideboard is constructed in the wall, which has a small opening through which the dishes are passed direct from the kitchen. The kitchen has a separate entrance for the servants through a smaller passage leading out to the gable-side of the house, and passing the smaller stair. In the kitchen there is a small pantry where the food, which must be near at hand, is kept. The other rooms on this side are used for bedroom, dressing-room, servants' room, and library. On the other side of the hall the smaller parlour, the large saloon, two rooms for guests, and the principal staircase are arranged. This staircase is, like the hall, decorated by arcades, and leads to the upper floor, which is really the loft under the roof. On the gable-sides bedrooms with alcoves are arranged, while the middle part contains two large rooms used for smoking and card rooms. Outside each of them is a verandah, and they are still protected by the projecting roof. The house is entirely built of 7-in. timber, outside and inside, covered by deals to resist the cold, which a well-built timber house fully does. The floor-beams of the first floor project, after old Norwegian custom, 12 in. out over the ground-floor, and support the upper walls. Through this, variation and ornamentation are produced in the elevation, giving the exterior a striking appearance. The high pointed arches of the verandahs under the projecting roofs assist also in this, and thus depth and a fine variety of light and shade are obtained.

As a rule, the Norwegian timber houses are light and elegant, and produce by their warm and bright colour an attractive appearance. At the same time, they are strong and cheap. The price of the timber is low, and the rates of wages are low, so it is possible even for people not so well off to inhabit a good and handsome house. For this reason, I feel much inclined to recommend these timber-houses for use in England, to have the houses built in Norway and sent here by steamer, where they can easily be re-erected. As will be seen from the estimate on the plan-drawing, the total cost of a timber-house of this size will favourably compare with the cost of a brick house, besides being a much more healthy and comfortable abode.

P. LOWZOW.

RUINS OF THE TOMB OF ST. CATHERINE, CYPRUS.

SIR,—When I first visited Cyprus,—four years ago,—few things struck me more than the ruins of the so-called Tomb of St. Catherine. When making a tour of inspection a short time since I had the opportunity of examining it more minutely, and one of my assistants, Mr. F. R. Stent, has since sent me an accurate sketch with figured dimensions, of which I now forward you a copy.

This interesting relic is situated half a mile or less east of the ruins of Salamis, with which, however (so far as the character of the remains is concerned), it has nothing in common. The drawings sufficiently explain the general arrangement and structure of the building, which consists of one large or outer chamber (A), 35 ft. 2 in. by 18 ft. 2 in., and a smaller chamber (B), entered from the former, 13 ft. 6 in. by 7 ft. 5 in. It will be seen that the floors of both A and B, and the walls of B, are formed of solid rock; but the walls and vaulted roof of A, and the huge stone forming the roof of B, are of hewn stone. A remarkable feature of these structures is the enormous size of the blocks. I roughly measured one of the stones in the arch of A, and found the dimensions as follow:—18 ft. by 9 ft. by 2 ft. 6 in., while Mr. Stent has, I see, figured another,—18 ft. by 7 ft. by 3 ft. 1 in. The weight of these stones is approximately 19¼ tons and 20¼ tons respectively. But this is greatly exceeded by the covering-stone forming the roof of B, which I observe Mr. Stent represents as a monolith, 20 ft. 6 in. by 14 ft. by 6 ft. The weight of this mass, after deducting the portions cut away, is between 70 tons and 80 tons. I would also call attention to the boldness and simplicity of the cornice. The stones are truly worked, and this is altogether a grand example of early masonry. The stone is of a pliocene calcareous sandstone, and is easily worked.

I do not intend to speculate on the purpose for which this building was designed, whether as a sepulchre or a temple, or as to the period when it was built, except to say that it reminds me somewhat of ruins I have seen in Greece and elsewhere, which are classed as Pelasgian built by the early Phœnician colonists of the island?

If you think the illustrations of sufficient interest for insertion in the *Builder* perhaps you or some of your contributors may kindly throw some light on a subject which possesses a peculiar interest for residents in Cyprus.

I shall be happy, if you wish it, to send you sketches of a massive rock structure near Larnaka, now used as a shrine by the Cypriot Christians, and called the "Pharenomene,"—which, though on a smaller scale, belongs, I have little doubt, to the same period; and of a hill fortress near Nikosia, of entirely different style to the ruins near Salamis and Larnaka, but evidently of great antiquity and antecedent to the Lusignan occupation.

SAMUEL BROWN,
Chief Engineer to Government.
Nikosia, Cyprus.

DOVER SEASIDE ORPHANS' REST.

THE illustrations given of this building are the front elevation and plan of the principal floor. The building is to be of flint rubble, with Bath stone dressings.

This institution was founded at Dover by Mr. Thomas Blackman, and started in hired houses by the seaside. It has been so prosperous that nearly 500 orphans have been received into it during the last year.

The temporary premises contain over fifty beds, but in the new building it is proposed to provide at least 100. This orphanage differs from all others in this respect, that all the inmates are invited from different orphanages in companies of about twenty a piece, to obtain the benefit of the sea air. As soon as the term of one party is over another comes from some other orphanage to take their place, so that the inmates are continually changing, and a very large number receive the benefit during the year.

The accommodation is as follows:—The basement (one wing) contains the kitchen, offices, laundry, servants' rooms, &c. Under part of the chapel there is a large swimming-bath, and under the apse is the chaplain's apartment. The other wing is mostly devoted to covered playgrounds for boys and girls.

The boys' and girls' entrances are at either end of the principal floor. At one side of the chapel are boys' schoolroom and the dining-hall, and at the other side the girls' and infants' department. The infants' dormitory is also on this floor.

The chapel goes through two stories of the building, and is groined.

The upper floor contains dormitories, bath-rooms, &c., with an infirmary completely isolated.

The architect is Mr. J. Treadway Hanson.

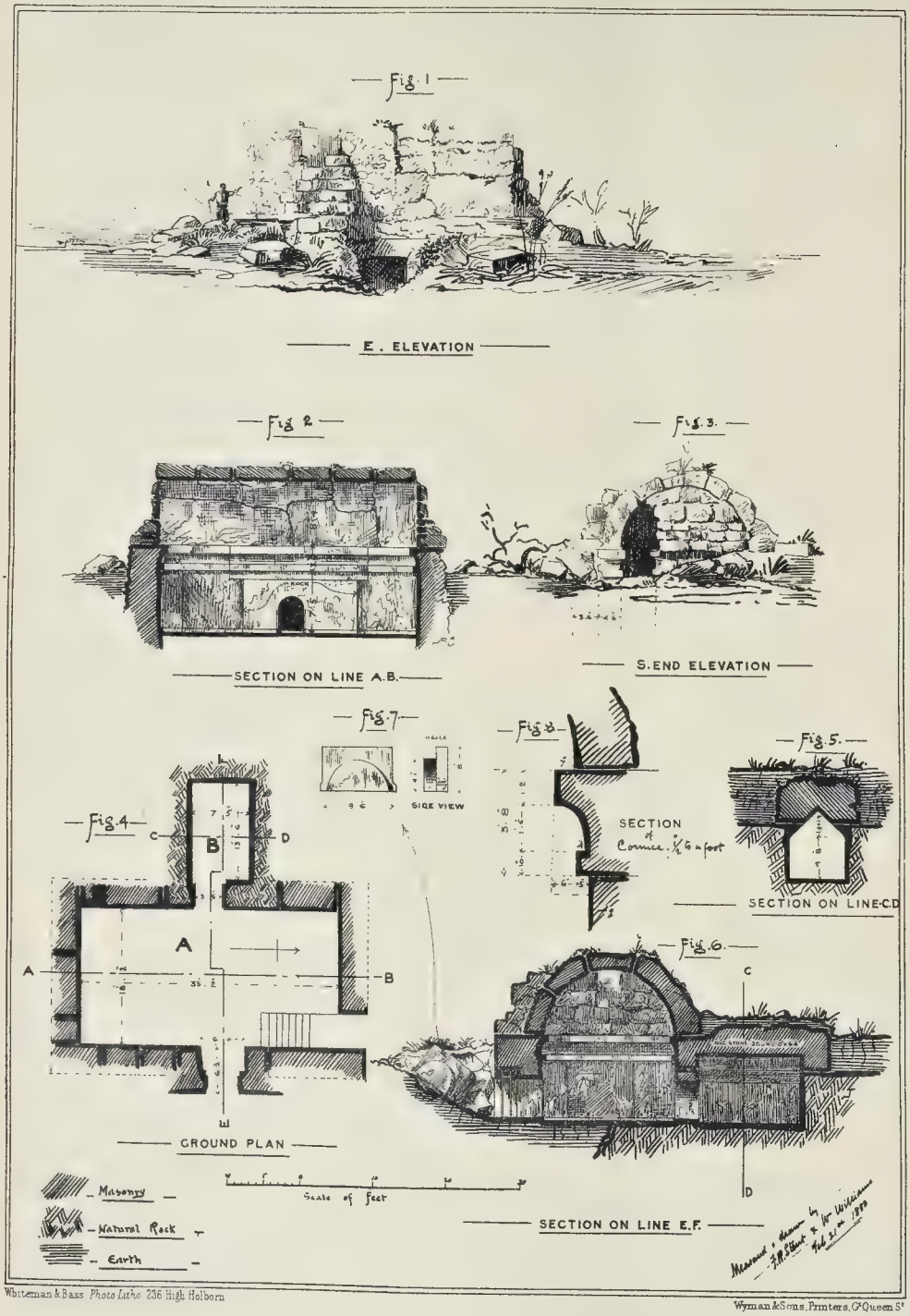
PREMISES IN ADDISON-ROAD NORTH, NOTTING-HILL.

THE accompanying illustration shows part of the premises rebuilt for Mr. W. Pope, and consists of a shop with private apartments above. The premises are built of yellow stocks, with red and moulded brick dressings. The building cost about 700*l.*, and was carried out by Mr. Jewell, of Wandsworth, from the designs of Mr. Chas. Grieve, architect, 1, Duke-street, Grosvenor-square.

It may be viewed as something of a protest against the over-decoration now often bestowed on small and unimportant frontages where simplicity should have been cultivated.

THE NEW BRIDGE AT SPANDAU, NEAR BERLIN.

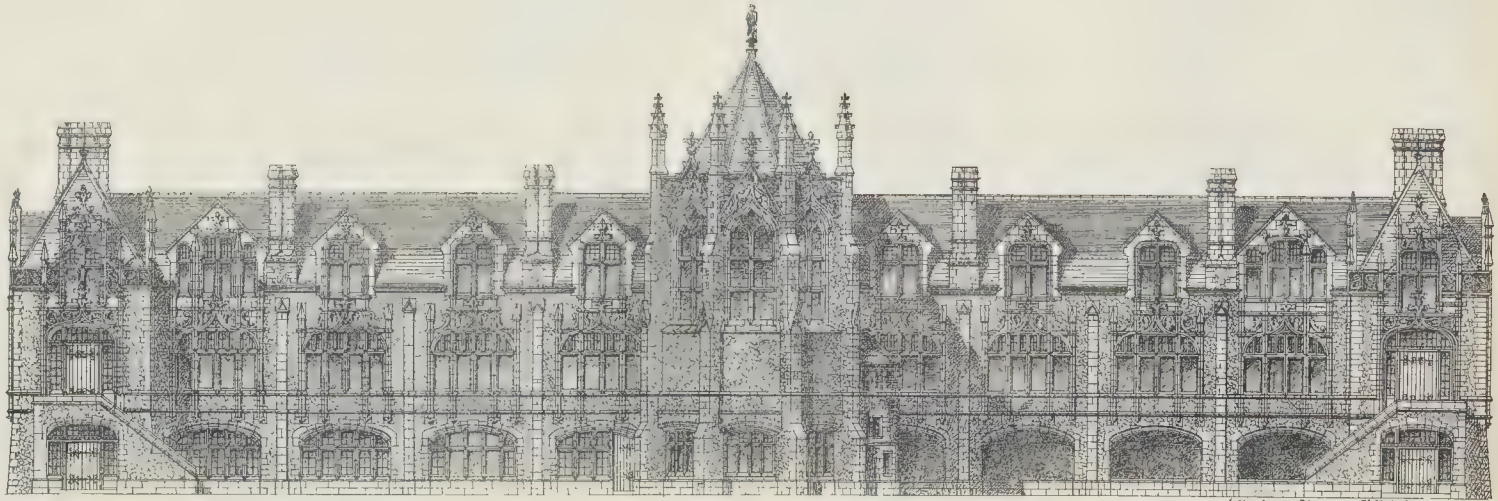
ACCORDING to the *Central Blatt für Bauverwaltung*, the above bridge over the Havel is about 500 ft. in length, and is distinguished from other pontoon bridges by the fact that the expensive chains and cables usually employed are here replaced by wire-ropes for the purpose of resisting the pressure of the wind. Only a small portion of the bridge rests on piles, while eighteen pontoons support the footway. This portion of the bridge is placed high, and is so arranged that boats can pass at two places, and in the middle vessels with upright masts; two pontoons being movable. Special precautions have been adopted to allow of the bridge being used without inconvenience at any height of the water in the river. The cost is said to have been 1,050*l.*



Whiteman & Bass Photo Litho 236 High Holborn

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ANTIQUITIES OF CYPRUS.



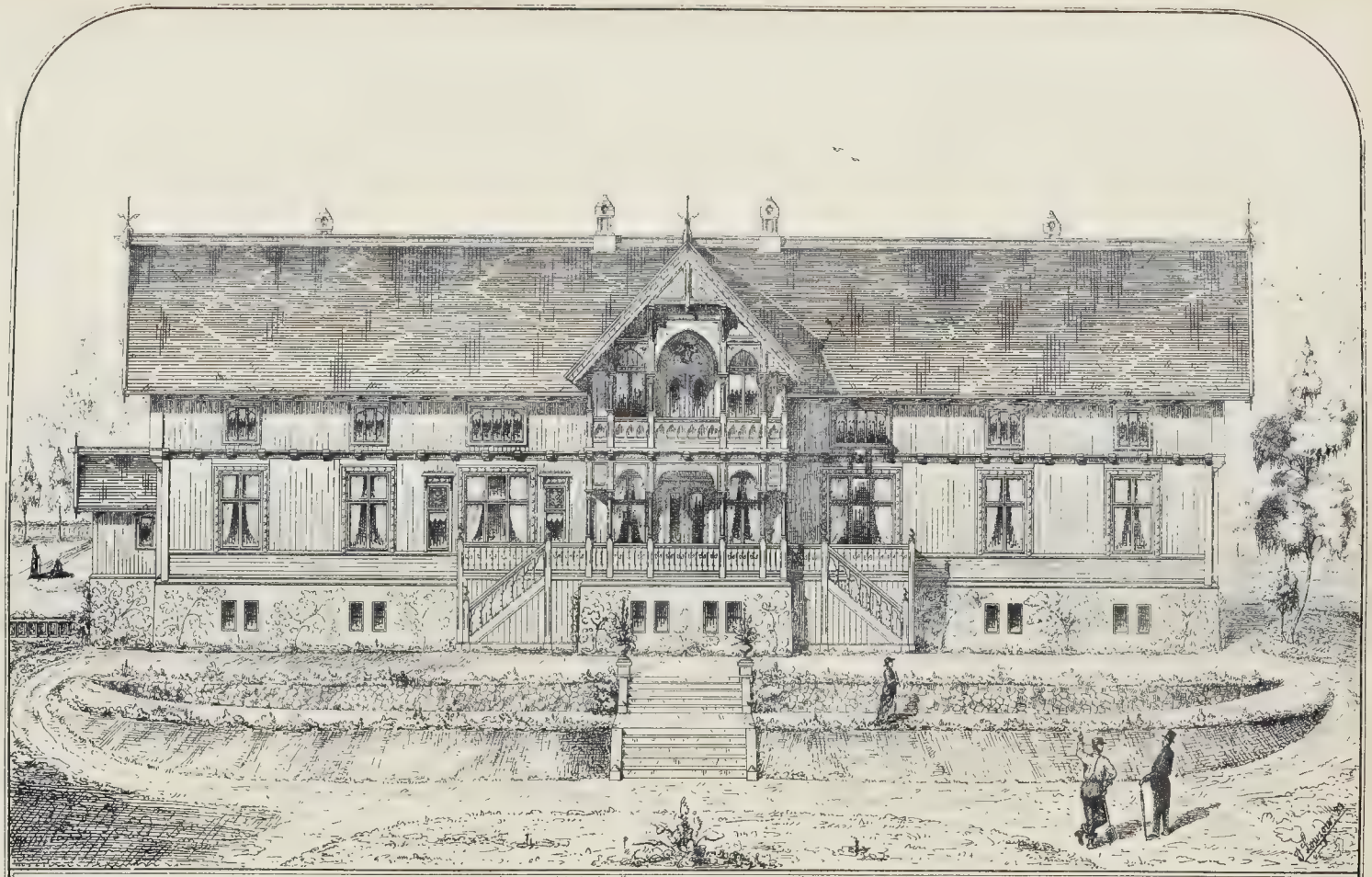
J. Treadway Hancox F.R.I.B.A.

DOVER SEASIDE ORPHANS' REST

FRONT ELEVATION

Whiteman & Bass *Photo Litho* 236, High Holborn

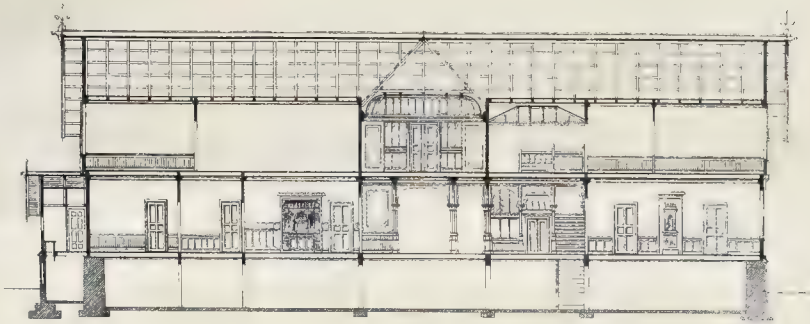
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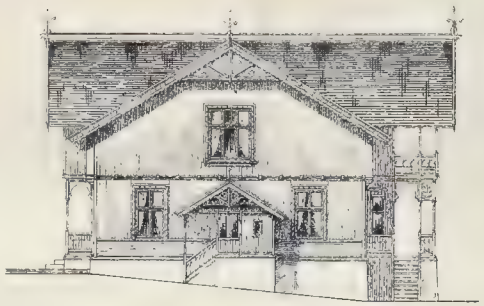
Residence for Jrr. M. Hals. Tetevdalen. Norway. P. Lowzow. Architect.

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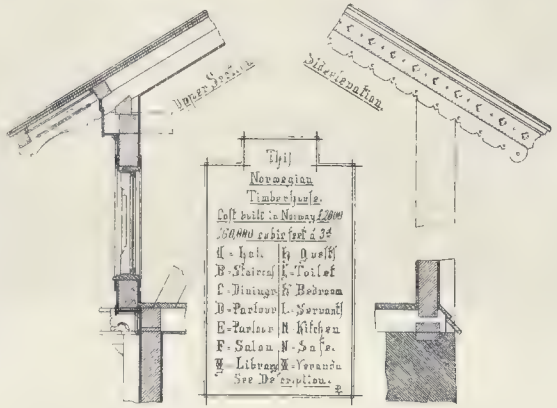


Section.

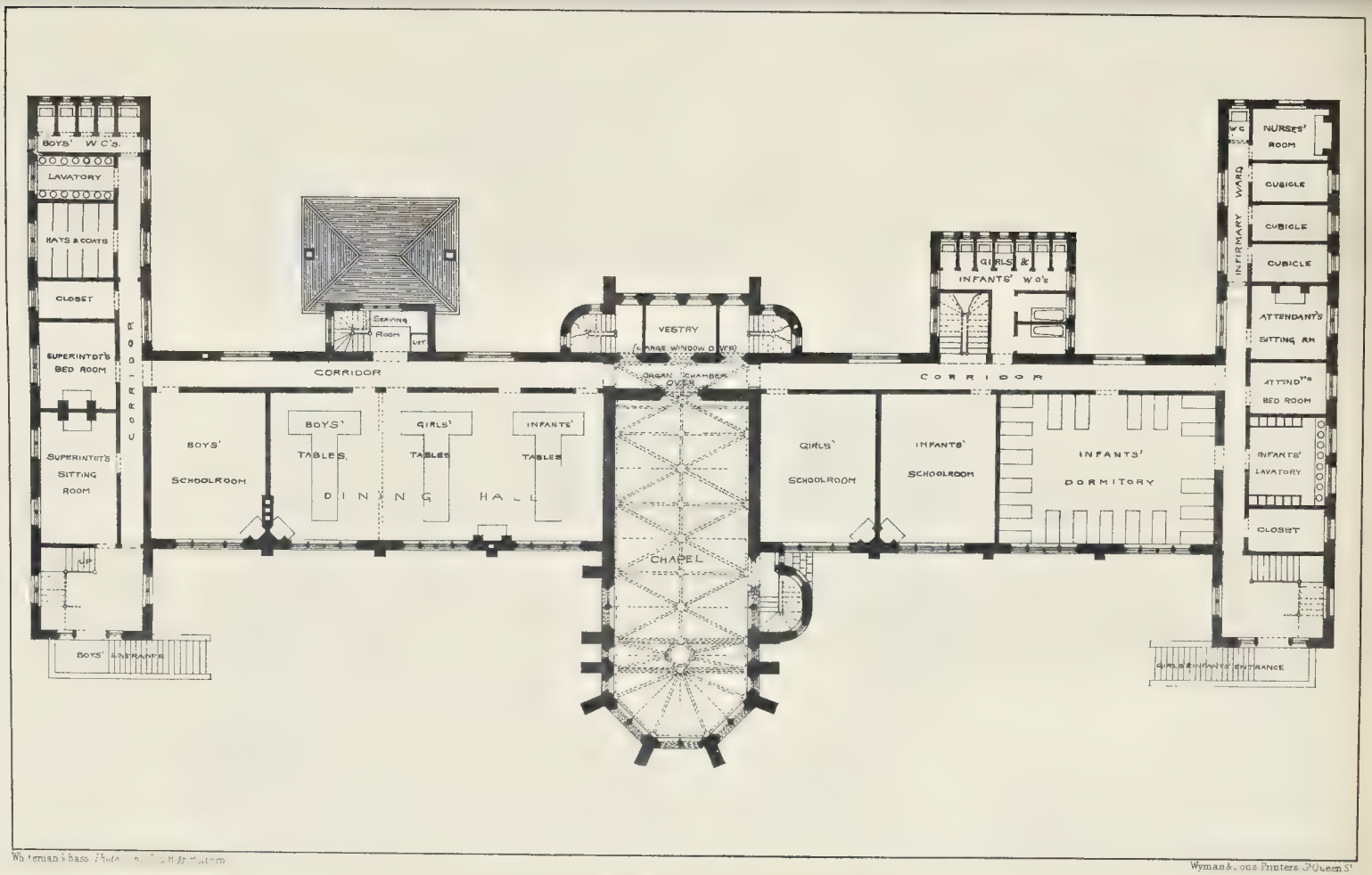




Ground Floor.



Residence for Hrr. N. Hals, Osterdalen, Norway. P. Lowzow, Architect.



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DOVER ORPHANS' REST.—PLAN OF PRINCIPAL FLOOR.



Whiteman & Bass, *Photo-Litho* 236 High Holborn

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PREMISES IN ADDISON ROAD, NOTTING HILL.—Mr. Charles Grieve, Architect.

THE ARCHIEPISCOPAL PALACE AND CHAPEL, CROYDON.*

WHEN I undertook to conduct this visit of our Society, I hoped to have been able to devote a reasonable time to prepare some particulars of these interesting buildings, but ill-health and pressure of professional duties combined, have utterly debarred me from doing justice to my subject. For such information as I have been able to gather within the past few days I am indebted to my friend, Mr. S. Wayland Kershaw, who most kindly placed before me Ducarel's manuscript account, written in 1755, and preserved in the library of Lambeth Palace, together with some interesting notes of his own, prepared some time since.

From Domesday-book we learn that the manor of Croydon belonged to the see of Canterbury in the time of Lanfranc; but there is, I believe, no documentary evidence to prove when a manor-house was first erected, though it is certain that this occurred between the time of Lanfranc and that of Archbishop Peckham (1278), a period of over 200 years. The history of the manor during this time appears to be lost, but registers show that, at all events, it was a place of importance in Peckham's time, and that he made it his principal residence. That his predecessor, Helwardly, was once there appears by a mandate of his, issued from Croydon, in September, 1270. From this time forward to the Great Rebellion it continued one of the most important among the numerous habitations of the various occupants of the see of Canterbury. Peckham's successors, Winchelsay (1294) and Freynes (1313) both used it as an occasional residence. The registers of Archbishop Mepeham, Stratford, Mitford, and Bradwardine, are lost. Islep does not appear to have resided here and his successors Langham (1366), Withesey (1367), and Sudbury (1375), are merely mentioned as being here occasionally from May, 1382. Archbishop Courtenay received his pall with great solemnities in the Great Hall, and resided here often, as also Arundell (1396). This prelate appears to have built the Guard Chamber, so often referred to by Ducarel in his manuscript history, and in which he says that this archbishop's arms impaled with those of the see of Canterbury were on the north corbel, and by themselves, on the south corbel, but I believe there are no traces of this building now. Archbishop Chichele (1414) often resided here, as also his successor, Stafford, who either rebuilt or greatly altered the Hall, which was in 1770 still adorned with his arms, and those of his family. Most of the Acts of Archbishop Temple (1452) are dated from here and Lambeth. Bourchier (1454) and Morton (1486) also made the palace a residence, though Dene (1501) does not appear to have done so. Cranmer (1533), however, spent most of his time here, and the consecration of two bishops, viz., John Taylor to the see of Lincoln, on June 26th, 1552, and John Harley to that of Hereford, May 26th, 1553, took place in the chapel. An Act of Cardinal Pole is dated from Croydon. The great Archbishop Parker (1559) very often resided here, and for eight days entertained in great state Queen Elizabeth and her retinue, comprising very many of the princes and nobles of the kingdom. Grindall (1575) appears to have occasionally resided here, and in his time the consecration of three bishops took place in the chapel, viz., is 1579, 1580, and 1581. Archbishop Whitgift (1583),—of whom we shall hear more presently from Mr. Kershaw, —often resided here. Of the Acts of his successor Bancroft (1604) none appear to be dated from Croydon. Archbishop Abbot (1610) made it one of his principal residences. It was he who refused to obey the king's command that the "Book of Sports" should be read in the church; and although he had many enemies anxious to bring him into disfavour, the king declined to take any notice of his offence. The great Archbishop Laud (1633) improved the palace and chapel; and in the records of his infamous trial, one of the charges against him seems to have been that he restored a representation of the "Crucifixion" in a stained-glass window. The account states that:—

"Browne, his joyner, being examined at the Lords' Barre against his will, confessed upon his oath that in the chapell at Croydon there was an old broken crucifix in the window which he, by the Archbishop's direction, caused to be repaired and made complete, which picture was then remaining very lately, for which work Master Pryn found the glazier's bill, discharged by the Archbishop himself, among other of his papers."

He also put up an organ in the chapel, as appears by his will, a copy of which is preserved in the manuscript at Lambeth. This will, dated the 13th of January, 1643, was not proved till the 8th of January, 1661. In it there is this,—"Item, to Mr. Cobb my organ that is at Croydon."

In the confusion and anarchy succeeding this noble prelate's cruel martyrdom, this palace, with the estate about it, were wrested from the see of Canterbury and offered for sale, with the intention, it would seem, that the buildings should be taken down, a survey * for the purpose being made 17th March, 1646, in which the materials were valued at 1,200*l.* Up to this time the palace and everything belonging to it had been leased by the ruling powers to the Earl of Nottingham, after which it fell to Sir W. Brereton, colonel and general of the Cheshire forces, who desecrated the chapel by converting it into a kitchen, and so it probably remained till the Restoration in 1660, when Archbishop Juxon repaired and fitted it up in decent manner, his arms appearing in several parts of it and in the Guard Chamber. His successor, Sheldon (1663), retired here after the Great Plague, but during which he nobly remained at Lambeth, and by his charity preserved many who would otherwise have perished. He also did much to improve the buildings, and died here Nov. 9, 1677. His successors Sancroft and Tenison probably did not reside here. Archbishop Tenison (1694) had a great regard for Croydon, but it is not certain that he at any time resided here, though he founded a school in the town. Wake (1715) repaired the buildings and rebuilt the great gallery next the gardens, and resided for a portion of several years. Potter (1736) was seldom here, but the next archbishop, Herring (1747), spent 6,000*l.* in repairs and laying out the gardens here and at Lambeth. In Archbishop Cornwallis's time (1768-83) the palace became utterly ruinous and unfit for habitation, and an Act of Parliament was obtained investing the property in trustees, with power to sell, when a new residence, that at Addington Park, was purchased. The old palace with its out-buildings have for a long time been used for the purposes of linen bleaching works.

Before leaving this chapel, I may mention that there were formerly two if not three chapels attached to the palace, this being upon the site of that known as the principal one. Ducarel says, "In the outer chapel is a pulpit of the Renaissance style bearing the arms of Archbishop Laud," and that "the carvings of the bench-ends also display the same arms, as well as those of Juxon." Attention may also be called to the cross and cross keys in coloured brickwork on the exterior of the chapel.

I propose that we should now inspect the great hall. This I have already stated was probably rebuilt by Archbishop Stafford *temp.* Henry VI., though the porch appears older. The roof of the hall is of very fine timber construction, equal in beauty and somewhat resembling that of Christ Church, Oxford. The pendents are good, and the corbels are carved with angels' heads and armorial bearings. The arms of Stafford occupied a conspicuous position at the east end, and the same joined to those of the see of Canterbury were placed on the south side. On the north, east, and south sides were the arms of Humphrey, Earl of Stafford, father to the Archbishop.

In the middle of the hall there was not long since, says Ducarel, a fireplace, and over it a lantern as in some of the old colleges of our two universities. At the upper end there was, in 1755, a very remarkable coat of arms, viz., those of King Edward the Confessor impaled with those of France and England, the arms of King Edward being *azure*, a cross fleury between five martlets, *or*, impaled with the arms of France, viz., *azure*, three fleurs-de-lys, *or*, quartered with those of England, viz., three lions as borne by kings Henry V. and VI., and supported by angels (in the foundation charter of Eton College the arms of Henry VI. are supported by two angels), and another angel under holding a label with this inscription, "*Dne. salvum fac Regem.*" Ducarel suggests the following as a probable explanation of this curious coat of arms:—1st. That the hall was entirely repaired, if not rebuilt, by Archbishop Stafford; and 2nd, that in the year 1444, king Henry VI. wrote a letter to the Convocation of the clergy of the Province of Canterbury, then assembled in the Cathedral church of St. Paul, London, wherein he thus speaks of king Edward the Confessor:—

"And, forasmuch as among all other saints, we trust that the blessed and glorious Confessor, Edward, is a special patron and protection of us and of our Royaulme, whereof he sometime bare the coronne, whoos day of translation is kept as now double feest in Holy Church only, we for the more laud and praising of God worship the said glorious saint, and for th' encrece of more devocion among Christen people pray and exhorte you to decre and ordeyne by th' authorite of the said convocacion that the said day of S. Edward be kept and observed perpetuelly hereafter as double feest and holyday throughout *your Province*, wherein ye shall do unto God right acceptable service, and to us right singular plaiser. Yeven under our signet at our Castel of Wyndesore, the 15th day of October."

This being agreed to by the convocation, Archbishop Stafford wrote to all the bishops of his province that the said feast should henceforth for ever be observed in their dioceses as a double feast and holiday. "I am therefore inclined to think [continues Ducarel] that the arms of King Henry VI. thus impaled with those of King Edward the Confessor were placed here by Archbishop Stafford soon after this decree of the convocation was made, and as a compliment to his Sovereign, who had been the author of it.

An effort is being made with which, I feel sure, you will all sympathise, viz., to purchase what remains of these old buildings, so full of historical association, and preserve them from further ruin and destruction as a memorial to the late Archbishop Tait, with the view of converting the fine hall and other buildings to some public use as a free library or museum, and to restore the chapel to the sacred purposes for which it was intended. This effort, whilst doing great credit to the town of Croydon in which it originated, has not, I regret to say, hitherto met with the support which so worthy an object deserves, though with patience and perseverance I yet venture to hope that those who have the scheme at heart may yet see their desires accomplished.*

WHITGIFT'S HOSPITAL, CROYDON.†

BEFORE I proceed to the history of this ancient building, I will ask your patience to a short account of its founder, John Whitgift, Archbishop of Canterbury.

Parker, Whitgift, and Grindal are names associated with our national history, for their lives and actions have come out so strongly in the post-Reformation history of England that in the Elizabethan annals their memories have shed a lustre that will not soon be forgotten. Each of these prelates made the Manor House of Croydon a favourite residence, a retreat from the turmoil and etiquette of Court life and politics, — Archbishops Parker and Whitgift specially entertaining their Queen at Croydon, besides transacting important business here. The family of Whitgift is to be traced to Yorkshire, where a branch of it settled at Great Grimsby. Henry, the father of the Archbishop, was a merchant, and, as far as we can discover, John, the son and Archbishop, was born in 1530. His early education was at St. Antony's School in London, and as a youth he lodged with his aunt, the wife of the verger of St. Paul's Cathedral. He then (in 1548-9) matriculated at Queen's College, Cambridge, and afterwards migrated to Pembroke Hall, of which Nicholas Ridley, the great Reformer, was then Master,

* A paper by Mr. Hugh Roumieu Gough, architect, read at the Croydon meeting of the St. Paul's Ecclesiological Society on the 19th inst.

* At the end of this survey there is this remarkable clause, "That all charters, deeds, evidences, or writings anyway touching or concerning the same are to be excepted." Probably these were wilfully destroyed at the great rebellion, and this will account for the paucity of the history of the buildings. Even Camden merely mentions "That Croydon is particularly famous for a palace of the Archbishop of Canterbury, whose it hath been now for a long time."

* In our last volume (p. 831), we briefly reviewed the history of these old buildings, and mentioned the movement which has been set on foot for their preservation,—a movement which has our heartiest support. One suggestion made in connexion with the subject was mooted by Mr. G. H. Birch at the meeting on Saturday, viz., that as Croydon has just received its charter of incorporation as a municipal borough, it would do well to secure these old buildings and to restore the ancient hall of the Palace, so as to make it serve the purpose of a guildhall.

† From a paper by Mr. S. Wayland Kershaw, F.S.A., of Lambeth Palace, read by him at the Croydon meeting of the St. Paul's Ecclesiological Society, on the 19th instant.

and when Ridley became Bishop of London Whitgift was one of his chaplains. In 1555 Whitgift was made a fellow of Peter-house, the celebrated Dr. Perne being Master of that College. The Visitation of the University, under Cardinal Pole, placed Whitgift in an anomalous position; but through the kindness of Dr. Perne, he was screened from any ill feeling which those of an opposite faith might have awarded him. In 1560 he was Rector of Teversham, in Cambridgeshire, and in 1563 was made Lady Margaret Professor of Divinity; in 1567 he was elected Master of Pembroke Hall, and in 1570 Master of Trinity College. Preferment seemed to follow rapidly, and he was made a prebend in Ely Cathedral, and his fame now extended to the Court, when he preached before the Queen at Greenwich. So pleased was Elizabeth with his merits that she made him one of her chaplains, and on the occasion of one of his sermons preached before the Queen, with a drollery, of which she was often capable, called him her "White-gift," somewhat alike to that of her partiality for Archbishop Parker, whom she called her "little black husband." In 1573 Whitgift was made Dean of Lincoln, and three years afterwards we follow him to a still higher step, viz., the Bishopric of Worcester. His advancement to this dignity was universally popular, and in his progress from place to place, his cavalcade and retinue, which was always numerous, was joined in by many an admiring throng. In 1583 he had reached the pinnacle of ecclesiastical fame, viz., the Archbishopric of Canterbury, and it is in this position we view him, in regard to politics and learning, and, lastly, as to the foundation of this ancient hospital. In the disposal of church property, as to which the Reformation had greatly altered, Whitgift preserved much moderation, and Elizabeth approved of his straightforwardness in action. In 1594 complaints were made of the corruption of the Ecclesiastical Courts, and the Archbishop made a general survey of them; in this year he procured of the Queen the rectory of Bishopsbourne, near Canterbury, for that eminent divine, Hooker. Whitgift was associated with Archbishop Parker in an answer to the "Admonitions." He compiled, while Bishop of Worcester, new statutes for the Church of Hereford, and recovered some of the revenues belonging to it. The historians Hallam, Hume, and Rapin, give credit to the Queen for her course of action, as regards the unsettled state of religious opinion at this time, though gradually the Protestant cause was finding its firm level. The party spirit of the Puritans on the one hand, and the foreign theologians on the other, gave rise to a series of celebrated publications known as the "Martin-Mar-Prelate" tracts, which fiercely assailed the Queen and the Primate; another great controversy connected with Whitgift is that known as the "Cartwright controversy," in which Cartwright's object was the "overthrow of episcopacy and the subversion of all principles which were in accordance with those of Calvin."

In Whitgift's primacy occurred the settlement of what are known in history as the "Lambeth Articles," of which the Archbishop had the direction, praying that nothing be taught against these doctrines, a measure not pleasing to the Queen. We turn from the ecclesiastical and political career of Whitgift to his domestic life, and read that he delighted in hospitality, and on his visits into Kent, or to his palace at Canterbury, displayed a munificence in retinue that would astonish a prince of to-day; he sometimes entered the city of Canterbury with 800 horse. At his first journey into Kent, 1589, he rode to Dover attended with no less than 100 of his own servants in livery, whereof there were forty gentlemen in chains of gold, and his first entry into Canterbury Cathedral is described as very grand, and greatly impressed some of our foreign visitors who happened to be there at the time. The literary labours of Whitgift must not pass unnoticed, for no less than ninety-one works of this prelate are mentioned, some, of course, in MS., and many of a transient character. Several of my hearers will know the collections of this primate's interesting writings and letters published by the "Parker Society." We read of his having left tokens of his wealth. To Trinity College, Cambridge, he gave a piece of plate gilt and several MSS.; he endowed the city of Canterbury with 100 marks. The later days of Whitgift were saddened by attending the last moments of his queen, to whom he was so loyal a subject, and in the old Palace of Richmond he consoled her with the last service of the church; within six hours of the queen's death Whitgift appeared with the Council of the Nation at the High Cross at Cheapside, to proclaim James I. king of England; and in a few days after, Whitgift placed the crown on that monarch in Westminster Abbey. Then followed the famous Hampton Court Conference, in 1604, in which Whitgift was engaged, and on going to the Bishop of London at Fulham, in his barge from Lambeth, caught that fatal cold which ended in death. In that solemn hour he was visited by James I., and soothed to some extent by the presence of royalty, and history has recorded his last memorable words, "Pro ecclesia Dei, pro ecclesia Dei." On Feb. 28, 1604, John Whitgift passed away, one of the most noted archbishops who, in times of persecution and religious feeling such as we cannot now realise, will, with his predecessors, Parker, Grindal, and Bancroft, live in the lasting annals of church history.

We may assume that the foundation of such buildings as the Whitgift Hospital were to some extent the successors of those many hospitals or refuges which, in the Middle Ages, were the temporary abode of pilgrims and travellers, an asylum for the aged and infirm, and the halting-place for many who visited the great churches and shrines of our land. The county of Kent is exceedingly rich in this respect, and we can enumerate many such buildings which exist to this day with altered statutes and improvements, while others are utterly lost; in some cases the chapel of the hospital is preserved. . . .

We have heard of Whitgift's fondness for his house at Croydon; it is not surprising that he should found a hospital in this town. On the 17th of January, 1596, the building was begun, and on the 29th of February, 1599, was finished, occupying a little over three years. The total cost was 2,716*l.* 11s. 11d., and the Rev. S. Finch, the vicar of Croydon, was appointed by Archbishop Whitgift to overlook the progress of the works. In the Lambeth MS. 275, is preserved the account of the building, the weekly payment of the workmen, and the statutes of the hospital. This document is a model of a building account, extending over three years, regularly examined by Mr. Finch, and generally supervised by the Archbishop. From the mass of material I have only selected some prominent items, which bear more closely on my subject and that of church-building, either locally or in general.

Feb. 4, 1596. This day we made an end of pulling down; now we take to mortar-making, clearing, and levelling of the ground. We have finished the two trenches next the Crown and George Inn, and have made them even with the ground.

Jan. 17, 1596. The first weekly account after beginning of the building.

Then follow directions for the arms of the see of Canterbury to be placed over the entrance-gateway, and the motto, which still exists, "Qui dat pauperi, non indegebit." Several mottoes appear to have been put before the Archbishop for selection, but the above was finally agreed upon.

Feb. 14, 1596. The foundations were begun to be dug.

March 22, 1596. His Grace laid the two corner-stones, north and south.

June 27. The first of all the Hospital was reared.

September 29, 1597. All the outworks, as tyling, &c., were fully finished.

1598. The glazing was finished; the glass in the hall window cometh unto 49*l.* 2s

1599. We read of an order for colouring the beams in the hall. Whether this was carried out is uncertain.

June, 1600. The schoolmaster's house finished. For the wainscoting of the chimneypiece in the great chamber, 10s.

Some of the timber was obtained from the Archbishop's domain or "park" at Croydon, a good deal from Lingfield in Surrey, on the Sussex border. We must remember the whole of that part of the country was thickly wooded, forming part of the great Weald of Kent, Surrey, and Sussex, the many shingled spires in that district indicating the abundance of wood. The sand for mixing purposes was obtained from Duppas Hill, then called "Dubbers Hill," an eminence close to the town on its western side. On Monday, July 9th, 1599, Whitgift's Hospital was dedicated to the use of the poor by Richard Bancroft, Bishop of London, and Anthony Watson, Bishop of Chichester. The preacher at the dedication was Thomas Bonford, and there were present several others, including one George Whitgift. The hospital was dedicated to the Holy Trinity. The common seal has the history of Dives and Lazarus. The statutes were made by the Archbishop, of which the original copy exists in Lambeth Palace Library. By the courtesy of the Rev. O. B. Byers, chaplain of the hospital, the corporation charter and Barker's black-letter Bible are shown to our members in the dining-hall, which also possess an interesting water-colour drawing of the old High-street here, showing the Crown Hotel, mentioned in the building accounts.

The foundation is for such as needed relief, not to exceed forty, to be chosen and nominated, from time to time, by the Archbishop, his executors, and assigns.

Three classes of persons are eligible for the benefits of this hospital:—(1) Men of 60 who have served in the household of the Archbishop to be preferred above all others; (2) poor men of the parish of Croydon and Lambeth over 60 years of age; (3) persons of 60 years of age of parishes in the county of Kent.

The founder ordered that within ten days after the Feast of St. Michael the statues be openly read in the chapel of the said hospital. In 1634 we read of the visitation of Archbishop Laud, when certain questions were asked, but it appears from that Primate's Register no return was made. I may remark generally that the statutes for this hospital have a strong likeness to those made by Archbishop Abbot for his hospital at Guildford.

Among the accounts of lands to be purchased for the maintenance of Whitgift's Hospital there are many extracts which have a local interest.

The building, as it now remains, is nearly in its original state. Some repairs and additions were made about thirty years ago. The chapel is situate at the southern side of the quadrangle, and is partly panelled,—it also contains some old paintings. The warden's room has a fine carved mantel, which was drawn some years ago for the Architectural Association Sketch-Book. The hall is small, but contains fragments of old glass. The entire building is of brick; and in this respect is like Abbot's Hospital at Guildford, which, however, is much richer in architectural detail.

The town of Croydon is fortunate, indeed, in having a parish church of so much architectural beauty, close to which are the remains of the archiepiscopal palace, viz., the hall, chapel, and other apartments. This old palace, the home of the archbishops of Canterbury for several ages, and which has witnessed the transactions of sovereigns, nobles, scholars, and divines, is now engaging the attention of all lovers of historical buildings to save it from demolition and preserve to us a part, indeed, of our national history. I cannot but urge on you, as a society, to co-operate with others in the great work of preserving this structure, which should be dear alike to the student of history, archæology, and art.

SOME RECENTLY INVESTIGATED ANTIQUITIES IN CORNWALL.

Among the many remains of prehistoric ages in England, which have been either entirely ignored by county historians and the Ordnance Survey, or dismissed too briefly, are two sites of considerable interest in Cornwall, in the adjacent parishes of St. Teath and St. Advent, not far from Camelford; the former barely noticed by Maclean in his "History of Trigg Minor," the latter quite new to archæology. That in the parish of St. Teath is locally known as "The Rounds." It is an extensive earthwork of circular form divided unequally by the Boscastle-road between Trevain and Cockcrowing. The outer *vallum* is complete, except for the space of about fifty paces on the St. Teath and Delabole side. A very small portion only remains of the inner *vallum*, but there are distinct traces of it throughout the whole circuit, in some places as high as 2 ft. The Rev. T. Worthington, whose fortunate discovery of a Celtic cross we recorded a short time ago, has recently examined this site, known as No. 1,218 on the tithe-map of the parish, forming part of a farm called "New-Berry," of which the buildings are now entirely ruinated, a part only of one wall remaining. He finds that the foss between the two concentric mounds or rings has been almost completely

filled up to the level of the field, the material of the inner ring having been thrown down with this object. The average height of the outer mound on the Delabole side is 5 ft. 6 in.; the inside height is scarcely so great. On the western side, nearest to Camelford, the average height is 6 ft., with some places reaching 10 ft. in height. The sides of the mounds have been faced in many parts with walling, in the style commonly in use throughout the county. The camp or area thus enclosed measures 495 ft. in diameter; the breadth of the circumvallation, from the centre line of each mound, is 30 ft. This capacious stronghold of our early Celtic forefathers lies close to the "Castlegoff Camp" in the neighbouring fields of Lanteglos parish, and is situated upon the slope of the hill, looking in a westerly direction towards Boscastle.

The second monument is of a somewhat complex nature. It consists of three circular groups of standing and prostrate stones in the "Bury" or "Pool" Field, in Trecarne Farm, not far from the bridge which crosses the river Camel in the parish of St. Advent, or Adven, one mile to the south of Camelford. In this twelve-acre field the three groups are placed at spots forming the angles of an isosceles triangle, the two longer and equal sides, of 6½ chains, being about three times longer than the base, of 2 chains. Each circle is of the approximate diameter of 50 ft., and each originally contained three rings of stones. These have been almost entirely levelled, but they may be still distinctly traced. The stones were of granite and spar, ranging in height from 3 ft. to 7 ft., and in width from 1 ft. to 2 ft. Several loads of them are still heaped up against the fence, but hundreds of loads have been removed within the memory of the present occupier. In digging a trench across one of the circles, that on the right-hand base corner of the triangle, several tons of loose granite and spar boulders, and other stones, which had evidently been obtained from the bed of the neighbouring river, were thrown out. Mr. Worthington reports that virgin soil was reached at a depth of 3 ft., with small patches of charred substances. These, which may be of burnt wood or bone, have yet to undergo investigation. There is a similar mound, which marks the site of a stone circle that has been destroyed within the last twenty years, on the same farm, and not more than a quarter of a mile distant from this triad of monuments. It is situated in a long, narrow field, known as "Strap" Field. In this case the materials were removed by the former occupier. The present owner and occupier, Mr. Nicholas Parnell, is greatly interested in these evidences of archaic man, and will, we are sure, do his best to preserve them from further injury and from impending obliteration.

SALE AND DEMOLITION OF THE ANCIENT "COCK TAVERN."

A FEW weeks ago we referred, in the columns of the *Builder*, to the impending demolition of the historical "Cock Tavern," in Fleet-street, in connexion with the widening of that thoroughfare between Chancery-lane and Bell yard, and on Monday last the sale of the property took place at the Auction Mart, the auctioneers being Messrs. Orgill, Swann, & Orgill. The printed particulars stated that the property offered consisted of a lease to be granted by the Commissioners of Sewers of the City of London, for a term of eighty years, at a yearly rent of 500*l.*, of the plot of land in Fleet-street, formerly the site of the "Cock Tavern" and "Prosser's," having an area of about 2,400 ft., with a frontage to Fleet-street of 19 ft., by a depth of 130 ft. The purchaser, said the particulars, would have to remove the whole of the existing tavern and buildings, which would belong to him, "except the stove and mantel-piece in the coffee-room," which it is believed the Commissioners of Sewers intend to preserve as a relic of the old hostelrie.

Before proceeding to offer the property, the auctioneer read over the conditions of sale, which were rather voluminous, commenting upon them as he proceeded. One of the conditions stated that the risk of obtaining the transfer of the licence to the building to be erected upon the piece of land sold, and of obtaining a renewal of the existing licence, was to be taken by the purchaser, as the Commissioners did not guarantee in any way the transfer or renewal of the licence. In another condition the purchaser was recommended to take notice of the surrounding walls, and to satisfy himself whether they were party or external walls, as the Commissioners do not guarantee a right to such walls or any part of them. He was also recommended to take notice of the lights of the adjacent buildings, the Commissioners taking no responsibility as to the height to which the new buildings might be legally carried. The auctioneer next drew any intending purchaser's attention to the articles of agreement as to the building lease, a draft of which accompanied the printed particulars, and which stated that 5,500*l.* at least were to be expended on the building, which was to be covered in in nine months from the date of the contract, and completely finished and made fit for habitation in twelve months. In the schedule attached to the agreement there were stringent conditions as to the foundations, which were to have a concrete bottom 4 ft. thick, and as to the brick, stone, and other materials to be used in the buildings.

Having drawn attention to the above-named particulars, the auctioneer next enlarged on the great value of the site, observing that the opening of the new Law Courts was the best guarantee that the new "Cock Tavern," which in all probability was about to be erected, would continue to receive, in an extended degree, the patronage and support which for centuries past had been bestowed on the ancient tavern by the legal profession; and that the spacious offices which might be erected in addition to the tavern rendered the site still more valuable. The first offer was 1,500*l.*, and the property was ultimately knocked down to Mr. Guest for 3,610*l.* It is understood that a new tavern, together with office property, will be at once erected.

RAILWAY STATISTICS FOR THE YEAR ENDING DECEMBER, 1882.

SOME interesting railway statistics relating to the capital, revenues, and expenditure of the railways of the United Kingdom, to the end of December last, have just been issued, from which it appears that the total capital of the forty-seven railway companies representing that interest in England, Scotland, Ireland, and Wales, at the close of the year, was 691,082,223*l.*, of which 517,959,115*l.* was represented by shares, and 173,123,108*l.* by debenture stock. Of this prodigious sum upwards of 600,000,000*l.* forms the capital of fourteen of the leading companies, thus leaving about 90,000,000*l.* only as the aggregate capital of the remaining twenty-three smaller companies. Of the fourteen leading companies the London and North-Western stands at the head with a capital of 109,373,968*l.* The Midland follows, with a capital of 72,709,267*l.*; and next in order is the Great Western, with a capital of 72,505,561*l.*; followed by the North Eastern, whose capital is 56,913,483*l.*; the Lancashire and Yorkshire, capital 38,542,016*l.*; the Caledonian, capital 38,401,170*l.*; Great Eastern, capital 37,866,823*l.*; Great Northern, capital 34,380,050*l.*; North British, capital, 33,269,211*l.*; London and South Western, capital 26,564,188*l.*; Manchester, Sheffield, and Lincolnshire, capital 26,594,461*l.*; London, Chatham, and Dover, capital 24,342,289*l.*; and the South Eastern capital 21,665,974*l.* It should, however, be stated in explanation that the above-named sum of 691,082,223*l.* as the aggregate present capital of the several companies, represents only what is technically designated the "created" capital, the total amount of the authorised capital, under existing Acts of Parliament, being 717,316,121*l.* Thus the authorised capital of the London and North-Western Company is 103,178,013*l.*, as against 100,373,968*l.* created; the Midland's authorised capital, 74,749,267*l.*, against 72,709,267*l.* created; the Great Western's authorised capital, 73,144,561*l.*, against 72,505,561*l.* created; the authorised and created capital of the other companies being in like proportion. The total capital expenditure of these several companies to the end of December, 1882, amounted to the sum of 689,777,146*l.*, of which sum 8,426,831*l.* was expended in the half-year ending with December last, during which period the Midland Company expended 1,112,985*l.*; the London and North Western, 1,013,143*l.*; the Great Eastern, 934,978*l.*; the Great North of Scotland, 696,742*l.*; the Lancashire and Yorkshire, 633,095*l.*; the Metropolitan District, 495,685*l.*; the Metropolitan, 470,213*l.*; the London and South-Western 371,805*l.*; the Great Western, 322,674*l.*; the Great Northern, 246,305*l.*; the London and Brighton, 193,975*l.*; and the South-Eastern, 168,095*l.* The estimated capital expenditure of the forty-seven companies for the current half-year (with the exception of the London, Chatham, and Dover Company, which is not given, but known to be considerable) is 7,662,671*l.*, of which 1,060,276*l.* is by the London and North-Western Company; 1,150,000*l.* by the Midland; 950,471*l.* by the Lancashire and Yorkshire; 600,000*l.* by the Great Eastern, exclusive of costly works in connexion with the enlargement of the Liverpool-street Station; 426,000*l.* by the London and South-Western; 410,000*l.* by the Great Northern; 400,000*l.* by the Great Western; 336,000*l.* by the London and Brighton; 221,000*l.* by the Metropolitan District; 202,500*l.* by the Metropolitan; and 304,309*l.* by the South-Eastern.

One of the most important and interesting features in the statistics connected with the revenue department of these several forty-seven railways is that relating to the dividends paid during the last half-year. The highest dividends paid were by the two Welsh companies,—the Taff Vale and the Rhymney companies,—and the Maryport and Carlisle Company. The dividend declared by the Taff Vale Company was at the extraordinary rate of 17 per cent. per annum, whilst the Rhymney and Maryport and Carlisle dividends were each at the rate of 10 per cent. per annum. The North-Eastern dividend was at the rate of 8⅞ per cent.; the London and North-Western and the London, Tilbury, and Southend, 8 per cent.; the North London, 7½ per cent.; the Great Western, 7¼ per cent.; the London and South-Western and South-Eastern, 7 per cent.; the Furness, 6½ per cent.; the London and Brighton and the Midland, 6¼ per cent.; the Great Northern, 6 per cent.; the Glasgow and South-Western, 5½ per cent.; the Great Northern of Ireland, 5¼ per cent.; the Great Northern and West of Ireland, 5⅛ per cent.; the Lancashire and Yorkshire, Caledonian, Cork and Bandon, Great Southern and Western of Ireland, Metropolitan, and North British, each 5 per cent.; the Manchester, Sheffield, and Lincolnshire, 4¼ per cent.; the Belfast and Northern Counties and the Midland Great Western of Ireland, each 4 per cent.; the North Staffordshirdshire, 3¾ per cent.; the Great Eastern, 3½ per cent.; and the Dublin, Wexford, and Wicklow, and the Waterford and Limerick, each 2 per cent.

FIRE AT THE AMSTERDAM EXHIBITION.

THE *Rhenische Westfälische Zeitung* states that the German section of the Amsterdam Exhibition (or, in fact, the whole structure) was in serious danger from fire on the 12th inst. In the pavilion for exotic plants, artificial heat is constantly maintained, and by some defect in the heating appliances a portion of the hangings seems to have caught fire. The fireman on duty was in consternation, and an active French workman standing near climbed up, and (not without personal danger) tore down the burning drapery. Had he not done so, the consequences might have been very serious, for it was twenty minutes before the fire brigade put in an appearance, and even then the necessary tubing was not available to extinguish the smouldering woodwork. The space between this hot-house and the German section is filled with empty cases, and thus the risk of a serious conflagration undoubtedly existed. It is remarked that German exhibitors ought to keep their wares fully insured, in view of the warning they have received from the above occurrence.

NEW PANORAMA AT BERLIN.

VARIOUS important alterations on existing models have been carried out in the new panorama in the Friedrichstrasse, at Berlin. The circular platform for the public is made with steps, so that those persons who are not in the front rank can see perfectly. The outer portion of this platform will be movable, while the inner part will be fixed. The former is intended to be placed in motion every twenty or thirty minutes, so that any persons who wish to do so can see the whole panorama pass before them without stirring from their places. By this arrangement the crowding hitherto usual at points of special interest is obviated.

CROYDON CHURCH.

ON Saturday, the 19th inst., a large number of the members of the St. Paul's Ecclesiological Society visited the fine parish church of Croydon, which was restored and enlarged by the late Sir Gilbert Scott, after the destructive fire which completely gutted the building sixteen years ago.*

Mr. J. Corbet Anderson, author of "The Monuments and Antiquities of the Old Parish Church of St. John the Baptist, Croydon" (a work which was reviewed and commended by us at the time it was issued†), acted as *cicerone*, and, in the course of his remarks, he said that the church was undoubtedly a very ancient foundation, its origin being lost in a remote antiquity. At one time it was almost completely surrounded by running streams of water, but these streams had, within the last forty years, disappeared, on account, no doubt, of the improved drainage of the district. There were yet living men who remembered, sixty years ago, catching trout in a stream within 20 ft. of the tower of the church. Possibly the dedication of the church to St. John the Baptist was due to the existence of the streams in immediate contiguity with it, for we knew from the relation of the Venerable Bede that it was the custom of the primitive bishops to baptise converts to Christianity in the rivers. It might be inferred that there was a structure dedicated to the purpose of Christian worship at Croydon in the year 962, since to the will of Beorhtric and Ælfswyth, made in that year, Ælfsies, the priest of Croydon, was witness. The earliest direct notice of Croydon Church was contained in Domesday Book. Lanfranc, Archbishop of Canterbury, was mentioned in the same entry as being the lord of the manor. But the documentary evidence relating to the early antiquity of the fabric was extremely scanty, and therefore certain fragments that were discovered embedded in the walls of the church after the fire acquired additional importance and value as throwing light on the history of the church. Of these fragments, and of the *débris* which fell out of the walls, no portion could certainly be claimed as Anglo-Saxon, nor even perhaps as pure Norman, but many of the fragments undoubtedly belonged to the Late Norman period. There was a good deal of Early English dog-tooth ornamentation found, and some evidences of Decorated work. After the fire the ground plan of a more ancient church, which had occupied the same site, could be distinctly traced. As each successive alteration had been made in the character of the structure, the old walls had been merely pierced or taken down to the required level, but the ancient foundations had been religiously preserved. It was certain that, previously to the fire, the walls of Croydon Church had been thrice pierced for windows, and the presumption was that the succession of lights exhibited a design in harmony with the general character which the fabric bore at the respective dates of their insertion, whether that occurred during the Late Norman, Early English, Decorated, or Perpendicular periods. When Sir Gilbert (then Mr.) Scott was called in to restore the church he touched as little as possible of the old work, so that the walls of the church, although re-cased with ashlar internally and re-flinted externally, are really the old walls, which still contain a mass of interesting fragments of stonework, many of them bearing traces of colour. The old masonry below the oldest window-cills was very much darker in colour than, and quite different from, the masonry above the level of the insertions, in which a large quantity of chalk was used. It was remarkable, however, that in the older or dark-coloured portion of the walls no architectural fragments such as those before mentioned were found, though the other portions of the walls were rich in such remains, a fact which suggested the possibility that a sculptured history of our country might lie embedded in the walls of our old parish churches, depicted on stones wrought by Saxon and Norman hands. At some distance below the elevation reached by the roof of the late church, traces of a former nave roof were discovered on the tower; this roof was of low pitch, and a portion of its lead was found embedded in the wall of the tower. A rude and apparently ancient piscina was found in the south wall. It might be concluded that an altar once stood near the spot where it was found. Near the south door and also near the north door were holy-water stoups; from the fact of these not being in the porches, it might be inferred that originally there was neither a south nor a north porch. It was conjectured that the work of converting the church into a Perpendicular fabric was commenced by Archbishop Courtenay, from the circumstance of the arms of that prelate (*or*, three torteaux) having formerly been affixed to the north entrance. There was also heraldic authority for placing the date of its completion in the days of Archbishop Chicheley, whose arms (*argent*, a chevron *gules* between three cinquefoils of the last) were carved at the side of the western or principal entrance. The Perpendicular style of work exhibited by the late structure attained its purest development towards the end of the fourteenth and in the early part of the fifteenth century,—exactly the period which included the archiepiscopates of Courtenay and Chicheley. When the church was cleaned in 1844, a distemper painting was discovered on the south wall, representing St. Christopher. Another and still more interesting specimen of rude mural decoration was found on the south wall of the church when the gallery was removed in 1857; this painting had for its subject St. George slaying the Dragon. The church was destroyed by fire on the night of January 5, 1867. The fire was caused by the over-heating of a "Gurney" stove,—an excellent stove in itself, but the water had been allowed by a careless attendant to be entirely evaporated, so that the stove got red-hot and ignited the pitch-pine roof at a point 35 ft. distant from the stove. This catastrophe conveyed a remarkable lesson as to the care which should be exercised in the heating of churches. In 1390 the church was appropriated to the convent of St. Saviour's, Bermondsey, after which it continued only a vicarage. At the dissolution of the convent in 1538, the rectory falling to the Crown, King Edward VI. granted it to a couple of laymen, to whose representatives it descended, but the advowson of the vicarage reverted to the see of Canterbury, where it remains. Among the bishops known to have been consecrated in this church might be mentioned Myles Coverdale, consecrated Bishop of Exeter by Archbishop Cranmer. To Myles Coverdale belonged the honour of having been the translator of the first entire Bible printed in the English language.

Croydon Church contained several interesting national monuments, all of which were more or less terribly injured by the fire which destroyed the fabric. The oldest inscription was on a fragment of a brass to the memory of Egidius Seymor, who died in 1390. The tomb of Thomas Warham, some member of the family of Archbishop Warham, and who died in 1478, was a very stately structure, rich in ornamentation. Against the south wall of the old chancel stood a grand tomb commemorative of Archbishop Grindal. It was of alabaster and various coloured marbles, but was so injured by the fire that it crumbled to pieces. The recumbent figure of the Archbishop was represented clothed in his doctor's robes, the reason for which, according to Mr. Bloxam, was that Grindal had rather a leaning towards the Puritans, and disliked the episcopal habiliments. In the St. Nicholas or south-east chantry stood the tomb of Archbishop Whitgift, who, in addition to being the favourite prelate of Queen Elizabeth, was a great benefactor to the parish of Croydon, to whose inhabitants it was a disgrace that they allowed his monument to remain unrestored. Close by are the relics of the splendid monument which was erected to Archbishop Sheldon, who was the founder of the Sheldonian Theatre at Oxford,—Sir Christopher Wren's first executed building. Amongst other celebrities buried in the church was John Singleton Copley, the distinguished painter, and father of the late Lord Lyndhurst. Near to Copley's resting-place was interred Lewis Nockalls Cottingham, the architect. Above his tomb, affixed to the east wall of St. Mary's Chantry, was a beautiful monument by Flaxman, representing an angel bearing up a female.

Mr. Corbet Anderson, assisted by the vicar (the Rev. Mr. Braithwaite) afterwards conducted the visitors through and around the church, which, it was explained, was lengthened 18 ft. when it was restored after the fire, and the clearstory heightened, the east window being, in Mr. Anderson's opinion, a very much grander light than the one in the church which was destroyed. Altogether Mr. Anderson regarded the restored church as having a much finer interior than its predecessor.

* The church was destroyed on the night of the 5th of January, 1867 (see *Builder* volume for that year, p. 25). Some particulars of the restoration of the building were given in our volumes for 1869 (p. 831) and 1870 (p. 69). Illustrations of a corbel, a gurgoyle, and the pulpit, were given in our volume for 1871, pp. 761, 766.

† See *Builder*, vol. xxix. (1871), p. 759.

THE CHARTERHOUSE.

LONDON AND MIDDLESEX ARCHÆOLOGICAL SOCIETY.

AT the last evening meeting of this society for the present session, held on Monday evening last, Mr. J. G. Waller, vice-president, took the chair, and stated that the Council of the Society had drawn up a resolution of condolence with the family of the late Lord Talbot de Malahide, who was president of the society.

Mr. George Lambert, F.S.A., then read a long and interesting paper "On the Early History of the Founding of the Charterhouse." The author recounted the circumstances attending the founding of the monastery by Sir Walter de Manny in 1371, and traced the fortunes of the house down to the time of the Dissolution. Incidentally the author gave some interesting particulars as to the origin of the Carthusian order, founded by Bruno, a monk of Cologne, in 1084, the parent house of the order being La Grande Chartreuse, near Grenoble. The history of the Charterhouse subsequently to the Dissolution, and its connexion with episodes in the history of Queen Elizabeth and Mary Queen of Scots were detailed, and mention was made of the circumstances under which the property was granted by James I. to Sir Thomas Sutton for 13,000*l*. Sutton endowed it as a charity under the title of the Hospital of King James.

In the discussion which followed, the chairman, Mr. E. Walford, Mr. George Wright, Mr. E. J. Barron, Major Joseph, Col. Britten, Mr. S. W. Kershaw (hon. sec.), and Mr. E. C. Robins, took part.

Mr. Walford, as an old Carthusian, expressed his thanks to Mr. Lambert for the paper, and referred to the projected removal of the Charterhouse, which had been on the *tapis* ever since the removal of the school to Godalming. He believed it was now in contemplation to remove the hospital and the Poor Brethren to the same neighbourhood as the school. He thought he expressed the opinion of many of his old schoolfellows, who were neither radicals nor revolutionaries, when he said that they would like to see the institution removed into the country, because, with all its associations, the Charterhouse was not the place it was a few years ago. What would be the fate of the buildings he did not know. The existing hall was substantially the same, under some disguise, as the hall of the monastery, and the chapel was not materially altered. The Governor's Room remained just as the Norths and the Howards left it. Part of the old cloisters still remained, as well as the monks' kitchen. The library was a comparatively modern building of Jacobean character.

Mr. Kershaw referred to the Charterhouse as an interesting specimen of the hospitals or bede-houses which were the legacies of the old monastic institutions, and referred to the paper read before the Society by the Ven. Archdeacon Hale some years ago, dealing with the topography of the Charterhouse and its neighbourhood.

Mr. E. C. Robins and other speakers referred to the services rendered by the monks in keeping burning the lamp of art and learning.

Mr. Lambert, in replying at the close of the discussion, said he had reason to believe that before very long the Charterhouse would be removed, and the site, which was a very valuable one, situate in the midst of a thickly-populated and busy neighbourhood, sold for building purposes. Report said that great alterations had taken place of late in connexion with the Charterhouse, and that there were not so many Poor Brethren in residence there as formerly. If the buildings were to be destroyed, the marvellous chimney-piece of the hall should, at any rate, be preserved.*

It was announced that the annual City meeting of the Society would be held early in June in the Goldsmiths' Hall.

Thrift.—Last year's deposits in the Post Office savings' banks amounted to the enormous sum of 12,821,230*l*., or at the rate of 8s. 8d. per head of the population.

* Cannot the old buildings be turned to good account as they are? They should be preserved if possible.—ED.

SKETCHES ABROAD.

THE very charming volume which comes to us with this title* on the cover, is on the title-page described more properly as "Sketches in Spain," as twenty-seven out of the thirty plates are illustrations of Spanish architecture; the remaining three are from Tangiers. The illustrations are photolithographed from the author's pen drawings, which are excellent in every way, as specimens of architectural sketching, combining freedom and effect with precision of line. The choice of subjects which he has made gives a certain special interest to the book, as a large proportion of the sketches illustrate Spanish Renaissance architecture, or rather the form which the architecture of the Renaissance assumed when transplanted to Spain. Though the general characteristics of this Spanish variety of Classic architecture are familiar to most architectural readers, the remains of it have not been very largely illustrated, and the drawings reproduced here give some idea of the amount of suggestion in regard to variations in the treatment of Renaissance detail which is to be gathered from the peculiarly Spanish form of sixteenth-century architecture, which has been not inaptly termed the Plateresque or Silversmith's style. This is the style chiefly illustrated in these sketches, and the one best worth illustration on the whole; it retains the best qualities of Italian Renaissance, exhibited in a form peculiar to Spain, and remarkable for richness and elegance of detail; a form which, though it exhibits no reminiscence of Moorish detail, certainly seems coloured, in its richness and profusion of delicate ornament, by a reminiscence of the sumptuous taste of Moorish art.

In some of the buildings illustrated there is a curious mixture of Classic refinement in detail accompanied by an irregularity and want of design in the disposition of parts, such as we rarely find in the Renaissance architecture of Italy or France. This is strikingly apparent in the first plate, showing part of the Hospital of the Holy Cross at Toledo, where a doorway of the greatest richness and most symmetrical design is inserted in the middle of a blank stone wall, destitute of any architectural treatment whatever, and with grated openings and pedimented windows cut out in it almost at random, and with no features to connect them in any way. This want of keeping gives a curious effect to the whole, as if the central doorway had been brought from somewhere else and inserted as an ornament to a plain building; it is not a precedent to be followed, but it is highly characteristic and picturesque in itself. Plate II. shows another interesting and, in this case, highly suggestive combination, in the comparison between the lantern of the Giralda tower, Seville, of sixteenth-century work, and the Moorish substructure. It is remarkable how this Renaissance addition harmonises in character with the Moorish work; the small square pilasters of the lower stage of the lantern, with inlaid faces, have an effect really much more allied to Mediæval than to Renaissance feeling, and that is what frequently strikes one in the Renaissance work of Spain. The sketch of the north entrance to Granada Cathedral is still more remarkable in this way (Plate V.), as it shows an absolute imitation of the Gothic buttress form with Classic mouldings and details, with a completeness of which we hardly remember another example. Plate VII. shows, in the courtyard arcades of the Hospital at Toledo, a beautiful piece of nearly pure Italian work, but not without, even in this case, some semi-Gothic picturesqueness of effect in the proportions of the upper galleries with their low columns. Toledo, the author observes, is one of the most interesting and unspoiled of Spanish towns; the fashion of remodelling the streets and squares after French ideas not having been imported into it. "The grand mass of the cathedral, the fortress-pile of the Alcazar, the numberless towers of church and convent grouped around, all encompassed with the still-standing fortified walls and the wild scenery around on every side, form a picture almost unrivalled and not easily forgotten. The impetuous Tagus almost encircles the town, spanned by two noble bridges,—the bridges of Alcantara and of San Martino,—built and rebuilt at different ages by Romans, Moors, and Christians."

The bold and effective treatment of the cornice in some of the Classical buildings at Saragossa especially (Plates VIII. and X.) is very remarkable; and the Saragossa Town-hall (Plate VIII.), with its broad masses of wall, small deeply-recessed windows, and heavy arcade in the story beneath the cornice, combines the expression of Gothic and Classic architecture remarkably. It seems partly like a reminiscence of the style of the earlier Renaissance palaces of Florence. The author observes that this manner of building is almost peculiar to Saragossa. There must be a reason for that. Was there, historically, any special commercial or other relation between Florence and Saragossa?

We thank Mr. Bernard Smith for a very charming and interesting volume of sketches, which ought to be valued by architects not only as a pleasant book to turn over, but as embodying a great many suggestions as to new combinations, which seem only waiting to be further worked out.

* Sketches Abroad, made by Bernard Smith, architect, late Assistant Colonial Engineer, Gibraltar. London: B. T. Batsford, 1883.

EDINBURGH ARCHITECTURAL ASSOCIATION.

ON the 17th inst., at a largely-attended special meeting of this society,—Mr. M'Gibbon, president, in the chair,—Mr. R. Rowand Anderson read a paper entitled "Early Renaissance Architecture of Italy." Giving an account of the causes that led to the great architectural movement at the beginning of the fifteenth century, he described the characteristics of the Mediæval architecture of Italy that prevailed up to the commencement of the Renaissance, and showed that there was always a bias towards Roman art in it, and that the Italians never developed a consistent style of Gothic architecture, as was done by the other nations of Western Europe. The other causes were the political subdivision of Italy into numerous Republican centres, each keenly competing with one another, creating great independence of thought and individuality of character; the stimulus given to education by the Emperor Frederick II., and his contests with the Church; the enthusiasm for ancient learning of Petrarch, who was the first to suggest the foundation of public libraries. There was also his collection of coins and inscriptions, followed by the influence of Giovanni Boccaccio and Poggio Bracciolini, one of the greatest discoverers of ancient manuscripts; among others, the writings of Vitruvius Pollio, a Roman architect of the first century, whose writings on architecture have been the basis of all that has since been written on Classic architecture. At the time the Medici family rose to eminence, Florence was the capital of culture and art in Italy, and that family gave the first great impulse to building in the new style. Mr. Anderson gave the names of the leading architects and their works, and showed the freedom of treatment both of plan and of elevation that prevailed then, but that gradually drifted into a dry and formal style, strictly regulated by academical formulæ, and eventually expiring in the barocco of the seventeenth century.

The Cost of Cleansing Footways.—The Clerkenwell Vestry recently directed Mr. Irons, their surveyor, to make inquiries of other Boards as to their practice of cleansing their footways, and, from the answers received, it appears that in St. Marylebone the footways are not generally cleansed, only in exceptional cases, such as near crossings; men being paid 3½d. per hour, and boys 7s. 6d. per week. In the Strand district the footways are partly cleansed; the Strand footway is swept from Exeter Hall to Temple Bar at a cost of 130*l.* per annum. In St. Giles and Bloomsbury districts the footways are cleansed in wet weather, according to the importance of thoroughfares; men paid 18s. per week, and boys from 6s. to 12s. per week; in fine weather the boys are employed on the wood pavement. In St. Pancras the footways are cleansed as often as required; the men paid from 17s. to 22s. per week. In Islington the footways are swept at the same time as the streets, according to the importance of the thoroughfare; the men paid 5d. per hour. In St. George's, Hanover-square, and Chelsea, it has been recently decided not to sweep footways. In the Holborn district it is considered the duty of the occupiers of premises to keep footways cleansed at their own expense.

DESIGN IN ART SCHOOLS.

SIR,—The subject of my letter is one which has been frequently ventilated in your valuable paper, and its paramount importance at the present time, when technical schools are springing up throughout the country, emboldens me to crave your indulgence for a few remarks from one who has had practical experience in this matter during the past fifteen years.

The question arises, What is the system which is adopted in our art schools to produce designers, and in what respect may it be improved?

I propose, with your permission, carefully to inquire into the present system, and then to offer a few practical suggestions from my own experience, which, I trust, may not be without effect.

Design is an inventive faculty which cannot be implanted, but may be developed. The regulated system in our schools to this end consists in second-grade examinations in free-hand and model drawing, practical geometry, and perspective; then, without any intermediate stage, we come to an advanced examination in design, and the sending in of designs for national competition. These two items I wish to analyse thoroughly.

As regards the advanced examination in design, before a student is allowed to sit for this examination he must first either have passed all subjects of the second-grade examinations, or he must have already taken a third-grade prize for a design in national competition. The first condition is fair, but the latter seems absolutely absurd. One would suppose the reverse course would be more consistent, that a student should first pass an examination in design before being allowed to submit a design for national competition. Coming now to the examination itself, of what do we find it to consist? It is of the most indefinite character. A paper is given out with a list of subjects, from which the student may select one to design, the time allowed being two hours and a half. No preliminary examinations leading up to the knowledge requisite to produce a design are required. No previous intimation is given of the style or period of ornamentation which is to be adopted, but a student (and I say the word emphatically) is expected to enter for this examination, and produce in two hours and a half an original design, which, whatever may be its merits, has yet to contend against the decision of an unknown examiner, whose partiality may be inclined to Classic, Gothic, Renaissance, &c., ornament, and who is supposed to be conversant with the technical essentials of designs as applied to every branch of industry.

I next come to the subject of sending in designs for national competition, as a means of developing designers. The ultimatum of a student's ambition is to obtain a high award in national competition. Where the inducement is so great, the difficulty to a master in checking the student's aspirations and in making him understand that success in national competition will not make him a designer is equally great.

Too much stress is laid upon producing effective results. Some years ago I pointed this out to the authorities by representing to them the impracticability of some designs for carpets to which high awards had been made, and I am pleased to say that they have since made it a condition that designs of this description must in future be accompanied by a portion of the work put upon point, or squared paper. Again, the awards are disproportionate. A single design, it may be for muslin executed in a few hours by a professional designer, who joins a school for a couple of months, receives a gold or silver medal, whereas a student who has worked steadily for a much longer time, and whose collective work is equally deserving of recognition, is passed over without a prize. So long as this system of awards (I speak as applied to design) is continued, we cannot expect to do very much in developing designers, but I am glad to know that the whole system of prize-giving is likely to be re-organised, if not abolished.

My experience leads me to believe that a student entering an art-school with the view of becoming a designer, should, in the first place, be made a good draughtsman; no effort should be spared, and no encouragement be too great, to achieve this end. A knowledge of practical geometry and the general principles of perspective is most important, but I would not

make the passing in these subjects a barrier to his entering for other examinations of an intermediate and second-grade character, which I think should be introduced into our schools, and the passing of one or more of which should be made a condition before a student is allowed to enter works for national competition; for instance, examinations in the historic styles of ornamental art, in the leading elements and principles of the best periods of ornament, in the analysis of plant form and its adaptation to elementary design, and in the laws of colour. Then, when the student has obtained, by preparation for these examinations, a store of useful knowledge, by all means let him enter for the advanced examination in design, but at the same time, let him know (as in the science examinations) who is his examiner. These examinations in design should comprise subjects bearing upon the manufacturing speciality of the localities in which they are held. In this neighbourhood designing for textile fabrics is the leading feature, yet at the last examination it was not represented on the list of subjects. Further, the examiners appointed should be practical men, who are thoroughly conversant with the technical knowledge requisite to understand whether such designs were adaptable for manufacturing purposes. In the last examination one subject given was a design for a wall of a music-room to be painted on a flat surface in Italian Arabesque, or Pompeian style, with panels with not more than one figure, &c. Very few students, I fear, would be able to execute such a work, and any one doing so successfully in two hours and a half would scarcely come under the category of student. How much more satisfactory it would be if the styles of ornament to be made use of in a coming examination were made known, say three months before the examination. Students would then have no excuse for not being thoroughly versed in the leading characteristics of those styles. As it is at present, the examination is altogether too vague in character, the field of information which a student is supposed to possess is of too wide a range, and though a master may urge students to work, and prescribe a proper course of reading for them, teachers generally will, I think, bear me out that students, as a rule, will not study unless with an object in view, such as preparing for an examination the nature of which should be definite in character.

In the national competition a distinction should be made between the efforts of a student and the finished work of professional men, such as designers, art-teachers, &c., who should not be allowed to enter works for a students' competition. It is equally unfair to class for the same competition the works of amateurs who have the whole day for study with those of the hard-worked artisans who attend our evening classes after their day labour.

The annual exhibition, again, to be representative, should comprise the best works in the elementary, as well as in the advanced stages. I cannot understand why a laboured sheet of copies from Owen Jones's Grammar of Ornaments should be more favoured than a good shaded drawing from models requiring far more ability in a correct rendering of light and shade. If the above suggestions were carried out, I believe the results would prove most satisfactory. The annual exhibitions of works might not be so numerous and promiscuous in character, but unquestionably they would be more representative, and, as regards design, the possibility of our schools fulfilling more effectually one of the intentions for which they were originally established, viz., supplying designers for manufacturers, would be far more fully realised.

I believe our schools have done much good in the past, and that the very great improvement in the public taste is due in no small measure to their teaching; but I am also of opinion that with fewer restrictions, less of the high-pressure system of payments upon results, a more comprehensive scheme of intermediate examinations, and a more equal encouragement to all classes of our students, results of a still more satisfactory nature would ensue.

W. H. STOPFORD,
Head Master, School of Art, Halifax.

Leatherhead Sewerage. — The Epsom Rural Sanitary Authority has appointed Messrs. Smith & Austin, civil engineers, of Hertford and Westminster, to carry out a scheme of sewerage and disposal for the special drainage district of Leatherhead.

FELT HOUSES.

AN officer in the German cavalry has invented a form of transportable dwelling, which he considers will do much to obviate the inconveniences of bivouacs and the dangers to health often resulting from them. These houses are made of felt, impregnated with substances which render them impervious to water. The idea is intended to apply specially to hospital tents and the larger kinds of such dwellings. In addition to being watertight, these tents are cool in hot weather, and, to some extent, are able to moderate a severely cold temperature. They can be packed into a few comparatively small boxes, and ventilation is duly provided for. They resist hurricanes better than linen tents. Their erection and removal is very simple, and their cost is said to be small in comparison with that of linen tents. They have been permanently introduced into the Danish army. The *Vossische Zeitung* says that leading medical authorities have approved of them.

ADDITION TO THE ORPHAN HOMES, HEADINGLEY, LEEDS.

THE Headingley Orphan Homes are amongst the institutions which have been built and are maintained by the results of prayer and faith. We will not discuss what the result would probably be if the principle were depended on largely.

The new building is a Sanatorium, and provides accommodation for about twenty children, besides the matron. It will at present be used chiefly by children in delicate health who require rather more attention than can be devoted to them in the other Homes, and the remainder of the number will be made up by other children of infantile age. The exterior of the building is designed in a half-timbered Domestic Gothic style, somewhat after the manner of the sixteenth-century country houses that are to be found in Cheshire and some of the Midland counties. An arcaded wooden verandah runs along the west front, forming a pleasant sheltered recess in which the children may sit. The building is carried out in brickwork of a deep red colour, red terra-cotta from Messrs. Wilcock & Co., of Burmantofts, being used for the mullioned and transomed bay-windows, string-courses, and other features. The whole of the woodwork in the overhanging gables, verandah, and other parts of the exterior is painted in an artistic shade of peacock bluish gray, the cemented panels being finished a vellum tint. The ground-floor contains the following:—Vestibule and spacious interior hall; convalescent room, 18 ft. 6 in. by 15 ft., with large bay to south; matron's room, 15 ft. by 14 ft. 6 in., with large bay-window facing the west; kitchen, 15 ft. by 13 ft. 6 in.; store-room, larder, scullery, and coal-place. The first floor comprises two large, well-lighted dormitories, one for boys (size 19 ft. by 15 ft.), the other for girls (18 ft. 6 in. by 15 ft.), the matron's bedroom being placed between the two, and having small windows looking into each apartment, to be used for supervision purposes. The remaining floor space is utilised for bath-room and lavatories, linen store-room, and other necessary accommodation. On the second floor are two bedrooms, the larger one for children, and the other for the domestics. The interior is chiefly noticeable for the rather unique style in which the woodwork and walls are painted and coloured. The woodwork of the hall, staircase, and upper landings is painted the colour of Japanese red lacquer; the bedrooms are painted a quaint shade of bluish grey; a sage-green leather colour is adopted for the matron's and convalescent rooms, and a serviceable brown for the other apartments. All the ceilings are finished in cream colour, a pale shade of Pompeian red and a quiet tone of greenish drab being used for the various wall surfaces. The vestibule, hall, kitchen, and verandah floors are paved with red tiles. Noticeable features in the convalescent and matron's rooms are two chimney-pieces, specially designed by the architect, constructed in celadon green-glazed Burmantofts faïence. The gas-fittings, of artistic design, in brown bronze and wrought iron, finished black, were provided by Messrs. Strode & Co., of London. The leaded stained-glass staircase window came from the atelier of Messrs. Powell Brothers, of Park-square. The work has been carried out from the designs and under the superintendence of Mr. William H. Thorp, architect, of St. Andrew's Chambers, Park-row, Leeds. The contractors for the work were as follow:—Mr. John Pickard, Dorrington-street, mason and bricklayer; Messrs. Eddison Brothers, Kirkstall, carpenters and joiners; Mr. James Season, Hunslet-lane, slater; Messrs. Barrand Brothers, Carlton-hill, plumbers and glaziers; Mr. William Holdsworth, Leighton-lane, plasterer; Mr. J. Walker, Headingley, painter. The total expenditure, including architect's commission, gas-fittings, road-making, &c., amounts to 973*l.* 11s.

THE DUTY ON WOOD IN GERMANY.

THE guild of Stettin merchants has sent a petition to the German Parliament asking for the duty on wood not to be increased. From the explanations given, it would seem that quantities of wood are received at Stettin from Russia and other sources of supply. This wood is prepared at the Stettin woodyards for various foreign markets, and is exported (mostly in German vessels) to England, Belgium, and France. It is thus transit business, involves an industrial operation in German territory. The amount re-shipped is valued at 150,000*l.* annually, and of this amount one-third is represented by the cost of the labour executed in Germany; while the freight earned by the German vessels engaged in the trade is by no means an unimportant item.

BUILDING ACTIVITY IN BERLIN.

THE *Baugewerks Zeitung* remarks that building is being pushed forward in Berlin with much activity. In the old quarters many houses are being cleaned down and rebuilt, and in some of the more modern portions of the city repainting is being done on an extensive scale, and structural alterations are being carried on in cases where they are rendered necessary by the increasing requirements of the tenants. In some instances new buildings are being erected of a class which will not be permitted under the new building regulations.

In the western portion of the city, however, there are scarcely any other buildings than new ones, which are planned in such a way as to meet the requirements of modern times as to light, air, water, and elegance. While the building of private houses is thus on the increase, there is a decided reduction in the number of public buildings in course of erection as compared with last year. The normal scale of wages is 4½*d.* an hour, but some employers are paying less, it is remarked.

PRICE OF BUILDING LAND AT HENDON.

THE increasing value of building land at Hendon is shown by a sale which has just been held by Mr. Richard J. Collier, at the Auction Mart. The property consisted of a freehold building estate, with frontages to the main Edgware-road, close to the Hendon Station on the Midland Railway, and near the Welsh Harp. The property comprised 27½ acres, in two lots. In the course of the auctioneer's remarks he stated that the Midland Railway Company had taken about two acres to widen their line, at the rate of 1,700*l.* per acre, and that the estate was within the limits of the proposed London, Hendon, and Harrow Railway, which would join the Midland line at the Hendon station. The first lot, consisting of 12½ acres, was sold for 9,600*l.*, the second lot, containing 15 acres, being bought in at 9,780*l.*

Memorial. — An interesting monument, sculptured in statuary marble from the studio of Mr. Jas. Forsyth, has just been uncovered in one of the bays of the north aisle of St. Paul's Cathedral. It is in memory of the deceased officers and men of the 7th Royal Fusiliers who lost their lives in the Afghan campaign of 1879-80. This work, like all others of the kind now admissible in the cathedral, is of a sacred character. The subject chosen for the present work was suggested by the text, "Is not this the blood of the men who went in jeopardy of their lives?"—2 Samuel xxiii. 17. The base of the monument contains the badge and insignia of the regiment. The dedication and names of those commemorated appear on a brass underneath. The memorial is erected by their surviving comrades and friends.

BUILDERS' BENEVOLENT INSTITUTION

An election of four pensioners on the funds of this institution (which was founded in 1847 for allowing pensions to necessitous masters of the various branches of the building trades and their widows) was held on Thursday last, at Willis's Rooms, St. James's, Mr. F. J. Dove (Dove Bros.), in the chair.

There were vacancies for three men and one woman, and there were eight candidates, seven of whom were men. The candidates were William Mansell, Little Titchfield-street, aged 64 (second application); Edward Bagridge, Usher-road, Bow, aged 60 (second application); J. C. Crittenden, Burton-road, Brixton, aged 79; Henry Johnson, Olinda-road, Stamford-hill (a former subscriber and vice-president of the Institution), aged 60; John Page, Ball's Pond-road, aged 73; William Voysey, Manor-street, Clapham, aged 71; William Humphrey, Barnes-green, aged 65; and Ann Mills, Trinity-square, Brixton, aged 71, widow of Charles Mills, builder, late of North-street, Clapham. The poll was open from two p.m. to four p.m.

The scrutineers, Messrs. Thos. Stirling and T. F. Rider, announced the result of the voting to be as follows, viz.:—John Page, 1,203; Henry Johnson, 1,162 (inclusive of 170 votes placed to his credit in respect of his subscriptions to the Institution in the days of his prosperity); J. C. Crittenden, 766; E. Bagridge, 427; W. Mansell, 333; W. Humphrey, 204; W. Voysey, 135; and Mrs. Mills, 40.

The successful candidates were, therefore, J. Page, H. Johnson, J. C. Crittenden, and Mrs. Mills.

Votes of thanks to the chairman, scrutineers, and vote-checkers terminated the proceedings.

LONDON ÆDILES.

Dr. Norman Chevers delivered an address on Wednesday last at No. 9, Conduit-street, on the objects of the Sanitary Assurance Association, which he entitled "The London Ædiles," Mr. George Aitchison, A.R.A., in the chair. Dr. Chevers compared the sanitary condition of ancient Rome and modern London, and referred to his experience in Calcutta, and he urged that the sanitary condition of London was such that no householder should be satisfied without the assurance of some competent authority that his dwelling, whether a palace or a cottage, was free from drain contamination. He expressed an opinion that consumption was hereditary principally because successive generations neglected to remedy the sanitary defects from which their forefathers suffered. The lecturer was most impressive in his delivery, and illustrated his discourse by interesting diagrams.

A discussion followed, in which Sir Joseph Fayer, F.R.S., Mr. H. Rutherfurd, Mr. Cave Thomas, Mr. Mark H. Judge, and others took part, and a desire was unanimously expressed in favour of the lecture being re-delivered to a popular audience in Exeter Hall or some other capacious building.

MARKET VALUE OF GAS SHARES.

At each sale of gas shares in companies in and around the metropolis, the property fully maintains its value, whilst in some cases increased prices have been realised. This happened at a sale of Wandsworth and Putney Gas Stock which took place at the Auction Mart last week, Messrs. Murrell & Scobell being the auctioneers. The property offered consisted of 12,000*l.* worth of new ordinary seven per cent. stock, which was submitted in lots of 100*l.* stock each. There was a numerous attendance, and all the lots were sold, realising an aggregate sum of 16,529*l.*, or a premium of forty per cent. A similar sale of shares in this company a short time ago realised an average of from 30 to 35 per cent. premium.

RAIN CONDUCTORS.

Sir,—Would some of your correspondents give me any information as to "Rain Conductors"? The cast-iron circular pipes, 3 in. and 4 in. bore, are so liable to crack from weather or other causes, that an improvement becomes most requisite. In those I have round a large building, about half have split in the lengths of 6 ft. and 3 ft., pouring the water upon the walls and becoming both a cause of damp and an eyesore to the building.

Surely the science of the present day could offer some improved forms of pipe for this purpose. A. B. C.

BUILDING PATENT RECORD.*

APPLICATIONS FOR LETTERS PATENT.

2,417. J. Whitehouse, Tipton. Stench-traps for street gutters, &c. May 12, 1883.

2,420. G. W. von Nawrocki, Berlin. Apparatus for lighting fires. (Com. by C. Poekel, Berlin.) May 12, 1883.

2,425. T. Parkinson, Blackburn. Water-closets May 12, 1883.

2,444. H. Charters, London. Fasteners for windows, &c. May 15, 1883.

2,475. A. Rudolph, San Francisco, U.S.A. Window-sashes. (Comp. Spec.) May 17, 1883.

NOTICE TO PROCEED

has been given by the following applicants on the date named:—

May 15, 1883.

162. J. Shaw & F. Milan, Lockwood. Apparatus for indicating the presence or absence of water in cisterns, &c. Jan. 11, 1883.

213. E. A. Showell & C. Turner, Birmingham. Sash and casement fastenings. Jan. 13, 1883.

341. F. Trier, London. Machinery for dressing, shaping, &c., stone and the like. Jan. 20, 1883.

May 18, 1883.

238. H. H. Lake, London. Water-closets. (Com. by J. Bennor, Philadelphia, U.S.A.) Jan. 15, 1883.

753. J. H. Johnson, London. Sawing, shaping, &c., stone, marble, &c. (Com. by G. Westinghouse, Pittsburg, U.S.A.) Feb. 10, 1883.

ABRIDGMENTS OF SPECIFICATIONS.

Published during the Week ending May 19, 1883.

4,437. S. C. C. Currie, London. Fastenings or clutches for blind cords and wires. Sept. 19, 1882. Price 2d.

A knee-shaped piece of metal is pivoted at its head to the window frame, the upper end of which is weighted to allow the cord being jammed by the lower end against a stop. (*Pro. Pro.*)

4,449. W. Y. Stevens, Bristol. Combined range and register grates. Sept. 19, 1882. Price 4d.

The range is fitted with a sunk grate between the oven and the boiler, which has a solid base ridged and perforated, and fitted with a gas bar and burners by using which coke can be burned in the grate.

4,466. E. Edwards, London. Apparatus for closing, fastening, and adjusting movable ventilator and window frames, &c. (Com. by A. Descaves and D. Halut, Paris.) Sept. 19, 1882. Price 6d.

This consists of a drum with helical teeth actuated by an endless screw. The axis of the drum is prolonged and governs the motion of the window-frame. Two grooved spheres are used in the prolonged axis to form a union joint.

4,479. W. McNicol, Leith. Appliances for securing windows. Sept. 20, 1882. Price 2d.

A bolt is fitted in a tube in the inside sash, which is projected forward by a spring into the outer sash. A knob draws the bolt back. (*Pro. Pro.*)

4,495. W. R. Lake, London. Manufacture of bricks. (Com. by H. R. Dickinson, Hamilton, U.S.A.) Sept. 20, 1882. Price 6d.

The apparatus consists of a circular table in which the moulds for the bricks are arranged in pairs. As the table revolves the clay is filled into one pair of moulds, which are then brought under a plunger to be pressed, and when the table again revolves the movable bottoms of the moulds are lifted by an inclined plane below, and the bricks are expelled and passed on to a table at the side.

4,509. F. H. Noott, London. Drain pipes. Sept. 21, 1882. Price 4d.

The ends of these pipes have only half a flange or faucet, so that they can easily be disengaged from each other.

4,514. J. W. Cook, London. Temporary partitions or screens for class-rooms, &c. Sept. 21, 1882. Price 6d.

Flaps are hinged to the backs of the forms or seats, which when turned up form the partitions required.

4,544. E. Wery, London. Compound atmospheric funnels. (Com. by G. E. Wery, Paris.) Sept. 23, 1882. Price 6d.

For ventilating and other purposes a funnel is used in which are a series of spiral blades and round which is a jacket open at both ends, but of a smaller diameter at the top than at the bottom, so that as the external air enters at the bottom part of it is forced through spiral openings into the funnel to increase the draught therein

4,550. J. Shaw & F. Milan, Lockwood. Indicating the presence or absence of water in cisterns. Sept. 25, 1882. Price 6d.

On a pipe from the cistern is an indicator within which is a flexible diaphragm connected with the pointer on the indicator. The pressure of water on the diaphragm actuates the pointer, but when there is no water the pointer revolves until it reaches an electric contact make, when alarm-bells are sounded.

4,618. E. Whillier, London. Fire-grates or stoves. Sept. 28, 1882. Price 6d.

These have lateral flues which open into a combustion-chamber, where the smoke is burned.

4,655. R. Hudson, Gildersom. Metallic staircases. Sept. 30, 1882. Price 6d.

The risers and treads are formed of metallic plates, each plate forming one riser and one tread. When the plates are bent to the required shape they are bolted or riveted together, and the ends are secured to stringers at the sides.

* Compiled by Hart & Co., Patent Agents, 186, Fleet-street.

"LOOKING BACK."

Sir,—Under this heading there appeared in your impression of a fortnight ago a heartrending wail for the past, and a doleful prognostication for the future. That the article seems to challenge an answer from one of the younger men of the profession must be my excuse for asking you to find a corner for this letter in one of your columns. We are accused of apathy, of wanting a *motif*, an ideal, &c., and of having no "dream." Ay! that is it, we have no dream. It is granted, then, that the Gothic revival was, like other revivals, a dream,—a dream which has taught much to those who interpret it aright, and has left them better and truer artists, but still a dream; that the "fine frenzy" of its whilom apostles, which the writer shared, and the death of which is really the text of his present jeremiad, was, perhaps, a nightmare. What if we have awakened, and find the hope of re-vivifying dead styles to be as barren as that of breathing life into dead bodies; that the enthusiasm which worships one phase of art and damns the rest is silly and useless, and little to be respected, whether the idol be "Early English," Greek, or Japanese; that to decline to see the beauty of a Greek temple or the grandeur of a Roman amphitheatre because we admire a Gothic cathedral is childish folly; that to babble of truth and declaim against double domes and marble-faced concrete, and then to construct high-pitched roofs over vaults, and stone piers with rubble cores, and great solid-looking turrets containing nothing, and for which there is no use, is, after all, simple hypocrisy. No, sir; we are not enthusiastic for any particular style. We love beauty and truth, and hate ugliness and lies wherever we find them. Our admiration is not for a Gothic cathedral only, but for it and for a Classic temple also; and our aim and hope is to seize and master the perfections of each, and combine them in our own works. Though we as firmly believe in, and are as determined as our forerunners and masters to stand by, those broad principles which they enunciated, and which we believe to be good and true, we prefer to study how to practise rather than further to enforce them.

Our search is not for a past style to imitate; it is not our aim to fit the architecture of a thirteenth-century church to a nineteenth-century railway station; it is not our hope to have our works mistaken for those of another country or a past generation. Our search is for those true principles which underlie all styles; our aim is to shake off those fetters which bind us to, and mark each of us as the slave of, some mediæval monk or Italian revivalist. Our hope is that our works will in the future be recognised and admired as the reasonable and beautiful productions of our own age, as well as of our native land, and that men will say of us that we did indeed not only "design with beauty," but also "build in truth."

Frank T. Baggallay.

CURIOUS DISCOVERY IN STEYNTON CHURCH, PEMBROKESHIRE.

Sir,—On removing the step leading into the chancel of this church a few days ago, a very perfect human skeleton was found barely a foot below the surface, and by its side three skulls of horses as well as an iron pike-head. Can any of your archæologist readers shed any light upon this strange circumstance?

I may also mention that some months back, when the old broken plastering was stripped from the nave walls at the commencement of the restoration, there was found in the centre of the wall above each of the four piers of the arcade, and some 7 ft. or 8 ft. from the floor, a hole measuring about 7 in. square and about 3 ft. long, and in each of these was a human thigh-bone.

This is the parish church of Milford, and during the great Civil War it is reported to have been frequently occupied by the contending parties.

E. H. Lingen Barker.

COMPENSATION CASE.

WILCOXON v. METROPOLITAN AND DISTRICT RAILWAY COMPANIES.

This case, which more especially related to the widening of the streets in connexion with the Inner Circle Railway, came before the Recorder, Sir Thomas Chambers, and a special jury, at the Guildhall, on Monday last. The premises in question were 60, King William-street, having a circular frontage opposite the end of Eastcheap. The claimant was Mr. A. S. Wilcoxon, the lessee of the premises, and the defendants the Metropolitan and Metropolitan District (City Lines and Extensions) Joint Committee. The amount of the claim was 17,800*l.*

Mr. A. S. Wilcoxon, the claimant, stated he lived in Berkshire, and he was lessee of these premises, 60, King William-street, which he sub-let to Messrs. Bull & Co., bootmakers. The freeholders of the property were the Corporation of London, and they were leased in 1832 for 80 years at a ground-rent of 90*l.* to a Mr. Dumerque, who granted a lease for 21 years to the claimant. In 1871 witness became the lessee of the original lease, and thus his own landlord, by paying 4,500*l.* for the remainder of the term. Mr. Bull had been in the service of his father and himself on these premises ever since he was twelve years old, and in 1864 his father let them to Mr. Bull for 14 years at 525*l.* a year, with a premium of 1,500*l.* At the expiration of this term the lease was renewed at a rent of 750*l.*, on payment of 2,000*l.* premium, for a period of 8 years from September, 1878. Witness, therefore, now held the premises for 29¾ years longer, subject to an underlease to Mr. Bull, terminating in 3¼ years. Including the premium, it made an income of 1,070*l.* a year.

A number of expert witnesses having been called, *pro* and *con.*, the jury, after hearing the addresses of counsel and the summing up of the Recorder, returned a verdict for 15,000*l.*

CLAIM AGAINST BUILDERS.

Last week a case came before the Bow County Court, in which the plaintiffs, Bennett and another, carpenters and pile-drivers, residing at Hampton Cottages, Barking, brought an action against Messrs. Parrish & Co., builders, of the St. Anne's Works, Limehouse, to recover a balance of account, amounting to 11*l.* 14*s.* On the part of the plaintiffs it was stated that they were parties whose business it is to drive wooden piles, and early this year a contract was entered into by them with the defendants, whereby they undertook to drive a certain number of piles for them. The defendants agreed to pay for "shoes" and other things necessary to be used to clear the ground, but this not having been carried out the plaintiffs had to use wood for what is called "dollying." The result was that a fresh agreement was entered into between the plaintiffs and the defendants, under which the latter undertook to pay 11*3.*, involving the payment of 3*s.* for each pile "dollied." Weekly and other payments were made up to 102*l.*, when the defendants objected to pay any more, and the plaintiffs now sued for the balance named.

On the part of the defendants it was stated that the only point in dispute was measurement, and according to measurement they contended that they had paid for the work done by the plaintiffs, with the exception of 4*l.* 6*s.* 2*d.*, which they had paid into court.

After some conversation between the counsel of the parties, the judge ordered the case to be referred to the Registrar of the Court for arbitration, as it appeared to be a difference on a matter of account. Should the reference to the Registrar not be satisfactory he would direct the matter to be settled by an engineer.

Alexandra Park.—The Bill promoted by the owners of the ill-fated Alexandra Palace, for giving them authority to turn the whole of their land, 150 acres in extent, into building sites, has been withdrawn. Parliament, in 1866, sanctioned the making of certain railways to the Palace, on the express condition that the Palace grounds should be used in perpetuity as a place for public resort and recreation. A year or two later the proprietors succeeded in obtaining from Parliament a release of this condition as regarded about 50 acres, and villa residences have been built over this area, on the faith that the adjoining grounds, about 150 acres in extent, would remain an open space in perpetuity. It is suggested that the land be purchased and dedicated as a public park by the Corporation of London or the Metropolitan Board of Works. Nearly the whole area is outside the district of the latter body, so that the Corporation would be enabled to apply the metage on grain duty for the purposes of the purchase, while the amount of the purchase-money should, of course, be calculated with reference to the restrictions imposed by Parliament on the use of the land. The Hornsey Local Board has been discussing the subject.

Fires in Theatres.—The Society of Arts propose to hold a public meeting on Thursday, the 31st inst., at three o'clock, to consider and discuss a report which has been prepared by a committee of that body on the best means o preventing loss of life from fires in theatref and other places of public resort.

Books.

WEALE'S RUDIMENTARY SERIES.

A Rudimentary Treatise on Clocks and Watches and Bells. By Sir Edmund Beckett, Bart., LL.D., &c. With numerous illustrations. Seventh edition, revised and enlarged.

Plumbing: a Text-Book to the Practice of the Art or Craft of the Plumber. With supplementary chapters upon House Drainage, embodying the Latest Improvements. By W. Paton Buchan, Sanitary Engineer and Practical Plumber. Fourth edition, revised and enlarged. With above 330 illustrations.

Rudimentary Treatise on Wells and Well-sinking. By John Geo. Swindell, A.R.I.B.A., and G. R. Burnell, C.E. With illustrations. Revised edition, with a new Appendix on the Qualities of Water.

Details of Machinery. Comprising Instructions for the Execution of various Works in Iron, in the Fitting-shop, Foundry, and Boiler-yard. Arranged expressly for the use of Draughtsmen, Students, and Foremen Engineers. By Francis Campin, C.E.

The Smithy and Forge. A Rudimentary Treatise, including Instruction in the Farrier's Art, with a Chapter on Coach-smithing. By W. J. E. Crane. With numerous illustrations.

A Practical Treatise on Handrailing. Showing New and Simple Methods for Finding the Pitch of the Plank, Drawing the Moulds, Bevelling, Jointing-up, and Squaring the Wreath. By George Collings. Illustrated with plates and diagrams.

London: Crosby Lockwood & Co., 7, Stationers' Hall-court, Ludgate-hill. 1883.

It would be wasting our space to enlarge to any extent upon the general usefulness and value of the series of rudimentary treatises undertaken by the late Mr. Weale, and published by Messrs. Lockwood & Co. Its excellence is now so well appreciated that the reviewer's part is reduced almost to chronicling fresh editions, or to briefly mentioning new additions. It is our intention to do no more than this in the present instance.

Sir Edmund Beckett's "Clocks and Watches and Bells" has now reached its seventh edition. The author has made it as complete as possible, introducing new matter and making alterations where necessary. The portions of the book dealing with clocks and watches have now been written by him for the ninth time, the articles on those two subjects, abridged from this work, appearing in the seventh and eighth editions of the "Encyclopædia Britannica." It is well understood that clockmaking and watchmaking cannot be learned from a book, and the author, therefore, attempts no more than teaching the principles of horology, and so much practical knowledge as may be useful both to clockmakers and to amateurs who wish to make, or direct the making of, their own clocks of superior character. This is still more true of watchmaking. Nobody can learn the details of watchmaking from a book; that art must be acquired by hard work, and from his manual dexterity and practice depends the success of a watchmaker as such. Yet even to him the book will be of great assistance. There is no greater authority on bells than Sir Edmund, and there is no other treatise in the English language which deals so thoroughly with their proper construction, shape, composition, and the best modes of hanging. No man has done more, by the help of long experience and many special experiments, to revive an art which had sunk to a lower ebb thirty or forty years ago than it had ever reached in the thousand years or more since large bells were first made.

Mr. Buchan's work on "Plumbing" is a text-book which may be safely put into the hands of every young plumber, but which will also be found useful even by architects and medical professors. It speaks well for the popularity of the book that it should have passed through four editions. The present edition has been thoroughly revised, and some fresh chapters have been added, especially those relating to house drainage. Time has shown how necessary it is to pay close attention to the state of the sanitary fittings of our houses, if the health of the inmates is to be preserved. For this reason the book ought to be commended also to the sanitary engineer.

The alterations made in the revised edition of "Wells and Well-sinking" are but few, being principally verbal corrections in places where the meaning was obscure. The matter has, however, been re-arranged in several places and some portions of the old text removed. The principal addition consists in the new chapter, "Notes on Deep Artesian Wells made after 1851," written by Mr. Burnell, and now appearing for the first time. Another important addition, "The Qualities of Water," has been put in an appendix.

In introducing his treatise on "Details of Machinery" to the engineering public, Mr. Campin has throughout adhered strictly to simple arithmetic. The calculations are illustrated by examples worked out in full, in order to render the mode of working the rules practically perfectly clear. There is, as far as we know, no work in existence specially devoted to details of machinery, and the author has done well to supply the want felt by draughtsmen and foremen engineers for such a guide.

In adding Mr. Crane's "Smithy and Forge" to Weale's Series, Messrs. Lockwood have filled a void. Although the art of the smith is the most ancient of human handicrafts, strangely enough no craft has been so neglected in modern technical literature, especially in our own country. The present, therefore, is the first modern English book on the subject, and as great pains have been bestowed by the author upon it, especially on the chapter on farriery, shoeing-smiths will find it both useful and interesting. We should add that the chapter on "Coach-smithing" is from the pen of Mr. H. J. Witten, of Sheffield, and that on "Ancient Ornamental Ironwork" is mainly by Mr. C. J. Hall.

The author of "Handrailing" (Mr. George Collings) has been employed for several years as a practical handrailer. The art of handrailing is a difficult one, and has been the subject of much discussion,—as the pages of the *Builder* have witnessed; but, notwithstanding that the question has been fully ventilated, and perhaps because of that fact, great difficulty is still experienced in applying the methods given in the various works which have been published on the subject. This was the case with the author. Guided by what he has acquired by practice, therefore, he has worked out a method of his own, which he presents to his fellow workmen with a hope that it may meet with their acceptance. As we are of the opinion that there is no better teacher than practice, we have no doubt that the little work will be found of practical utility in the execution of this difficult branch of joinery, and we commend it as a guide to those to whom it appeals.

Dictionnaire technologique dans les Langues française, anglaise, et allemande. Renfermant les termes techniques usités dans les arts et métiers et dans l'industrie en général. Rédigé par M. Alexandre Tolhausen, traducteur près la Chancellerie des Brévets d'Invention à Londres. Revu par M. Louis Tolhausen, Consul-Général de France. Français-allemand-anglais. Troisième édition, augmentée d'un grand supplément. Leipzig: Bernhard Tauchnitz, 1883.

Grand Supplément du Dictionnaire technologique. Same authors and publisher.

There is no denying the fact that, in dictionary making, and in a good many other pursuits, Germans,—to use a slang American term,—"lick creation." We do not know whether Mr. Alexander Tolhausen considers himself by this time an Englishman; but of his German extraction, no one who has the pleasure of knowing him will entertain the slightest doubt. If there were nothing else in this proof of our hypothesis, his dictionary-making propensity stamps him as a Teuton. In referring to that national peculiarity, however, we have in our mind, in the first place, that bugbear of English authors, Herr Bernhard Tauchnitz, who, with all his sins of commission and omission, has done more to make their works popular in Germany than any man living. But it is not in the light of trespasser that we desire to look upon him; we wish to point him out as a benefactor of a portion of humanity at least, whose thanks the Leipzig publisher has so fully earned by the issue of his dictionaries, both general and technical. There is hardly a spoken tongue which has not been transformed into book shape by the Leipzig firm. Technical dictionaries form a large proportion of their published books; and although only the technical translator knows that, even with the best dictionary at hand, renderings from one language into another require practical knowledge and intelligence, yet a good dictionary is a welcome help. We

may say of Mr. Tolhausen's trilingual books that they are a very great help to assist the tortured brain. The fact that the work has passed through three editions since 1877, although there appears to have been no change made in it beyond altering the title-page, proves that there is a large demand for it. Probably in order to save the heavy expense which an entire reprint would involve, the publisher has chosen to issue a Supplement containing such terms as have come into use since the first edition was printed. We do not wish to say that this is not the cheapest way of adding to a book; but it is certainly not the best plan. We hope that, when another edition sees the light, the whole additional information will have been incorporated in one volume.

Japanese Marks and Seals. By JAS. LORD BOWES. London: Henry Sotheran & Co., 1882.

WHEN Mr. Chaffers and others proceeded to collect, arrange, and publish the marks found on pottery, china, and faïence generally, much praise was justly given for the patient industry displayed, and the advantages which followed. In the book now before us the work by Mr. Bowes would seem to have been even more difficult and the result more remarkable. The information given is usually fuller than that given by Chinese and European potters, and makes the identification of the works of the Japanese potter an interesting study. The earliest marks are those found upon the earthenware and stoneware vessels attributed to Bizen and Owari during the thirteenth and fourteenth centuries. The manufacture of porcelain, says Mr. Bowes, was introduced into Japan by Gorodayer Shonsin, who settled in Hizen upon his return from China A.D. 1513, and there commenced the industry which was brought to perfection a century later by a Corean potter named Risampei. Exportation to other countries commenced in 1641.

There is much general information to be obtained from the book, and to collectors of Japanese wares it is indispensable.

VARIORUM.

"Hydrostatics; or, Theoretical Mechanics," Part II., by J. T. Bottomley, M.A. (London: W. Collins & Co.), is intended as a sequel to the same author's "Elementary Dynamics." The two books follow the programme prescribed by the Science and Art Department for the subject of elementary theoretical mechanics, and, taken together, from a complete course in that subject.

Miscellanea.

Artists' General Benevolent Institution.—The sixty-eighth anniversary dinner of this institution was held at Willis's Rooms on Saturday evening last, the Right Hon. Sir S. Northcote in the chair. The object of the institution is to extend relief to distressed meritorious artists, whether subscribers to its funds or not, as well as to their widows and orphans; merit and distress constituting the claims to its benevolence. Since the establishment of the society in 1814, 3,989 donations have been granted, in sums amounting in the aggregate to 64,544*l.*; and in the course of the last year the amount of 3,548*l.* was distributed among 145 applicants in sums varying from 10*l.* to 70*l.* During the evening Mr. P. Hardwick, the treasurer, announced the sums collected by the various stewards of the dinner, which, together with the sums received by Mr. Millais and himself, amounted to the handsome total of 2,507*l.*

Liverpool Society of Painters in Water Colours.—The twelfth annual exhibition of the Liverpool Society of Painters in Water Colours was opened to the public on Monday last, in the Old Post Office-place Exhibition Rooms. A new entrance has lately been made to these rooms from Church-street. The new entrance to the gallery is called St. Peter's Hall, and it is much better lighted and far more attractive than the old one in Old Post Office-place. The gallery itself has been cleaned and renovated. The exhibition contains a selection of water colours, and is described as being above the average, not only in quantity, but also in quality. Last year the number of water colours hung was 323; this year there are 387, showing an increase of 64.

St. Giles's Cathedral, Edinburgh, and the late Dr. William Chambers.—The work of restoring St. Giles's Cathedral, Edinburgh, is now all but completed, and the restored church was re-opened on Wednesday last by the Earl of Aberdeen, Lord High Commissioner to the General Assembly. We shall have more to say of the building on a future occasion. Unhappily, Dr. William Chambers, by whose munificence the cost of the restoration (estimated at 50,000*l.*) has been defrayed, died on Sunday last, full of years and honours. His was a remarkable career. How, by frugality, industry, and study, he rose from a humble station to be the co-founder, with his brother Robert, of a great publishing firm,—a firm which became great by leading the way in the provision of cheap, elevating, and useful literature for the people,—all this has been told at length elsewhere. We only need stay here to refer to the useful scheme of public improvements which he initiated when Lord Provost of Edinburgh, and to his munificence in founding the Chambers Institution in his native town of Peebles. The history of his life is that of a well-spent career,—one fraught with lessons for emulation. He was in his eighty-third year at the time of his death, and had not yet received the patent of the baronetcy which her Majesty had signified her intention of conferring upon him.

Demand for Labour in Canada — On Tuesday in last week the following cablegram was received, we are informed, by Mr. H. H. Board, 98, High-street, Homerton, London, E., from Mr. John James Jones, director of the London Samaritan Society, who left Liverpool per ss. *Oregon*, of the Dominion Line, on May 3rd, with a party of 500 emigrants to Canada: —"All well. Five thousand fresh applications for farm and general labourers, domestic servants, and mechanics. Make arrangements for as many as possible for June 28th." It may be stated that this demand was the result of previous negotiations with Government and other labour agents throughout the Dominion, which is the direct object of the London Samaritan Society's scheme.

Surveyors' Institution.—The annual election of president, vice-presidents, council, and professional associates will take place next week, and we see that Mr. T. M. Rickman has been nominated for a seat on the council. Much has been said during the past year as to the necessity of a body which should adequately represent the responsible profession of quantity surveyors, and it has been claimed that such a body exists in the Surveyors' Institution, which contains a considerable number of the leading members of that profession. If this be so, it is very desirable that they should be properly represented on the council.

Re The Great Fire in Wood-street.—Messrs. Measures Bros. & Co. have been selected in competition to supply and fix the constructional ironwork for Messrs. Foster, Porter, & Co.'s new premises. We believe this is the sixth case within the last few months, in which this firm have had the re-construction of buildings in ironwork after having been burned out.

Ventilation of Public Buildings.—Messrs Robert Boyle & Sons' system of ventilation has recently been, or is at present being, applied to the new hall of the Medical Society of London; Christ's Hospital (Blue Coat Boys); German Hospital; new Police Station, Shepherd's Bush; new Police Station, Hornsey; Law Courts, Salisbury; and new Naval Barracks, Keyham, Devonport.

TENDERS.

For painting and other work at the Kensington Infirmary, Marloes Road, as per schedule of prices, for the Guardians of Kensington. Messrs. A. & C. Harston, 15, Leadenhall-street, architects:—

	Per cent. above.	Per cent. below.
Fawkes	10	—
Thorne	10	—
Haynes	7½	—
Robling	7	—
Fleming	5	—
Hucks	4	—
Childs*	—	—
Garratt*	—	—
Targett*	—	—
Gibbin	—	2½
Campkin & Son	—	2½
Derly	—	5
Kearley	—	5
Wythe	—	5½
Coombe & Son	—	7½
Sherman & Son	—	12½
Stevenson	—	15
McCarthy	—	20
Stewart, Walworth (accepted)	—	30

* At schedule price.

For dwelling-house and stable buildings at Westminster. Mr. Henry S. Legg, Christ's Hospital, architect:—

Hatfield	£6,210 0 0
Hayward & Son	6,150 0 0
W. Bishop	6,969 0 0
Perry & Co.	5,875 0 0
Patman & Fotheringham	5,873 0 0
Miller & Brown	5,859 0 0
Hall, Beddall, & Co.	5,545 0 0
Holloway Bros.	4,926 0 0

For the erection of three warehouses in Hoxton-square, for Mr. A. Souhami. Messrs. Hammack & Lambert, architects:—

F. & F. J. Wood	£4,359 0 0
Gould & Brand	3,994 0 0
T. Boyce	3,951 0 0
Bangs & Co.	3,929 0 0
R. Conder	3,580 0 0
J. H. Johnson	3,542 0 0
B. T. Wood	3,516 0 0

For two warehouses to be erected in Mansell-street Aldgate. Mr. E. J. Worley, architect. Quantities by Mr. R. C. Gleed:—

Lawrance	£3,231 0 0
Downs	5,069 0 0
Colls & Son	5,052 0 0
Kilby	4,974 0 0
Perry & Co.	4,635 0 0

For erecting a new hotel, Sandy-lane, Richmond, for Mr. Bass Smith. Mr. W. E. McCarthy, architect. Quantities by Mr. Smith:—

Perry & Co.	£4,461 0 0
Johnson	4,400 0 0
Lucas, Kew	4,382 0 0
Dore	4,230 0 0
Sharman	4,100 0 0
Matten	4,050 0 0
Martin & Goddard	3,940 0 0
Lucas & Son	3,900 0 0
Martin, Kew	3,855 0 0

For building bacon stoves, &c., at Sandes-close, Stricklandgate, Kendal, for Mr. Robert Dixon. Mr. John Stalker, architect. Quantities by the architect:—

C. Gibson (masons and slating)	£410 0 0
G. Lucas (joiner)	323 0 0
Carter (plumbing)	37 4 6
G. Lyon (glazing and painting)	15 8 0
J. Hoskinson (plastering)	25 9 0

For pulling down and rebuilding the Fox and Hounds public-house, Stratford, for Messrs. Charrington & Co. Mr. John Hudson, architect. Quantities by Messrs. R. L. Curtis & Sons:—

T. Little, Whitechapel-road	£2,097 0 0
J. Bentley, Waltham-abbey	1,967 0 0
Norton & Son, Stratford	1,960 0 0
J. & H. Cocks, Mile End-road (accepted)	1,932 0 0

For the erection of three houses, Grove House-road, Hornsey, for the Directors of the Birkbeck Freehold Land Society. Mr. Sydney B. Grosvenor, architect:—

Whiting	£2,115 0 0
Hutchens	2,060 0 0
Shurmur	1,944 0 0
Tadgell	1,867 10 0
Hammon, Hornsey	1,850 0 0

For new school at Ponder's-end, Middlesex. Mr. Charles Stuart Barker, architect:—

Field & Son	£714 0 0
Boswell	700 0 0
Almond	654 6 6
Angood	616 0 0
Fairhead	579 0 0
Hampton	579 0 0
Patman	577 0 0
Brooks & Meader, Enfield	551 0 0

For the erection of Wesleyan Chapel, King's Langley, Herts. Mr. W. A. Fisher, architect, Hemel Hempstead:—

Clifford & Gough, Watford	£391 0 0
Andrews, Watford	335 0 0
Monk, Two Waters*	286 0 0
Creed, King's Langley	265 0 0

* Accepted, subject to modification.

For rebuilding a shop, dairy, stables, &c., at the Alderney Farm Dairy, Chislehurst West. Mr. Edward J Thomas, architect. Quantities supplied:—

Williams	£827 0 0
Arnaud	780 0 0
Lowe	745 0 0
Balding	740 0 0
Cass	730 0 0
Jones, Bromley (accepted)	676 0 0

For laying a length of 400 ft. 6 in. of stoneware sewer to above, with Cregeen's patent air-inlet arrangement, ventilation pipes, and cowls:—

Bayman (accepted) £34.

Accepted for furnishing the new Workhouse Infirmary Barnsley. Messrs. Dixon & Moxon, architects. Quantities by the architects.

Contract No. 1.—Bedsteads, mattresses, &c., and various ironmongery goods:—

Lawrance & Sons	£255 19 6

Contract No. 2.—Furniture:—

J. Machen	96 7 7

Contract No. 3.—Bedding, blinds, carpets, and various drapery goods:—

Messie & Sons, Barnsley	£379 10 0

Contract No. 4.—Internal painting to walls, and polishing doors:—

Fletcher, Barnsley	£300 0 0

For bar fittings and front at the Albert Victor public-house, Poplar. Mr. J. F. Wesley, architect. Quantities supplied:—

Brown & Tuse	£785 0 0
Whittemberg	754 9 0
Trent Bros.	690 0 0
Dodds & Robb	640 0 0
J. Beale	592 0 0
Richards	549 0 0

For constructing about 500 feet run of 3 ft. 6 in. by 2 ft. 4 in. brick sewer, and other works in connexion therewith, in Hornshay-street; 370 feet run of 12 in. pipe sewer, and other works in connexion therewith, in Blockhouse-street; and 180 feet run of 15 in. pipe sewer, and other works in connexion therewith, in Upcot-street, Deptford, for the Greenwich District Board of Works :—

Henry Colepeper	£912	0	0
Nicholas Baily	880	0	0
H. Standen, jun.	840	0	0
Charles Duffield	755	3	3
A. T. Catley	750	0	0
William Carter	736	0	0
Wouldham & Fry	689	0	0
John Bell	670	0	0
James Smith (accepted)	559	0	0
Matthews & Wells	544	0	0

For dwelling-houses and business premises, Streatham High-road, for Mr. W. H. Williams. Mr. Frederick Wheeler, architect :—

Hill Bros., Streatham (accepted).

For restoration of Congregational Church, Romford, after fire. Mr. E. C. Allam, architect :—

Staines & Son (accepted)	£2,174	0	0

For alterations and additions to Mr. F. Gorringe's premises, Buckingham Palace-road. Mr. J. T. Walford, architect. Quantities supplied :

Ashby Brothers	£5,348	0	0
Colls & Sons	5,215	0	0
Kirk & Randall	4,997	0	0
Patrick & Son	4,945	0	0
McLaren & Son	4,856	0	0
Wall	4,693	0	0
Fish & Prestage	4,541	0	0
Scrivener (accepted)	4,347	0	0

For additions to No. 69, Goldhawk-road, Hammersmith, for Mr. Frederic Tautz. Messrs. Smithies & Gladman, architects :—

Adamson & Sons, Turnham-green	£846	0	0
Joseph Dorey, Brentford	837	0	0
John Bloomer, Brentford	824	3	8
James Barnes, Brentford	823	13	0

For new billiard-room and alterations at 7, Victoria-road, Clapham, for Mr. F. Gorringe. Mr. T. H. Vernon, architect :—

McLachlan & Co.	£1,570	0	0
Fish, Prestage, & Co. (accepted)	1,416	0	0

For repairs and painting to be done to urinals for the Vestry of St. Mary's, Islington :—

Loop	£270	0	0 !
Killingback	260	0	0
Hunnings	176	6	6
McFarlane	140	0	0
McCormick	138	0	0
Angood	135	0	0
Dearing & Son	130	0	0
Smythe (accepted)	97	0	0 !

For the erection of five shops for Mr. James Ellis on the Poplars Estate, Willesden-park. Messrs. Charles Ellis, Son, & Co., architects :—

Mr. James Whiteman (accepted).

For the erection of stables and fittings in rear of 20, Upper Wimpole-street. Mr. F. Wallen, architect :—

S. Yardley & Sons (accepted).

For the erection of a warehouse and interior fittings for Mr. George Pockett, in the Woodbury-road, Tottenham. G. L. Wilson & Co., architects :—

S. Yardley & Sons (accepted).

Accepted for new roads for the Hornsey Local Board. Mr. T. de Courcy Meade, surveyor :—

Woodcroft-road.

Jackson & Son, Finsbury-park	£242	0	0

Lough's Park-road.

Jackson & Son, Finsbury-park	661	0	0

Enfield-road.

Jackson & Son, Finsbury-park	226	17	0

Northwood-road.

McKenzie, Williams, & Co., 1, Northbuildings, Finsbury	360	0	0

Spencer-road.

McKenzie, Williams, & Co.	45	0	0

Gordon-road.

McKenzie, Williams, & Co.	90	0	0

For five labourers' cottages for Mr. Gristwood. Messrs. Byrne & Wilmot, architects :—

J. Baker, Slough (accepted) £445.

For rebuilding private residence at No. 290, Albany-road, Camberwell, for Mr. J. Hand. Mr. Geo. Treacher, architect :—

Riddall	£625	0	0
Marsland	565	0	0
J. Beale (accepted)	559	0	0
Newton	490	0	0

For alterations and additions at the Rose Tavern, Saville-place, Lambeth-walk, for Mr. Wm. King :—

J. Beale (accepted.)

For alterations and repairs at the Golden Lion, Brixton-road, for Mrs. Day. Mr. Geo. Treacher, architect :—

J. Beale (accepted.)

For painting and repairs to be done at Nos. 11, 12, and 13, Birkbeck-road, Sidcup, Kent, for Mr. Charles Beck. Mr. W. F. Potter, architect :—

F. Dawes, Peckham (accepted).

For the erection of a residence for Mr. Reginald B. Brett, M.P., at Winkfield. Messrs. Byrne & Wilmot, architects, 303, Strand :—

A. L. Oades & Sons, Egham	£2,660	0	0
J. Higgs, London	2,449	0	0
J. Willis, Windsor (accepted)	2,350	0	0

For a pair of villas on the "Vansittart" estate, Windsor. Mr. P. J. Byrne, architect :—

Woodbridge, Maidenhead	£1,743	0	0
Oades & Sons, Egham	1,635	0	0
Charman, Ascot	1,560	0	0
Akery, Windsor	1,488	0	0
Bishop, Windsor	1,400	0	0
Ashfold, Slough	1,392	0	0
J. Willis, Windsor (accepted)	1,389	0	0

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The Builder.

VOL. XLIV. No. 2104. SATURDAY, JUNE 2, 1883.

ILLUSTRATIONS.

The Bagge Memorial, Swaffham.—Mr. Blomfield, M.A., Architect 742
Mosaic Wall Decoration 743
Doorway of the Infantado Palace, Guadalajara, Castile (Double-page Engraving) 744
Head Quarters, Club and Drill Hall, Bloomsbury Rifle Volunteers (with Plans, 751).—Mr. Samuel Knight, Architect 749

CONTENTS.

Muscovite Architecture and Muscovite Splendour 729
Liverpool Municipal Records 731
The Metropolitan Water Supply 731
Modern Vandalism in Greece 732
False Representations by Agents in Regard to the Value of Property 733
The Propylea of the Acropolis, Athens 734
Foreign Notes 734
"The Tale of Troy" 735
Hogarth and Calais Gate 735
Competitions 735
The Parkes Museum of Hygiene: Opening of the New Building, Margaret-street 736
Another New Theatre in the Strand 738
The Cistercian Abbey of Maulbronn, Würtemberg 738
Edinburgh 739
Excavations 740
Guadalajara, Castile 740
Head-Quarters, Club, and Drill-Hall: Bloomsbury Rifle Volunteers 740
The Bagge Memorial, Swaffham 740
Mosaic Wall Decoration 740
The Royal Courts of Justice Chambers, Strand: Visit of the Architectural Association 753
The Conversazione of the Institution of Civil Engineers 753
Lancashire and Cheshire Antiquarian Society. Meeting at Manchester 753
The Hygienic Exhibition at Berlin 754
Chimneys 754
The Domestic Architecture of India 755
"The Old House," Hereford 756
The Estimates for Vienna Town-hall 756
The Vienna City Railways 756
The New Fire Brigade Buildings in Scotland-yard 757
Progress of Building in Northumberland-avenue: New Hotels, Theatres, &c. 757
Improvements at the Walworth Railway Station 757
The London and County Bank Buildings at Newington 757
America 757
Building Patent Record 758
The Land-Tax 758
Medallion in Memory of the late Rev. Arthur Rigg 758
Manchester Cathedral Restoration 759
Re Rain-Water Conductors 759
The Future of the Journeyman 759
A Joiner's Shop and Its Management 759
The Archiepiscopal Palace and Chapel, Croydon 759
District Surveyors and Timber Stages 759
Timber Stages and the Metropolitan Building Act, 1855 760
Case under the Employers' Liability Act: Dixon *v* Bleakley 760
Miscellanea 760

Muscovite Architecture and Muscovite Splendour.



DAZZLING as is the splendour with which the resources of an empire covering eight millions of square miles, inhabited by more than eighty millions of people, have allowed the Russian monarch to invest the ecclesiastical and military pomp of his coronation, it has lacked that setting of architectural grandeur, which St. Petersburg would have afforded. Of the rightful claim of Moscow to be the scene of the important ceremonial there can, of course, be no doubt. And that is all the more true, because the coronation of a Czar is not a mere ceremonial. The effect of the religious consecration on the minds of millions of Russians is known to be profound. And this religious sanction is only to be given among the numerous sanctuaries and shrines of the Greek Church which exist in the ancient capital.

It is probable that within a few weeks Europe will know far more of the architecture of Moscow than it does at present. The photographer will be at the back of the silver-badged correspondents of the European press, and illustrated papers, with more or less imaginative expansion of the sketches of their contributors, will no doubt soon persuade our countrymen that they have a very good idea of the architecture of the ancient Russian capital.

As it is, however, it is probable that the conflagration of Moscow in 1812 is one main reason why we know so little of its architecture. Down to the time of Peter the Great, as Mr. Fergusson remarks, the architecture of Russia was of that peculiar form of the Mongolic type which has been described in the "History of Architecture." "Occasionally, it is true, in later times, pilasters and other quasi-Classical forms were adopted from the styles of the Western world; but they were used without the least reference to their meaning, or to the appropriateness to the situation in which they were placed."

So far as can be gathered, the same authority remarks, from such data as are available, Moscow still clings to her Tartar feelings; and until a change is wrought in this respect, the history of the European form of Russian civilisation, and of her modern art, must be chiefly confined to her capital. It has been said that there are a thousand or fifteen hundred churches in Moscow, while there are hardly one-tenth of that number in the new capital; a discrepancy arising, not from any difference in the intensity of religious feeling, but from the circumstance that in Moscow most of the churches are mere oratories, as they are in all truly Greek communities. A cell a few feet square, with a picture of the Virgin, is a church at Moscow; and that city possesses at least four cathedrals, the largest of which would not suffice for the church of a small parish in any other part of Europe. At St. Petersburg, on the other hand, the churches are on the European scale, and many of them vie in dimensions with the proudest monuments of modern times.

The suite of apartments destined for public festivities which have recently been erected in the new palace of the Kremlin, at Moscow, is said, in splendour and extent, to surpass anything of the same kind in Europe. Mr. Ferguson, however, not only laments his inability to obtain any drawings or dimensions that would enable him to judge how far this description is correct, but adds that in so far as the new palace can be judged of by photographs, it has, externally, no pretension to architectural excellence of any sort.

There has been, however, in Russia a recent attempt to reproduce the native Mediæval style for ecclesiastical purposes. Already one important church has been erected at Kieff, and several at Moscow and at Novogorod; and even at St. Petersburg a movement which its opponents call retrograde, and its advocates term national, is becoming important. And not in Russia alone, but wherever the Russians settle abroad, they are proud to give architectural evidence of their distinctive nationality. At Wiesbaden they have built a church which, "with its five bulbous domes and queer pendents over the doorways," might have been transplanted from Kieff or from Moscow. In Paris they have recently completed a still more ambitious edifice, at the cost, it is said, of 52,000*l*. When a glimpse is caught of its five spires, each surmounted by what looks like an enormous onion, from near the Barrier de l'Étoile, the idea which it raises in the mind is hardly that of a place of worship. The type has not been the usual five domed church, but the exceptional Vasili Blanskenoy at Moscow. We may, perhaps, demur to the criticism that "seen in all the freshness of its staring colours and barbarous forms it looks more like the pagoda of some Indian or Mexican tribe than a place of worship of a civilised people." For ourselves we are far from holding that the genius of a Tartar or Muscovite people may not be following its true bent in working out forms of Muscovite taste, rather than in the attempt to reproduce, on the banks of the Neva or the Moskva, such a resemblance of the *Garde Meuble* of the Place de la Concorde as is afforded by the elevation, 364 ft. in length, of the Michaeloffsky Palace. This palace, which is admittedly a very fine building, was commenced in 1820 from the designs of an Italian architec Signor Rossi. But the success of the Russian architect, Zucharoff, in the treatment of the enormous block of the Admiralty, the façade of which measures 1,330 ft. in length, is an argument very strongly in favour of native, as compared to imported, design. How can a building suitable for the sunny skies and snowless winters of Italy, be naturalised in a situation exposed to the rigours of a Russian winter?

The above was written before seeing the account given by the correspondent of the *Times* of the grand entrance into Moscow, in which the poor appearance of the streets, few of the houses in which have more than two stories, is matter of comment. In fact, Moscow resembles Constantinople in the circumstance that the promise of a *coup d'œil* which is striking at a distance is not borne out on nearer inspection. A countless number of towers, some with cupolas, gilt or painted green, some in the form of minarets, mixed with gardens and trees, and backed by the dark green colour with which the iron roofs of most of the houses are painted, strike the eye by a broken sky-line and a rich variety of colours. The best view of the city is from the Ivan Velikii, or great tower of Ivan in the Kremlin, and that is one which, at the present moment, very few visitors can hope to behold.

The Kremlin, of which we are accustomed to speak as the citadel of Moscow, is, in fact, the central portion of the city. It is surrounded with walls of from 20 ft. to 50 ft. in height, and from 12 ft. to 16 ft. thick, with battlements embrasures, and numerous towers, and it is entered through five gates. The part of the Kremlin which was blown up by Bonaparte in 1812 has been rebuilt in the original style. It retains unimpaired, says Dr. Lyall, its ancient irregularity and grandeur. It was first built of stone in the fourteenth century. It contains what is left of the ancient palace of the Czars; the new palace, founded in 1743, burned in 1812, rebuilt in 1816, and repeatedly altered and enlarged since that date; and no fewer than thirty-two churches, four of which have the dignity of cathedrals.

Of these the Cathedral of the Assumption of the Virgin, founded in 1326, is regarded as the most splendid. It is not a large edifice, but the interior is adorned with great profusion. It contains, besides numerous paintings, representing scenes in the life of Christ, 249 full-sized images, and 2,066 half-lengths and heads of angels, saints, prophets, apostles, martyrs, kings, queens, and patriarchs. It is in this cathedral, which contains many venerated relics, that the czars are anointed and crowned. The Cathedral of St. Michael contains the tombs of the Russian sovereigns from the time that Moscow became the capital down to Peter the Great. The Cathedral of the Annunciation is smaller than the preceding, but its architectural merit is said to be higher. It forms a

wing to the palace. The Cathedral of the Transfiguration is a plain edifice of Russian type, nearly square, which was founded in 1328, and rebuilt in 1527.

The Ivanova kaya belfry, also in the Kremlin, has a tower 269 ft. 6 in. high to the top of the cross, which measures 18 ft. 8 in. When the French fled from Moscow in 1812, they blew up this belfry, which was laid in ruins with the exception of the tower called Ivan Velikii, and this was rent from top to bottom, and otherwise injured. It has been rebuilt in the ancient form, but in a more splendid manner. In this belfry is the celebrated Great Bell of Moscow, which was cast by order of the Empress Anne in 1734. It is said to have been originally cast in 1553, of a weight of 36,000 lb.; recast in 1654, of the weight of 288,000 lb.; to have fallen in 1703; and then to have been recast, as before stated, of the weight of 432,000 lb. An inscription on it, however, states the weight at 10,000 poods, which is equal to 360,000 lb. English. It is 21 ft. in height and 23 in. in thickness. It remained suspended only till 1737, when it fell, in consequence of a fire, and was considerably damaged. It remained partly buried in the earth until 1837, when it was raised; and it now forms the roof of a chapel, made by excavating beneath it. It has, however, been denied that this bell was ever actually hung. This bell is not to be confounded with the St. Ivan's bell, which weighs 127,830 lb., and which is the largest of thirty-four bells contained in the successive stories of the Ivan tower. It is on the first story, swings freely, and is easily rung. Two of these bells are of silver, and their tones are exquisitely soft, liquid, and pure. Pilgrims come for thousands of miles on pilgrimage to Moscow, and fall prostrate on their faces when the rich and melodious tones of the bells first meet their ears. At the time of the *Angelus*, from towers and steeples upwards of four hundred bells join in such a concert as is perhaps nowhere else to be heard in the world.

The Kitai-Gorod, or Chinese town, adjoining the Kremlin, is surrounded by a wall with twelve towers and five gates. It is the centre of the trade of Moscow, and contains the magazine, bazaars, and richest shops. The houses are of stone or brick, and are built touching one another, which is contrary to the usual habit. This district contains the Pokrovskoi Cathedral, which was built in 1554, and so constructed as to contain nine separate chapels, to which eleven more have since been added, so that it is possible to have twenty-one masses said under the same roof at the same time. Besides the house of the Town Council and the printing-office of the Holy Synod, the Kitai-Gorod contains a monument of the Russian heroes, Minin and Pogarski, whose exertions led to the placing, in the seventeenth century, on the throne of Russia, of Michael Romanoff, the first sovereign of the present very modern reigning family. The bronze statues are colossal, 14 ft. in height, on a pedestal of a single block of red granite, adorned with bas reliefs.

The Beloi-Gorod, or white town, is the third great division of Moscow; and it forms about two-thirds of a circle, enclosing the Kremlin and the Kitai-Gorod, on the north side of the river Moskva, which forms the southern boundary of the three divisions. This part of the city contains the residence of the Governor-General, the assembly-rooms of the nobility, the University, the Post-office, the Medico-Chirurgical Academy, the College of Foreign Affairs, the Foundling Hospital, the Exercise-house, three nunneries, three monasteries, numerous churches, and many palaces of the nobles. The exercise-house has been constructed for the purpose of drilling and training troops, when the heat of Midsummer or the cold of winter, is so intense as to interfere with out-of-door drill. This building has two similar fronts, each 560 ft. long and 168 ft. deep. The height is 43 ft. Each front has thirty-two, and each end eight, plain Ionic columns, with arched windows between them. It is said that 2,000 infantry and 1,000 cavalry can be exercised in this building at the same time. Each account of the various buildings, however, speaks rather of their utility than of their claims to architectural beauty.

The Zemlianoi-Gorod, or earthen town, the fourth division of Moscow, was so named from the earthen rampart, which was reared in 1618, and repaired in 1783, but which no longer exists. This rampart enclosed the four divisions of the city, in an approximate circle; and is now replaced by a promenade planted with trees. The depôt of the commissariat is in this division of Moscow, and the buildings of the Imperial Philanthropic Society, as well as of the Moscow Commercial School, and the Zatchateisko Monastery, with its church dedicated to the Conception of St. Anne.

Around the above-mentioned promenade, or boulevard, lie the thirty-five Slobodi, or suburbs, in a great irregular polygon, partly covered with a mixture of stone and wooden houses, fine mansions, and mean hovels, part consisting of straggling villages, with unenclosed pasture, corn land, and waste ground. Numerous monasteries, each surrounded with a high wall, enclosing three or four or more churches within its precinct; and several fine hospitals, are in this part of Moscow. The circumference of the city is stated at about 25½ English miles. In this area are included not only pleasure-grounds and kitchen gardens, some of them of very large extent, but also fields or parks, called Poles,—which are unenclosed, and used for promenades, for festivals, and for military drill,—independently of public gardens tastefully laid out, and 250 small lakes or large ponds.

It is impossible to read the glowing accounts of the Russian festivities without being struck with the contrast of the extreme of earthly splendour and something not far removed from the extreme of earthly misery. In fact, the brief summary that we gave, at the commencement of these remarks, of the statistical features of the Russian empire, has a significance which should not be overlooked. Eighty-one or two millions of people, on an area of 8,000,000 square English miles, give a population less dense than that of the United States, with its enormous area of unreclaimed ground. It is only one-twentieth of the density of British India,—one-twenty-ninth of that of the United Kingdom. That the revenue of the State should nearly equal that of our own is a mark at once of wealth and of poverty, and such, to our modes of thought, is the general aspect of this vast empire. We have no wish to touch on the question,—vital as it is to the peace of Europe,—of the political character of Russia. But the moment is opportune for the remark that, in cases where we see (not in Russia alone) the close juxtaposition of splendour and of misery, it is a hasty, and it may be altogether an erroneous, conclusion that the latter is increased for the support of the former, or that the abolition of the splendour would be accompanied by any diminution of the misery. It is of great importance to all men who desire to think for themselves to be made aware to what a serious extent our social instincts may be perverted by a tacit adoption of a fallacious distinction, made by so many writers on political economy, between productive and unproductive expenditure. Nothing, according to some of these writers, that does not tend to the material and necessary support of man, as in food, clothing, housing, or the like, is entitled to be called productive labour. All else is waste. According to this view, logically carried out, all that can distinguish civilisation from barbarism must be swept away, in the advance of mankind (if the distinction be correct). It is needless to point out what would become of architecture, from this point of view. What can be more unproductive than the Parthenon or St. Paul's Cathedral? How many tons of wheat might have been produced the sums which these buildings cost?

To call the production of the bare necessaries of life productive labour, and the production of all that renders life itself noble, progressive, or worth living, unproductive, is to betray a sad tendency to have regard only on the animal part of the compound nature of man. All that tends to brighten existence, to raise human character, to make a people truly great, is ignored by this talk about reproductive labour. Those who so use this phrase entirely forget the enormous fallacy which underlies their argument. If the outcome of the labour of any given people were a fixed amount, it is conceivable, although, we think, very unlikely, that it would be possible so to direct the application of that labour as to provide the greatest amount of the frugal necessaries of life that the people could produce. But even were this so, no advantage would accrue from the production of more than was requisite for immediate consumption. The effect, then, of such a limitation of the field of labour would be a reduction in the amount of labour performed by every man. The advocates of idleness may view that prospect with satisfaction, but it is one entirely inconsistent with any idea of a true common weal.

Let us take the question of building as a crucial example of what we mean. From 1840 to 1880 there has been an increase, in round numbers, of 8,200,000 in the population of the United Kingdom. To house these additional people, on the principle of what is called productive labour, all attempt at architectural luxury is to be abandoned. Health alone is to be regarded. If we allow 1,000 cubic feet of house space per individual, we give as much as health may be said imperatively to demand. And if we allow one shilling per cubic foot, we have a fair allowance for a plain substantial kind of house building. That is to say, our house accommodation should increase at the rate of 50*l.* for each unit added to the population. In the last forty years, therefore, the value of our house property should have increased by 410,000,000*l.* This is a large figure, and one that shows how important a part the builder plays in the creation of national wealth. But how as to the facts?

In the *St. James's Gazette* of 8th September last was a remarkable article on the progress of the nation under Queen Victoria, which compared certain items of the national balance-sheet in 1840 and 1880. The value of houses in 1840 in that article, taken, we think, from Mr. Porter's well-known returns, is stated at 771,000,000*l.* The population at that time was a little over 27,000,000. That allows 28*l.* each for housing all round, or considerably less than our 50*l.* As far, then, as the returns are reliable, that was what it cost us to house our population forty years ago. It was equal to twenty-nine shillings per head per annum, at 5 per cent. on the capital value. This, of course, is rateable value alone, and makes no allowance for churches, public buildings, or any kind of monumental architecture.

If our larger allowance of 50*l.* per head be added since 1840, the value of house property should stand in 1880 at 1,181,000,000*l.*, giving an average of 33·5*l.* per head for housing. But the actual figures given in the paper cited are 2,142,000,000*l.*, being an increase of 1,371,000,000*l.*, or nearly four times as much as we regarded as necessary, in the forty years. So that, on this showing, while every inhabitant of the United Kingdom had been provided with house-room at the rate of 28*l.* per head in 1840, no less than 60*l.* per head has been spent all round at the present time. What do these few figures tell us of advance in national wealth, and in personal comfort and dignity? It cannot be necessary, on the principle of repudiating any labour but such as has been called reproductive, that every English man, woman, and child should have twice as much spent in providing house shelter in 1880 as in 1840. But that such is the fact is as sure as statistics can make it. Is not that a material progress?

In these forty years, in a word, the national wealth has more than doubled, having risen from 4,100 millions in 1840 to 8,720 millions in 1880. Without counting houses rebuilding, the number of new houses built since 1840 is 2,218,000. This is one house for rather less than four persons of the increase of population. Each such house has cost on the average over 60*l.* "That is to say," says the article cited, "the bricklayers in twenty years have been able to pay off the public debt, or (which is the same) to increase the public wealth to that amount." The term "bricklayer," of course, may be excepted to, as but a poor representative of the numerous and complicated industries that are comprised under the art of the builder. But substitute the latter word for the former, and what has the builder done in the last forty years for old England?

We might pursue this inquiry into other branches, did space now allow, with advantage. Thus on our railways, to the activity of which we owe something of the advance of the builder, in 1840 we had spent 26,000,000*l.*, which, by 1880, were increased to 703,000,000*l.* The production of coal rose in that time from 35 000,000 to 147,000,000 tons, or more than quadrupled. To say that the horse-power of our stationary steam engines increased in a like ratio is, we think, to undervalue the mainspring of such great activity, the introduction of mechanical motive power. But the point that we have in view is, that the growth of splendour is not only a sign, but an efficient cause, of the growth of national welfare. The poor do not become

poorer as the rich grow richer. On the contrary the poor grow richer, too, though in a less rapid proportion. Hospitals, infirmaries, savings-banks, free schools, free parks, free galleries, how great is the amount which the rich, of their wealth, contribute to the solace and comfort of the poor? Not so much, may be, as they ought. But could the wealthy be swept away, as the ignorant are taught to wish, it would be a bitter day for the poor!

LIVERPOOL MUNICIPAL RECORDS.

IN a very handsome quarto volume, published by subscription, Sir James Picton has put together, in a very interesting form, some of the information in regard to the past political, municipal, and social history of Liverpool, to be gleaned from the archives and records of the Corporation.* Such an illustration of a portion of history becomes of special interest at a time when Liverpool has entered on a new phase of her career, in the capacity of a "city"; and the remarkable contrast between the early history of Liverpool, its comparative insignificance for a long period, and its extraordinary, and, in this country, almost unprecedented development in quite recent times, gives an additional interest to its records. The present work does not come down to the period when the great recent development of Liverpool began; Sir James Picton closes his account at the end of the seventeenth century, observing, what we have no doubt of, that the municipal records of the eighteenth century contain much that is of great interest, which must be left to another hand to extract and put together.

In a brief preface the author draws attention to the nature of the interest residing in documents such as those which he has been collating. It was by the cities and boroughs that "the true principles of self-government were rescued—almost wrenched, from the grinding oppression of the feudal system." The relation of these boroughs to the Crown was originally of a pecuniary nature,—the charters of incorporation giving liberty to hold property and establish guilds, to frame by-laws, and to hold courts, had to be paid for; and not only so, but fresh payments had to be made to the Crown from time to time for a renewal of the charter whenever the Government for the time being chose to find or to imagine any flaw in the wording of the original charter; and the dues from the customs were retained and farmed by the Crown. But in other respects the boroughs did very much what was right in their own eyes, with a degree of individuality of habits and customs which could hardly exist in these days of general intercommunication. It is difficult now to realise what was the state of things when, as the author reminds us, there was, down to the middle of the eighteenth century, no road into Liverpool for wheeled vehicles. And other towns were no doubt in a similar state of inaccessibility. Thus each was a little community with its own internal politics, its own social customs, its own feuds and jealousies, which are reflected in the pages of such records as those which Sir James Picton has edited. The municipal records of Oxford and London have, however, alone received any literary illustration up to this date.

The special interest of the early history of any large town, of course, is increased greatly for those who are familiar with the locality at the existing period, and can contrast the present with the past. To them, the early history of the town or city has almost the interest and effectiveness of a romance. What an array of human interests and hopes and fears, and virtues and littlenesses, has paraded itself in successive generations on the ground that was once a waste, or that appears in the early records as affording habitation only perhaps to a few poor struggling aborigines. To the reader of this book looking on the modern city of Liverpool with its miles of docks, and its mass of houses covering the country up to the highest outline of land visible from the river, it is difficult to realise that within the period since the Reformation this was still a little town with four principal streets and two subsidiary ones, collected around a creek on the estuary of the Mersey, amid undulating meadow and moorland. Chester was then the dominant city of the neighbourhood, and lorded it over Liverpool in a tolerably high-handed manner. The annals in the Corporation books commence, it appears, only in 1551, but there are other documents in their possession relating to the early history of Liverpool, among others the first Charter of King John, who visited Lancashire in 1206, and made a grant "to all our liegemen who may take burgages at Liverpul that they may have all the liberties and free customs in the town of Liverpul which any free borough on the sea has in our land." The original of this charter, written in Latin in the abbreviated fashion of the time, on a small piece of parchment 7 in. by 2½ in. in size, is photographed as a frontispiece to the book. The author explains that this so-called charter had really only the force of letters patent giving rights to the existing burghers, not on them and their successors in perpetuity; charters of actual incorporation not dating earlier than the fourteenth century, when a charter was obtained from Edward III. granting privileges to the burgesses "and their successors." This document also is preserved.

The copious extracts given by the author from the municipal records show a very odd mixture of petty squabbling, trivial and vexatious local legislation, with, in many cases, real spirit, enterprise, and good sense. A good deal of light is thrown upon the past history of the town in regard to sanitary matters, touching which the mayor and officers of the corporation seem generally to have been fairly advanced in their views, and desirous, on the whole, to do the right thing. The first "local improvement" dates from 1329, when it was determined to pave the streets of the town, and a concession was obtained from the Crown to levy tolls for this purpose "on every horse-load of grain, ½d.; on every horse, mare, ox, or cow, ½d.;" and the document cites a long list of articles in which traffic was carried on at the time, in which are included, besides cattle of various descriptions, "cloth of worthsted, linen cloth of Aylsham, Cendallo,* iron, lead, tallow, Cordovan leather, wine, wood, honey, wool," &c. A curious example of the advantage of "unearned increment" is given by the record of the grant to the town by the second Earl of Lancaster, in 1309, of six acres of mossland lying near the eastern outskirts of the town, probably granted as a reservoir for turf for fuel. This land is now occupied by some of the best squares and streets of the modern town, and forms a very valuable portion of the corporate estate. The extent and value of the town property about that time are given in an assessment made when the Borough of Liverpool passed, with other property, from Thomas, Earl of Lancaster (beheaded in 1322), to his brother Henry. This was about six or seven years before the movement for paving the town, and the editor gives the valuation in modernised form thus:—

"The jurors say that there is at Liverpool a certain castle, whose trench and herbage are of the value of 2s. per year; and that there is a certain dovecote under the castle of the value of 6s. 8d.; and that there is a certain borough in which are divers free tenants holding the burgage, and paying yearly 8l. 8s.; and that there is a certain market held on Saturday, whose tolls are worth 10l.; and that there is a certain ferry beyond the Mersey which is worth 40s.; and there is a windmill of the value of 26s., and a watermill of the value of 24s.; and that there is a certain fair held on the day of St. Martin, whose toll is of the value of 13s. 9d.; and that there is a certain park, which is called Toxteth, whose herbage in summer is of the value of 11l.,—sum total, 35l. 0s. 5d."

This sum total Sir James Picton puts as equivalent to 525l. 6s. 3d. at present. The park called Toxteth still bears that name, but its "herbage, value 11l.," is no more; it is a wilderness of small streets. The early history of the town, before the date at which the Corporation annals commence, reveals the existence of a constant struggle between the privileged inhabitants and the outsiders who endeavoured to intrude into the commerce of the town; indeed, the evident struggle for the command of the trade of the various dues, between the Crown, the burgesses, and the intruding "forainers," suggests the idea that, comparatively speaking, the trade of the place was more prosperous at that early date than when, in the time of Elizabeth, it was spoken of by its own inhabitants as "your poor decayed port of Liverpool."

In dealing with the records of the municipality, which, as observed, commence only at the middle of the sixteenth century, the editor has thought it best to group his citations under various headings relating to special classes of subjects. Those relating to Municipal Government commence with the first formation of a Town Council in 1551, as appears from a minute—that on Assembly-day observed on Friday in Whitsun-week of that year, Thomas More being Mayor, it was agreed that "for so much as all earthly things have their mutations, alterations, and changes" there should be sixteen persons named, to take them a day to sit upon, hear, and understand all things to them presented, and to enquire of all accounts, payments, &c., "for the common weal of the town." There were named four for each main street, two other minor streets then existing are not represented: these were Tithebarne-street and Chapel-street, still existing under the same names. It is to be observed, as in the case of London, how picturesquely significant the names of the old streets are, all telling a bit of history of the original locality; the others at this time were Water-street, Dale-street, and Castle-street, all with distinct local colour in their names, which they still retain; the remaining name, Jugler-street, the origin of which is not obvious, has now disappeared. A few years after, in 1558, this constitution of a council or committee was made permanent, as a part of the governing machinery of the town. The quotations illustrating the spirit and behaviour of the local government show that, like other men, the Town Councillors of Liverpool had a great deal of human nature in them. Some of the records are like those of schoolboys; *i.e.* under date 1562:—

"This year my lord (Derby) gave the town a buck, a pure good one, and merrily disposed of and eaten in the Common Hall; many of the town absent, the others had more plenty. Also Sir Richard Molyneux gave the town a buck, which proved but mean, and that was divided betwixt the mayor, the aldermen, his brethren, and the bailiffs, whereat many of the commoners loured and something murmured."

But in more serious matters than eating bucks the old Government seems to have been spirited enough. It is interesting to notice that in the latter half of the sixteenth century there was just the same jealousy between Chester and Liverpool as more recently between Manchester and Liverpool, and that Chester then conceited itself to be the real port, and had books prepared for the records of the customers and comptrollers of Liverpool,—"a creek of this port." The Liverpool corporation were up in arms at this; the then mayor, Corbett, went up to London, and, with the assistance of the member for Liverpool, Sekerston, brought a representation before Parliament,—

"That if it were to come to pass to call Liverpoole the creek to Chester, it were not only a punishing of Liverpoole and its inhabitants, but also the matter against the jurisdiction and regal authority of the County Palatine of the Duchy of Lancaster; further declaring and showing that Liverpool hath ever heretofore been reputed and taken for the best port and harbour from Mylforthe to Scotland, and so hath always been proved with all manner of ships and barks, owners, masters, and mariners."

The controversy was carried on hotly for nearly twenty years, Chester being then by far the more powerful and populous place, of course, and Liverpool only a town of a thousand inhabitants or so and a limited trade. Our editor notes with satisfaction, however, that in this matter "they were quite equal to the occasion." They had meeting on meeting about it, they secured the co-operation of the Earl of Derby, and got the matter taken up by the Privy Council, and eventually they were formally released from the control of Chester (in 1581), though, as Sir James Picton observes, in no very dignified way, on the ground that they were retailers of wares only, "and it seemeth to us that if retailers of such poor cities and towns where small trade of merchandises is used should be put from their trade of shipping, it would be a great decay to the same poor cities and towns." For these small mercies, however, the Liverpool Corporation seem to have been jubilant. Nature went far to settle the question subsequently by silting up the Dee, so that the larger shipping trade of Chester was effectually knocked on the head. It is a question of some ultimate, though not of immediate interest, whether Liverpool is destined some day to be closed in the same way, and to experience the fate of Ephesus and some other great ports not immediately on the coast, whose channels

* City of Liverpool. Selections from the Municipal Archives and Records, from the Thirteenth to the Seventeenth Century inclusive. Extracted and annotated by Sir James A. Picton, F.S.A. Published with the sanction of the City Council. Liverpool: G. Walmsley. 1883.

* This the author explains in a note to have been a thin Spanish cloth of silk or thread. It indicates, he adds, imports from Spain in exchange for exports of fish.

were silted up. The *embouchure* of the Mersey is a very troublesome place for shoals, banks, and the bar, which latter, we believe, increases; this must have its effect some day, but those interested in the trade of Liverpool may perhaps console themselves with the thought that it will last their time. Still, the question between Manchester and Liverpool, which was formally regarded as a joke (a late town clerk of Liverpool drew up and printed for private circulation a humorous mock Act of Parliament for rendering Manchester a seaport), seems now to be on the eve, at least, of assuming a serious aspect; though we are hardly disposed to believe fully in the Manchester ship canal until, at any rate, we see a certain proportion of it actually executed.

We regret that we have not space to quote the delightful account of the efforts made by the town to make things pleasant for the Earl of Derby, when in April, 1557, he stayed in the town a few days *en route* for the Isle of Man, "awaiting for a fair wind." The kind of entertainments described, and the simplicity of the delight evinced by the burgesses in the contemplation of their own liberality and magnificence on the occasion, in the language of the official record, form an episode in social history in which an historian like Macaulay would have delighted. Among records which more concern our own branch of history, we may mention some which are cited under the head of "Streets, Buildings, and Sanitary Provisions," some of which are highly creditable to the energy and good sense of the authorities. The repair of the paving of the town is the subject of constant references, which, if they show that the place was in a very primitive condition in this respect, show also that the authorities were alive to the importance of the matter. The provision made on a visitation of the plague in 1558 is admirable:—

"It is ordered that all persons who may happen to be visited with the pestilence of the said town, that every of them shall depart out of their houses, and make their cabbins on the Heath, and there to tarry from the Feast of the Annunciation of our Lady until the Feast of St. Michael the Archangel; and from the said Feast of St. Michael unto the said Feast of the Annunciation of our Lady, to keep them on the back side of their houses, and keep their doors and windows shut on the street side until such time as they have licence from the mayor to open them; and that they keep no fire in their houses but between twelve and three at afternoon, and that no other person or persons be of family conversation, or dwell with them, upon pain of imprisonment, and to keep their own houses, and that they walk in no streets but for a reasonable cause; and their houses to be cleaned, dressed, or dyght with such as shall be appointed by Mr. Mayor for the safeguard of the town."

The first institution of street lighting is alluded to under date December 10, 1653, when it was ordered that "twoe lanthorns w^th^ twoe candles burning ev'rie night in ye dark moone" be set at the High Cross and White Cross, and other places prepared to set them in, up to eight in the evening: this to be observed "from All Saints to Candlemas." In regard to the recent difficulties in the Mersey with the Pluckington Bank, which, as was mentioned in our columns, has moved down the river and caused the grounding of one end of the great landing-stage, we find in this volume a record of the trouble which this shoal was giving as far back as 1690, when there is a long correspondence between Mr. Pluckington, the riparian owner, who has had the doubtful honour of giving his name to the bank, and the Corporation; he desiring that they should pay part of the expense for necessary operations for preventing the washing away of the bank, and the threatened downfall of his house. This they refused, but they appear to have made a grant of land to him farther in shore, as a compensation for his troubles. The idea of boring for coal, which has been much mooted recently, crops up in the records at the same time; but nothing seems to have come of it. The old Corporation, like other old-time governing bodies, would trouble themselves about very small matters, and appear to have been, officially at least, a highly moral body. The ferryman (1580) is "prevented" for taking toll from "divers freemen," contrary to by-laws; John Chapman, "for a loyterer, and keeping a woman known not to be his wife"; and John Wakefield's daughter (who seems to have kept a shop) for "alluring two children to spend 3d. at one shotte, either of them in her house,"—paternal government with a vengeance. The dramatic expression, "at one shot," says something for the sense of literary force on the part of the scribe to the Corporation. The worst record against the Corporation is that of Sir Edward Moore (in 1677), a member of a family then very influential in the borough, and who have left their family name in the street of "Moorfields," and that of their residence in "Old Hall-street" adjoining. They seem to have been in constant dispute and litigation with the Corporation, and Sir E. Moore left his record, in "The Moore Rental," that as for the burgesses "have a care you never trust them, for there is no such thing as truth or honesty in such mercenary fellows, but what tends to their own ends. And this observe as a general rule, civility will do no good, but make them contemn you for a kind fool": the English of which probably was that Sir E. Moore wanted too much of his own way in the community.

Every one interested in social and municipal history must be grateful to Sir J. Picton for this interesting *resumé* of the Liverpool records as far as it is carried. We can only hope that the records of the remaining years, which at present "*carent vate sacro*," may find their Picton in turn to edit them.

THE METROPOLITAN WATER SUPPLY.

THE annual return of the Metropolitan Water Companies for 1882 has a significance which our readers may readily comprehend. Taken by themselves, the solid mass of figures which occupy 7 in. or 8 in. of a closely-printed column in a morning paper, gives but little information. Analysed and compared with corresponding figures in former years, their voice is by no means uncertain. We will compare them with the corresponding figures for 1877, partly because the period of five years is a very convenient one for comparison; and partly because we have by us the elaborate analysis which we made in that year. The following are the chief points to which we desire to call attention.

In 1877, the aggregate expenditure of the eight great water companies stood at 11,614,179*l.* In the five years to 1882 it had grown to 12,965,869*l.*, being an increase at the rate of 11·6 per cent. But the revenue during the same period had increased by nearly 24 per cent., or from 1,248,116*l.* to 1,547,614*l.* It is unnecessary to go deeper, at the moment, into the cloud of figures. London, as our readers will remember, is taken to double its population in forty years. According to the tables,—we are always glad to acknowledge the great value of those contained in Hoskold's "Engineer's Valuing Assistant," — this gives an increase at the rate of 1¾ per cent. per annum. But the capital of the companies has increased far more rapidly than that. An increase of 11·6 per cent. in five years is at the rate of 2¼ per cent. per annum, that is to say, the companies increase their capital by nine, while the population increase by seven. That, however, is the least serious part of the matter. An increase at the rate of 24 per cent. in income, in five years, is at the rate of 4¾ per cent. per annum. At this rate the income will double in sixteen years. That is what is actually going on. From a population increasing at the rate of seven, an income is drawn increasing at the rate of twenty. The difference is, in fact, rather more than three to one. This is what the companies are doing. That a general increase of rates has been for some time going on is well known. Isolated complaints have appeared, from time to time, in the newspapers. We need not now refer more particularly to the attempts which have been made, at various times, to deal with the matter of water supply legislatively. Our readers will remember the plain lines which we have laid down, on which justice could be done at the same time to the ratepayers and to the shareholders in the companies. They will remember with what utter disregard of these plain principles of business, first one and then another Bill was framed. They will remember the just fate which befell these measures, and our own earnest warning that for every year for which the principles that we had defined were neglected, the ratepayers would become appreciably worse off. Were these unauthorised grumblings? What say the figures of the present year? In 1893, if matters go on as they have done for the last five years, a revenue will be drawn by the companies, from a population not quite one-third larger than that of 1877, of double the amount raised in that year! And something like double the sum must be paid by London to obtain the control of its water supply, if the step is neglected till 1893, that would have been necessary, if wisely and justly applied, in 1877.

Our readers may not be fond of figures. For ourselves, we have been led to overcome a natural innate hatred of arithmetic by sheer necessity, from the failure to arrive at sanitary, economic, or social results, in any positive way, without a painful and tedious apprenticeship to figures. But we have endeavoured to put the outcome of the present returns in the simplest form. Any one can understand that if the income of the water companies increases, as it is now doing, at the rate of 100 per cent., while the population from which it is raised increases only at the rate of 32 per cent. (in the sixteen years), it comes to something like paying three times as much per head in the way of water rate. These are the facts. Let them speak for themselves!

It seems to us that this is a case in which matters will go from bad to worse, until the ratepayers take the matter into their own hands. It is of little use to wait for help, from Government. Let London speak for itself. The appointment of a strong committee, to watch the water question on the part of the ratepayers, is a step which, it seems to us, is too obviously needed to be delayed with any regard to the pockets of the inhabitants of London.

MODERN VANDALISM IN GREECE.

AT home, fortunately, the shameless acts of Vandalism such as those of but a few years back are growing rare; it is sad, therefore, to hear that in the land to which of all others the eyes of the literary and artistic student are most constantly turned, ignorance and Vandalism still flourish at the very moment when, by the news that reaches us from modern Greece, one would be led to believe that nowhere did there exist a warmer and more fervent respect for the great creations of the classic days. We have, however, the indisputable authority of a writer who has resided many years in the country,—who, indeed, at this moment holds the official position of director of the recently-opened museum of antiques in Constantinople, M. Salomon Reinach, that there are committed every day, both in Greece and Turkey, a series of acts of Vandalism, the consequences of which for the cause of science it is difficult to calculate.*

In the opinion of M. Reinach no small share of the blame falls to the Greek Government, which, if it cannot be said directly to connive at the "Vandalism" complained of, has, by the imperfect nature of the laws existing on the subject of "treasure-trove," largely contributed to much of the destruction which, according to our informant, is daily progressing. It is a subject to which we cannot remain indifferent. The creations of the glorious past of Greece are not alone the inheritance of the modern descendants of the heroes whose deeds Homer has sung; those creations are the common inheritance of all civilised nations. On what other ground did the Greeks in their brave struggle for independence enlist so warmly the sympathies of the world? On what other ground do so many foreign nations generously support the explorations in Greece of those archæologists who have of late years brought to light so many treasures hidden from the world during centuries? When, therefore, we hear how, by a mistaken policy, the Greek Government by the action of its laws not alone hinders the researches of those nations which, richer than itself can carry on operations impossible without considerable means, but, in addition, encourages, however indirectly, the wholesale destruction of invaluable archæological treasures, and perhaps, worse than all, neglects even to take moderate care of the works of art with which foreign research has enriched the national museums,—when this is the case, as we are credibly assured, we think ample occasion exists for the complaints uttered in France receiving a ready response on our side of the Channel.

In the case of most countries such questions as these of the encouragement of archæology are, it must be confessed, largely regarded as subservient to the real interests of the nation, as matters rather of *dilettantism* than of fact.

* See the *Revue des Deux Mondes*, April 1, 1883.

With Greece, however, the case is very different; a due regard for the great creations of her past is essentially a national question, closely connected with the very existence and the future of the country. With the revival in Greece at the commencement of this century, of the spirit of independence,—in which the Greeks will never forget the warm sympathy of England and America,—it was immediately recognised how large a share in the great struggle must be played by an appeal to the glorious days of a past which the poet-dreamers saw once again revived in all their splendour. As early as 1812,—while the hated Turks still occupied the country,—was formed the Society of the Philomousai, under the patronage of the Emperor Alexander and that enlightened prince, Ludvig of Bavaria; the main object of the society being the preservation, as far as possible, of the monuments of the past. A few years later, however, the war of 1821 commenced, that war in which Byron's muse and personal presence did so much to rouse the enthusiasm of Europe. For six years the devastation was frightful. One of the first steps taken by the new Government on its formation, was a recognition of the duty which they owed to the works of those for whose memories so many of their fellows had fallen. The work thus commenced has been continued, thanks, of course, largely to foreign aid,—French, German, and English. It has been, after all, but just amends. We had all helped in the days gone by to despoil the country. Lord Elgin had borne off amidst incredible difficulties the choicest decorations of the Parthenon; we already owned the Phigaleian marbles; Bavaria, through the efforts of Professor Cockerell and his associates, was enriched with the Ægina pediment; France captured the far-famed Venus de Milo. Since those days we have, let us hope, sufficiently helped to make reparation for our spoliations, though, indeed, those who have never been wanting to express certain qualms at the possession of these treasures will, we think, have reason to cease their regrets when they hear how carelessly the national custodians to whom it is urged the guardianship of their possessions should be entrusted, fulfil their duties by those objects which remain in their hands.

Justice, however, should be rendered to a Government which has but a limited budget at its disposal, and which has done much to restore some order in their ruin-scattered territory, while the work of the Archæological Society, founded as far back as 1837, has been continued with laudable zeal. The blame appears to lie with the Government in a more indirect manner. There exists, what may be compared very much to the spirit of the dog-in-the-manger which their own Æsop's fable has made so familiar, a short-sighted prejudice evinced in the Greek Parliament, on several occasions, against all foreign exploration, even when its results so clearly benefit and enrich the nation as have the labours of Germany and France, who have each abandoned to Greece all their most important "finds." This, sad as it is to find even among the members of the Archæological Society, may, to some extent, be sympathised with, and, indeed, from more than one point of view, be defended; the objects left undiscovered remaining, of course, uninjured for future generations to lay bare. By this spirit no exact injury can be said to be done; it is, however, very different with the laws existing on the subject of "treasure trove." These, in the opinion of M. Reinach, are the direct cause of an incalculable amount of Vandalism, the results of which are fatal to the advance of archæological science.

The law relating to the discovery of antiquities was passed as far back as 1834, and its severity is such as apparently to have been framed with a view to deterring all archæological research. On the discovery of any object the owner of the property on which the find has been made is called upon to inform the local authorities within three days' time, the penalty for any secresy being immediate confiscation; an inventory is made, half the treasure belonging by the law to the Government; the owner on its sale having to relinquish 50 per cent. of his gain (where, that is, he has not consented to part with the object to the Government, who can only offer him a very modest price); the export of all works of art is strictly forbidden. Like all similar laws, this law remains in most of its repressive features almost a dead letter. The exportation of works of art from Greece is considerable, while the only effect of the large share claimed by the Government in all "finds" is the existence of a vast amount of clandestine exploration for commercial purposes, the results being very unprofitable to the study of archæology, however interesting from an artistic point of view. The law, in fact, encourages just what it was intended to repress, for clandestine exploration must necessarily be hasty, and conducted purely for purposes of pecuniary profit, and with an ultimate view to the objects found being smuggled out of the country to a better market; the mutilation of large statues is encouraged, and the rejection of all works but what are in comparatively good condition.

Within the last twenty years or so there have been some six important series of explorations made in Greece, four out of these by foreign initiative. The French school at Athens have been most active; Germany conducted its successful researches at Olympia, with what results our readers are aware; Dr. Schliemann unearthed the tombs at Mycenæ, while the Greek Archæological Society explored the southern portions of the Acropolis. In 1881 they commenced work at Eleusis and Epidaurus, explorations which many will be pleased to hear are to be continued this year. All the objects found in these several expeditions, whether French, German, or Greek, became the property of the Government, except a small number of duplicates of little value from Olympia, presented to Germany. The Greek museums have, in fact, been enriched at the expense of foreign countries. There would, of course, be light reason for regret at this had the generous action of France and Germany been received in a similar spirit; on the contrary, there has been manifested no small amount of bad feeling even among the native archæologists at what has been openly termed foreign interference. Yet these are researches which can alone be conducted by a wealthy state.

While, however, these few but important and openly-encouraged works have been proceeding, the amount of clandestine excavation that has been carried on it is impossible to calculate. No more characteristic example of the injurious action of the existing law could be pointed to than the story of the origin of those charming little terra-cotta figures from Tanagra, which of late years have been commanding such fancy prices among collectors. During four years (since 1871), the necropolis in Bœotia, from which these have mostly been taken, was secretly excavated, and when at length the Greek Government came to the rescue it was too late. The most beautiful necropolis of Greece, perhaps of the world, was, as M. Reinach justly bewails, positively sacked without any advantage to the true cause of archæology, all those minute details connected with the discovery of the objects having been naturally ruthlessly neglected to be noticed; thousands of statuettes and vases, easy of transport and exportation, have, during many years, thus found their way through the dealers to Paris, to London, and Berlin, and the secret of the Tanagra tombs is now perhaps lost for ever.

It might, of course, appear somewhat strange that the archæologists should not have earlier had wind of such a "find" as this, of which, however, numerous other similar instances might be brought forward. No one, however, it would appear, is more dreaded than the archæologist, whose incorruptible zeal would immediately disclose to the authorities the secret of the "find," with all the legal alternatives of confiscation, or at the best, share of half profits. Hence the utmost secrecy surrounds all such researches. The real origin of the objects, when they find their way to the dealer's shop, is never disclosed, to the mystification of the archæologist. The dealers' emissaries are busily engaged in every direction, in this way, it is true, spreading a certain degree of respect for the objects of antiquity which may be found by the peasants, who, however, with the Government half-profits fear always before them, keep every discovery secret, mutilating many a statue merely in order to carry conveniently into town the head or hand, which can easily be disposed of. In most cases the objects are smuggled out of the country, the markets at a distance being more profitable, the dangers accompanying the illegality of the export serving only to increase the price charged to the stranger. Some curious revelations as to this subject were made recently in the pages of the New York *Nation* (January 4th of this year), there existing in Athens, in spite of the severity of the law, more than one well-known dealer, who drives a most successful export trade of Greek antiquities.

It is only what might be expected of such indifference, the neglect which is so common throughout Greece in the various museums in which are preserved the antiquities discovered of late years. Even in the capital this neglect is equally great, a not unnatural result of the want of proper watchfulness over the ten separate museums which exist in Athens alone. M. Reinach reports a state of affairs which is certainly far from creditable to the Greek Government, however burdened may be its budget. The exposure to decay and robbery of the precious works with which foreign research has enriched the country is certainly, it will be admitted, scant gratitude, to say the least of it. It is startling to hear of rare bronzes, —bronzes which we have classical evidence were anointed with oil to protect them from the action of decay,—exposed in sheds far from water-tight, to all the inclemency of a damp climate, as is the case at Olympia with the Hermes of Praxiteles,—we have M. Reinach's statement. Where such manifest neglect does not exist the utmost confusion reigns in each and all of the museums, not alone in the capital but throughout the provinces. The museums should certainly, in the interests of archæological research, be concentrated at Athens; it would appear, however, that there exists throughout Greece a widely-spread feeling against centralisation. This, though it may be to some extent a ground for regret, certainly finds an excuse in the imperfect manner in which what possessions the capital at present owns are taken care of.

The position in Turkey is, it would seem, very similar to that in Greece; but the Turks may not unjustly screen themselves behind the dictates of their religion, which has at no time looked with much respect on the sculptor's art. Many of the Classic antiquities, however, scattered over the Turkish territory are at present under Government protection, and a small museum has been opened at Constantinople for the special preservation of any of the choicer treasures which the law and purchase render the property of the Government. In Turkey, as in Greece, the action of the law, as much as the state of the country, is, however, sadly opposed to the due consideration of such questions.

FALSE REPRESENTATIONS BY AGENTS IN REGARD TO THE VALUE OF PROPERTY.

THE legal maxim that what is done by a man's agent is done by himself, though not only known to the general public but continually acted on by them, is yet to its full extent not always appreciated by the world at large. People are aware that if a man's coachman drives so negligently that he runs over a passenger the master is liable for damages, but they do not so clearly understand that the principal is equally liable for frauds committed by an agent just as much as for actual injuries done by him. It was not indeed until the year 1867 that this rule was fully established, when a well-known case, namely, that of Barwick *v.* The English Joint Stock Bank, cleared up any existing uncertainties. "With respect," said Mr. Justice Willes in delivering judgment, "to the question whether a principal is answerable for the act of his agent in the course of his master's business, no sensible distinction can be drawn between the case of fraud and the case of any other wrong. The general rule is that the master is answerable for every such wrong of the servant or agent as is committed in the course of the service, and for the master's benefit, though no express command or privity of the master be proved." It would not be easy to express more clearly or more concisely than this well-known judge does in the above sentence the existing rule of English law. The reason that we have adverted to these general principles is because it is well before referring to a recent decision to point out the main rule of law. The case to which we will shortly refer is, in fact, no more than an example of the practical application of the above dictum, but it is one of peculiar interest to persons who are concerned with houses, or indeed with buildings of any sort, and with land. It is that of Mullins *v.* Miller, 52 *Law Journal* Report, Chancery Divi-

sion, page 380, and the head note to the report substantially gives the pith of Vice-Chancellor Bacon's judgment. "Where a principal employs an agent to let or to find a purchaser for a house, he authorises the agent to state any fact or circumstance which may relate to the value of the property. Where, therefore, an agent for a sale of a house untruly represented to an intending purchaser that a third person was prepared to buy the house, and if he could not buy it would rent it at a high rent, HELD that the principal was answerable for the representation by the agent, and would not enforce the contract." So far as we are aware, this is the first decision in which this kind of a fraud has been the subject of a judicial decision, or, at any rate, of a reported decision, and, consequently, as it is one of importance to large numbers of persons, it is worthy of careful attention. The facts of the case were in themselves both few and simple. The agent or surveyor who was authorised to let or sell the property introduced the subject to the proposed purchaser, and at an interview stated that among other things a gentleman, whom he named, was prepared to buy the property for 700*l.*, and if he could not buy it would rent it for 300*l.* a year for the rest of the term, as he was determined to occupy it. The Court, however, held that these statements were absolutely without foundation. In addition, however, to these misrepresentations, the principal himself made some, which, however, do not concern us here, because they do not help to elucidate the rule upon which we are now commenting. Then, when the proposed purchaser finds out that he has been deceived, he naturally will not go on with the bargain, and the vendor brings an action to compel him specifically to perform the contract. The head-note to the report, which has been already quoted, will have shown that the vendor was unsuccessful in this attempt. Referring, however, to the judgment, we find the matter dealt with by Vice-Chancellor Bacon on the principle enunciated in the decision of the leading case of Barwick *v.* The London Joint Stock Bank. "The defence is," he proceeds to say, "that the vendor employed an agent to deal with the property, first for letting and then for selling it, and that representations were made by the agent that were wholly untrue, and that to hold the defendant (the purchaser) to such a bargain would be against every principle of justice." Then, having thus stated the ground of defence, he proceeds at a later period in the judgment to lay down the rule which applies to such cases as this, based, it is obvious, on the main principle. "A man," he says, "employs an agent to let a house for him; that authority, in my opinion, contains also an authority to describe the property truly, to represent its actual situation, and, if he thinks fit, to represent its value. That is within the scope of the agent's authority; and when the authority is changed, and instead of being an authority to let becomes an authority to find a purchaser, I think the authority is just the same. I think the principal does thereby authorise his agent to describe, and binds him to describe truly, the property which is to be the subject disposed of; he authorises the agent to state any fact or circumstance which may relate to the value of the property." Then further on he proceeds to state that if the agent induced a purchaser to enter into the contract by means of a falsehood he did that which prevents a principal from enforcing the contract. Therefore we have here in regard to the selling or letting of houses, and of any kind of property, a distinct authority that a would-be purchaser who is induced to enter into the contract to buy by the fraud of the vendor's agent is not bound to perform the contract. It is perfectly true that at first sight this may seem to be hard on the innocent vendor; but, on the other hand, it would certainly be much harder upon the innocent purchaser to hold him fast bound to a contract which he has been induced to enter into by a fraud. Moreover, the principal is by no means placed in the same unfortunate position in which he finds himself if his servant inflicts on some person some actual injury for which the principal has to pay heavily. Because in reality when the bargain induced by fraud goes off, the vendor is in no worse position than he was before it was entered into, unless he is so foolish as to endeavour by a legal action to compel the purchaser to complete it. But it is equally clear that this case shows how very careful principals should be in the choice of their agents. The old legal maxim of "*Caveat emptor*" will not, it is clear, protect the vendor from the consequences of statements which are either deliberately false or made with so much recklessness or want of care as to amount in law to a fraud. Nor, again, will the mere fact that the purchaser makes what may be called independent inquiries prevent him from backing out of the contract if he has also acted on any misrepresentation made to him in respect of it. There is the very high authority of Sir George Jessel in a recent case, who says that "Nothing can be plainer than that false representation is not got rid of by the person resisting the performance of the contract, or asking for revision, on the ground of deceit, being guilty of negligence." Therefore it is clear that nothing except a great delay will prevent a person who has been deceived so as to have been induced to enter into a contract from being able to escape from it. Not only, therefore, does this recent decision show the necessity of great caution in the choice of agents to attend to transactions in regard to property; but it is also clear that it deals a blow at improper means of either selling or letting property, and may be ranked among those decisions which are fortunately so numerous and do so much to uphold the respect felt for the English Bench by the people of this country, and to create fair dealings between man and man.

THE PROPYLÆA OF THE ACROPOLIS, ATHENS.

IN 1879, the Royal Academy of Architecture, Berlin, made the first grant from the Louis Boissonnet bequest, intended for architects and engineers, the successful candidate being Baumeister Richard Bohn, the task imposed upon him being an exact survey and representation of the Propylæa of the Acropolis of Athens. Herr Bohn spent a whole year at the Acropolis, and he has now published the result of his researches in a voluminous work, with twenty-one folio lithographic plates. A few remarks respecting this publication will, therefore, not be out of place here. The volume is divided into two principal parts, the first of which treats of the history of the monuments, whilst the second contains detailed descriptions and reconstruction plans, not only of the Propylæa, but also of the buildings in connexion therewith at the eastern slope of the Acropolis. As is well known, the work of Mnesicles consists of a porch divided into three naves, provided both exteriorly and interiorly with a portico of six Doric columns, and two wings projecting outward on either side, of which the northern one is almost entirely preserved up to the cornice, whilst the southern wing was up to quite recently nearly completely hidden by a Turkish bastion. It was only after that tower had been removed, at Dr. Schliemann's expense, that the chief features of the wing were disclosed, and a reconstruction could be attempted. Herr Bohn's investigations have proved that the southern wing at one time opened into a portico towards the west, opposite the temple of Nikè; and also that it resembled in extent and form the northern wing, by an isolated column near the stairs leading to that temple. The principal portion of the south wing is placed behind that erection, which is adorned with a pediment, so that an angle is created, similar to that between the projecting northern wall and western front of the Erechtheion. This curious solution, not at all satisfactory, from an artistic point of view, which may not have been part of the original plan of the architect, but which may have been a makeshift owing to exterior obstacles, was probably, as Herr Bohn suggests, caused by the erection of the Nikè temple and its bastion. The temple of the goddess of Victory must have been erected at a later time, close to the Propylæa, a supposition which, although not yet satisfactorily proved upon historical and technical grounds, finds much acceptance.

As regards the buildings on the whole, Herr Bohn's thorough examinations have resulted in many important rectifications of and additions to previous surveys, especially as regards the connexion of the several buildings with each other, the construction of the roofs, formation of gutters, &c. In this connexion may be mentioned in the interior of the Propylæa the connecting traces, in the angle between centre portion and northern wing, of a building planned but not executed, in which we may recognise rather a hall than a peristyle courtyard. From an architect's point of view, the data respecting inclination and swelling of the columns, as well as the investigations on the much-disputed curvatures, are of interest. The same care that Herr Bohn has bestowed upon his principal work, the Propylæa, he has employed in investigating the approaches to the fortress. It is impossible to form a correct idea of its state before the time of Pericles. The slope has been partly raised since the erection of Mnesicles's work. The ascent commenced then, as before and at the present time, on the western side of the Nikè bastion, wound upwards probably to below the northern wing, then in a circle up to about the small stairs of the Nikè temple, to reach the porch finally in a last curvature. The orientation of the Agrippa base, erected in 27 A.D., agrees with this direction of the ascent. Soon after, and, as appears from inscriptions, probably in 37 A.D. or 38 A.D., the great marble staircase was built, of which numerous remains are still preserved. As regards the changes made in the approach to the fortress in the Middle Ages and during Turkish dominion, respecting which Herr Bohn reports in detail, it may be mentioned, that he made excavations at several points, which resulted in the discovery of numerous inscriptions and sculpture, amongst the latter being parts of the relief of the Nikè temple. The plates which accompany the work are much praised by the *Centralblatt der Bauverwaltung*, from which the above notes are taken. That journal says that they place Bohn's work in the front rank of artistic monographs published on Classic architecture. This has to be seen.

FOREIGN NOTES.

Competition: Great Hospital at Rome.—It is intended to erect in Rome a large hospital or polyclinque, which is to consist of ten separate buildings, and is estimated to cost eight million lire, or 320,000*l.* sterling. The Italian Ministry of Public Education accordingly, on the 11th inst., issued a notice that a public competition had been opened for the best designs. The programme states that these must be sent in by the 11th of October next by the hour of five p.m. to the "Segretaria del Commune di Roma." The jury will consist of a number of medical men and architects selected by the Ministry of Education. The first prize is 10,000 lire, and there are two second prizes of 5,000 lire each. The Government or Municipality claims as its property the successful designs, but reserves the fullest liberty as to carrying or not carrying any one of them out. The full programme, with plan of the site, can be obtained at the "Edilizia di Roma," or building office of that capital.

Herr Karl Hütter.—On the 14th inst. there died at Weimar, in his seventy-fourth year, one of the veterans of the golden age of the little Saxon city, Herr Karl Hütter, widely celebrated for his artistic stucco work. To English readers he is of interest, chiefly because when a young man he was employed as a *stuccateur* in embellishing Buckingham Palace. He also worked on the Archiepiscopal Cathedral of Rheims and many other noted edifices.

Raffaelle's Apollo and Mars.—The French Government, through the agency of the French Embassy at Rome, has recently purchased for 200,000 francs, the "Apollo and Mars," a painting attributed to Raffaelle. In 1850, it was bought by Mr. Morris Moore for a very small sum, because the English connoisseurs did not admit it to be a work of Raffaelle's. The judgment of Paris critics since that time has been given in favour of its claims as a genuine work of Raffaelle so far as the drawing is concerned, while they hold that his pupils carried out the rest of the work under his eye. Hence the painting is thought worthy of a place in the Louvre.

Tenders for Works, City Commission of Sewers.—At the meeting of the City Commissioners of Sewers, on the 22nd ult., the following tenders were accepted, viz.:—Painter's and plumber's work, Mr. J. F. Clarke, 30 per cent. below schedule prices; engineer's work, Messrs. Willard & Morley, 30 per cent. below schedule prices; carpenter's work, Messrs. Johnson & Co., 13 per cent. below schedule prices.

"THE TALE OF TROY."

THE Homeric drama which has been produced at Cromwell House under this title gave great pleasure to a crowded (perhaps rather too crowded) audience on Wednesday evening, when it was given in Greek, and was, we believe, equally successful in its English form on the preceding day.

The entertainment, which was got up for the benefit of the funds of the King's College lectures for ladies, consisted of a considerable number of tableaux illustrating scenes from the Homeric legend, and a certain number of scenes adapted from Homer, and thrown into dramatic form by Professor Warr, of King's College. The scenes consisted almost entirely of the very words of the Homeric poem, the speeches being merely extracted from the poem and put into the mouths of the characters on the stage, instead of being read as a narrative. One or two small lyrics, viz., an elegy for Patroclus, sung by Achilles and his friends, and a "shuttle song," or spinning song, sung by Nausicaa's maidens, were written by Professor Warr for insertion in the piece; one or two other lyrical additions were taken from other sources,—Theocritus and the Greek anthology.

The first portion opened with a tableau, very effectively composed, "The Pledge of Aphrodite Redeemed," in which the goddess unveils the face of Helen to the admiring Paris. A scene before the Scæan gate of Troy followed, in which Priam and Helen and her women appeared, and which was followed, on the entry of Hector, by the well-known scene of the parting of Hector and Andromache, played with considerable effect and feeling. The most important scene after this, in the first part, was that in the tent of Achilles, where Priam comes to beg the dead body of Hector. Here the really fine acting of "Priam," and his mastery of the expressive force of the language he was speaking in, excited general admiration, as well as the decorative effect of the whole scene, in which Briseis made a most picturesque figure. The first part was brought to a close by the mourning for Hector by his mother and wife, Hecuba and Andromache, and the chorus of women singing, as a dirge, the melancholy line of Homer, which has been translated somewhere, a little diffusely, but with more pathos, than in the translation presented to the audience:—

> "Like leaves of trees the race of man is found,
> Now green in life, now withering on the ground."

The second portion consisted of passages from the history of Ulysses, and opened with three tableaux which were the most real and effective of all; the first representing Circe and her attendants; then Ulysses waited on by Circe as an honoured guest, followed by the scene so often depicted in ancient art, where Ulysses flourishes his sword over the head of Circe and threatens her with dire misfortune unless she releases his comrades from their misery. The position of the principal figures,—Circe kneeling in a supplicatory posture before the hero,—seems to have been partly taken from Flaxman; it was very beautiful and very effective. It is strange what an impression that figure of the "much-enduring man" has made upon the world; the interest in Ulysses seems always fresh, and, in a sense, as much modern as ancient. In the tableaux he wore that plain cap, pointed at the top, which is so familiar to us on antique vases and in Flaxman's designs. The Sirens, who followed with a tableau and a song, were rather tame Sirens, and sang rather tamely: in fact, the genuine Siren would, perhaps, hardly be respectable enough for the modern theatre. The court of Alcinous, the father of Nausicaa, formed a very pretty scene; the ball-playing scene of the lady and her attendants being transferred from its true position on the banks of the river to the court-yard of the house, in order to get all the characters together in one scene; besides which, the actual scene where the ship-wrecked Ulysses alarms the women by his unkempt and unclothed appearance could hardly have been presented in this form, though in the poem it is a charming account of the preservation of dignity and mutual respect under trying circumstances on the part both of Ulysses and Nausicaa. The return of Ulysses to his home in disguise, his discovery by his old nurse from the scar on his foot, and his final revealing himself to Penelope, formed the concluding scenes. The "make up" of Eurycleæ, the nurse (also on the lines of Flaxman, if we are not mistaken), and that of the herdman Eumæus, were both exceedingly characteristic and effective.

The antique costume, when worn by modern actors, suggests a reflection as to the intimate relation between costume and habits of life and movement. The ladies mostly seemed at home in their dress, and it sat well upon them, though some of the figures were over-draped and rather "baggy" in the arrangement of the drapery; still, long skirts of one sort or another are an element in modern as well as in antique dress "of the female persuasion," and, therefore, there is not such a startling difference but that modern wearers may accommodate themselves to the costume. But it appeared to us that few or none of the men who acted felt at ease in their costume, or looked as if it belonged to them. Dress seems to have an influence on action and manner; and the modern male costume, so utterly different in character from the Greek, seems to have developed an action of the limbs suitable to it, but quite different from the action which would seem to belong naturally to men dressed as these Homeric heroes were. It would be difficult to define in what this consists; chiefly perhaps in a want of freedom in the walk, a kind of timidity of gait and action, compared with the movement we should expect from these men with short skirts and bare legs. We allude to this the rather because just now there is a great talk about improvements in dress, and perhaps it is not sufficiently remembered that a very radical change in dress requires a radical change in manner, if the wearer and his or her costumes are to appear to belong to each other; and that it may be found, after all that has been said about the inconvenience and irrationality of this or that costume, that dress has really been more governed by a kind of spontaneous adaptation to the circumstances of life than the reformers are quite aware of.

The architecture calls for some special remark, in two senses. The interiors of the palace of Alcinous, and that of the house of Ulysses,—designed, we believe, by Mr. Poynter, are very interesting examples of carefully-designed effects, based upon a thoughtful consideration of some of the probable elements of the early architecture of Greece and Asia Minor. Reference is made in the preface to the tombs of Phrygia for some of the details; but the zigzag ornament on the columns finds authority also in the curious sculptured column, on Grecian soil, on the tomb of Atreus at Mycenæ. In the house of Ulysses the characteristics of archaic Doric, in capitals and entablature, are faithfully represented; the result is, in each case, a homogeneous and highly effective interior, with a very old-world appearance and effect. So much for praise. What the arrangers of the piece have been about in the scene of "The Scæan Gate" (before which much of the first part of the action passes), and by whose advice they have been guided here, we cannot imagine; but the scene is perfectly absurd. The gate is represented by the gate of lions from Mycenæ, which is archaic enough at any rate, though it comes from another peninsula; but opposite to this is a shrine of Athene, the architectural details of which consist of poor imitations of the details of the Erechtheum,—the architecture of Periclean Athens brought into the "Tale of Troy"!

We cannot too highly commend the devotion of Sir Chas. and Lady Freake to achieve the success of the object in view.

HOGARTH AND CALAIS GATE.

THE municipality of Calais are carrying out their scheme for levelling the fortifications about their town and so extending its limits to include the neighbouring and much larger suburb of St. Pierre. The deep surrounding fosses filled with stagnant pestilent waters are also to be removed. At the Peace of Paris of 1815 some Nottingham lace-makers settling in the then little village of St. Pierre, set up there a tulle manufactory, which now employs upwards of 10,000 hands, being one-third of the total suburban population, and nearly equal to that of Calais itself. It is proposed to erect between Calais and St. Pierre a great central railway station or *gare*, a theatre, and a large hôtel de ville. With the defences will disappear the old Gate and drawbridge which forms a background for Hogarth's "Oh! the Roast Beef of Old England!" engraved by him and Moseley in the year 1749. Soon after the second Peace of Aix-la-Chapelle (1748), Hogarth crossed over to France, but his journey came to an abrupt end at the port of landing. Taken into custody while sketching at Calais Gate, he was led before the authorities, who placed him and his sketch-book under a searching examination: as depicted in the clever painting of Mr. Frith, R.A. They thereupon committed Hogarth to the charge of one Grandsire, his landlord, who undertook that he should not quit his lodgings except to embark for England. This adventure is commemorated in the plate we mention, and the impressions of his brief sojourn abroad in those of "France" and "England." The first-named, says Walpole, "has great merit, though the caricature is carried to excess. In all these [three] the painter's purpose was to make his countrymen observe the ease and affluence of a free Government opposed to the wants and woes of slaves." Into the scene at Calais Gate Hogarth introduced himself, sketch-book in hand. The miserable, half-starved Frenchmen who hungrily gaze at the sirloin which the butcher, intercepted by the sleek friar, is bearing (as the inscription on the wrapper reads) to Mademoiselle Grandsire of Calais, are but prototypes of their countryman in "Beer Street." In that plate Hogarth inserted by an afterthought,—for it does not appear in the first edition,—the absurdly hyperbolical group of the butcher tossing with one hand a Frenchman into mid-air. The respective merits of beef and what Hogarth in the latter gives as a tavern sign,—"Soup Meagre [*sic*] à la Sabot Royal," of political liberty and fanatic persecution, are further contrasted in his prints of "England" and "France." In the former a grenadier paints a caricature of the French king on the wall of the "Duke of Cumberland." In the latter, the soldiers are being forced on board a transport, women are ploughing on the cliff, a monk joyfully feels the edge of an axe which he is about to place amongst a cargo of instruments of torture; whilst in "Calais Gate" he draws in the foreground an expatriated Highlander in a state of abject despair for the then recent disasters of his Prince.

COMPETITIONS.

Leamington School Board.—A special meeting of the above Board was held on the 19th ult. to select the plans for the proposed new Board schools in Shrubland-street and Leicester-street. The Board agreed that the designs bearing the motto "Experiar" were the best-and upon opening the envelopes accompanying the plans it was found that Messrs. G. B. Nichols & Sons, of London and Handsworth, were the authors. At an adjourned meeting, Messrs. Nichols & Sons were appointed architects for these schools, and were instructed to prepare the contract plans at once. Forty-six architects competed.

West Cornwall Dispensary and Infirmary.—At a special meeting of the committee of the West Cornwall Dispensary and Infirmary, held on Saturday last, the premium of 10*l.* was awarded to Mr. John Wm. Trounson, architect, Penzance, for his plans for an operating-room and for single wards adjacent, so arranged that this room and the wards should form part of a new hospital, in case it should be decided to erect one. The other architects who sent in plans were Messrs. Webb & Pearce, Liskeard; Messrs. Henderson & Son, Truro; and Mr. Clarke, Exeter.

All Saints Church, Ipswich.—We understand that Mr. Ewan Christian, the referee, has recommended the premium to be awarded to Mr. S. Wright, Townley-street, Morecambe, Lancashire, for the design bearing the motto "Desideratum." The committee have accepted Mr. Christian's recommendation. The design is in the Late Decorated style.

The Building Exhibition at Birmingham.—The exhibition of arts and manufactures associated with the building and allied industries, which has been held during the past month in Bingley Hall, Birmingham, closed on Monday night. It is stated that upwards of 60,000 persons have passed through the turnstiles in addition to exhibitors. So successful has the exhibition been that it has been determined to continue it annually.

THE PARKES MUSEUM OF HYGIENE.

OPENING OF THE NEW BUILDING, MARGARET STREET.

ON Saturday last the new premises which have been acquired for the purposes of the Parkes Museum of Hygiene were formally opened by H.R.H. the Duke of Albany.

Captain Douglas Galton, C.B., chairman of the Council, read the following report of the Council:—

May it please your Royal Highness,—The new epoch in the history of the Parkes Museum which commences to-day, under the auspicious influence of the presidency of your Royal Highness, affords the Council a desirable opportunity of recapitulating briefly the circumstances which led to the establishment of the Museum, and of setting forth its objects, and the benefits which its promoters anticipate it will confer on the public.

Edmund Alexander Parkes was the first Professor of Hygiene in this country. He had obtained experience by his services in the Army in India, and during the Crimean War, and he was appointed Professor of Hygiene in the Army Medical School when it was established in 1860 by the late Lord Herbert of Lea. When Dr. Parkes's death occurred in the spring of 1876, it was felt by his professional and personal friends, as well as by those who had known him officially, that steps should be taken to perpetuate the memory of a man whose life had been of almost unparalleled utility to others. With this object a public meeting was held on June 18th, 1876, under the presidency of Sir William Jenner, bart., at University College, London, where Dr. Parkes had received his medical education, and had held the Chair of Clinical Medicine. At this meeting it was unanimously resolved to raise a fund for establishing a Museum of Hygiene, to be called the Parkes Museum.

Hygiene, as the executive committee soon practically ascertained, is a word capable of very wide application. In the language of Dr. Parkes, "It is the art of preserving health; that is, of obtaining the most perfect action of body and mind during as long a period as is consistent with the laws of life. Taking the word Hygiene in its larger sense, it signifies rules for perfect culture of mind and body. It is impossible to dissociate the two." The object of a Museum of Hygiene, then, should be to illustrate visually whatever is of service to prevent disease and maintain health.

The subscriptions to the fund were headed by a donation of 50*l.* from the Queen. The Council of University College, at the commencement of 1877, placed galleries at the disposal of the executive committee of the Museum. A library of works of sanitary science was formed, and the Museum was provisionally arranged in classes illustrative of,—(1) Engineering and Local Hygiene; (2) Architecture; (3) Furnishing; (4) Clothing; (5) Food; (6) Preservation and Relief.

The Museum was formally opened to the public on June 28th, 1879, by the Right Hon. Sir R. A. Cross, G.C.B., then Secretary of State for the Home Department; and from that date the public were admitted to the Museum free on every Tuesday, Thursday, and Saturday.

Early in 1881 the Committee of the Parkes Museum of Hygiene arranged to hold in London an International Medical and Sanitary Exhibition, on the occasion of the International Medical Congress, and Her Majesty's Commissioners of 1851 afforded space for the Exhibition at South Kensington. The exhibition was not only international, but it embraced all the industries connected with medicine, as well as those pertaining to domestic and hospital architecture, and included articles illustrative of the following subjects:—Planning and construction; ventilation, lighting, and warming; water-closets, sinks, and baths; house drainage; water supply and filtration; main drainage; appliances of the ward and sick room; disinfectants; foods; microscopes and other apparatus used in the investigation of the causes of disease; appliances used for the treatment of sick and wounded during war. This exhibition proved to be a great success, and the proceeds have materially assisted the executive committee in establishing the Museum in its new premises. The galleries lent by the Council of University College were unfortunately in a somewhat inaccessible position, but notwithstanding this drawback, the Museum was visited by over 5,000 persons interested in sanitary questions. Demonstrations and lectures were also given, which were well attended. Of these lectures one series, in the winter of 1879-80, was given for the benefit of the Working Men's Club and Institute Union, and comprised the subjects of house drainage, ventilation, lighting and warming, food, and the management of the sick-room. A second series was given to the members of the Institution of Builders' Foremen and Clerks of Works, and comprised the subjects of ventilation and house drainage. During the winter 1880-81, a course of lectures was delivered to members of Metropolitan Building Societies. These, which comprised the same subjects as the lectures of the previous year, were attended by numbers so large that the Museum was barely adequate for their accommodation.

In the summer of 1882, the Council of University College required for other purposes the space they had lent to the Parkes Museum, and it became necessary to make new arrangements for housing the collection. The experience acquired by the Committee during the three years in which the Museum was open at University College convinced them of its great utility for educational purposes, and they, therefore, determined to use their best endeavours to establish it upon a permanent basis in a building of its own, in a central situation. In order to effect this it was necessary, in the first place, to give the Museum a legal status. For this purpose the subscribers were incorporated on the 28th of June, 1882, under a license from the Board of Trade. The funds of the Museum are, therefore, now invested in its own name; the trust will be carried on without break and for any length of time, and the Museum is competent to receive legacies and gifts, and generally to transact business under its corporate seal. After the incorporation, the Council proceeded to obtain the premises in which the Museum is now placed.

In fitting up and arranging the Museum, the Council have endeavoured to make the most of the space available. A gallery has been fixed all round the hall and library, with access by means of a circular iron staircase. The heating arrangements illustrate more than one principle; and it may be mentioned that the Council have selected some of the stoves and grates which were successful in the Smoke Abatement Competition. Flues have been so arranged as to enable new forms of stoves and grates to be introduced for exhibition in action, as occasion may arise. The lighting, as far as completed, has been arranged to exemplify the most recently introduced domestic gas-burners, combined with methods for the removal of the products of combustion. The various structural alterations have been made under the valuable and honorary professional assistance of Mr. Edward C. Robins, F.S.A., a member of the Council.

The drainage arrangements, which have been planned by Professor Corfield and Mr. Rogers Field, M. Inst. C.E., exemplify the latest and best principles, and have been fitted up under the superintendence of Mr. Rogers Field, a member of the Council, at his own expense. They have been specially arranged so as to be available for teaching purposes. In the side corridor, channels have been constructed, and a water-service provided, so as to enable various forms of sanitary apparatus to be tested, and a large number are already exhibited in action.

Mr. Thomas Twining, of Twickenham, has contributed a collection of food articles, which, arranged as they are with rare knowledge and judgment, form a most interesting and instructive display. The Council are indebted to Mr. Twining, also, for an admirable synopsis which he has published, showing what he considers to be the scope of a complete museum of hygiene, which the Council commend to the attention of students and intending contributors.

The space at the command of the Museum is small, consequently it became essential to exercise much discrimination in the admission of objects to the Museum. The Council have, in the first place, selected those which mark the various stages in the progress of the science; and, in the second, those which exhibit the most recently-approved form of apparatus.

It will be readily understood that there is an essential difference between an exhibition and a museum:—

Exhibitions are practically a collection of showrooms, containing the articles which each exhibitor considers to be novel and good.

A museum, on the other hand, is a collection of articles selected for the purpose of exhibiting their special qualities as a means of education, and all the exhibits must be arranged in such a manner as to contribute to that end.

The library, which already contains a considerable number of standard works of reference, including blue books and other reports relating to health, not easily attainable elsewhere, is being constantly enlarged; and a reading-room has been fitted up which will be supplied with the leading English and foreign periodicals, treating of matters connected with sanitary science.

The object contemplated in establishing this Museum was to found a central institution for the instruction of the public, where not only professional men, but owners of property, employers of labour, manufacturers, artisans, and other persons, both men and women, may study at their leisure the subjects in which they are most interested. But it is essential to the usefulness of a museum that the exhibition should be accompanied by demonstrations or lectures. The Council propose, therefore, that the meetings, demonstrations, and lectures, which, whilst the Museum occupied temporary premises in University College, were only occasional, should now become a permanent feature of the Institution; and they have arranged for a series of lectures to be delivered during the months of June and July, connected with the various departments of hygiene.

Professor De Chaumont, F.R.S., the successor of Dr. Parkes in the Chair of Hygiene at the Army Medical School at Netley, will give an introductory lecture on Friday, the 1st proximo, entitled "A Sketch of the Origin and Development of the Science of Hygiene."

The Council have arranged to grant the use of the Museum to professors of hygiene and teachers of sanitary science, for the purpose of demonstrating to their pupils the uses of sanitary appliances; and they are glad to say that all the leading professors of hygiene in the medical schools of London have become members of the Museum with a view to availing themselves of these privileges.

In order that the Museum may be of benefit to the labouring and artisan class, the Council propose that it shall be open free to the public during a portion of every day, and they have therefore arranged that the hours of opening shall be as follow:—

On Mondays and Saturdays, from 10 a.m. to 2 p.m., on payment; and from 2 p.m. to 9 p.m., free.

On other week days, from 10 a.m. to 5 p.m., on payment; and from 5 p.m. to 7 p.m., free.

Each step taken since the original institution of the Museum shows the vast importance of the work. It is impossible to look round into the operations of daily life without seeing how much waste and misery result from the ignorance of hygienic laws. Each house in which preventible disease occurs may become a focus for the spread of disease. There are few houses in this great metropolis which are in a really sanitary condition, and this is largely owing to the want of sanitary knowledge on the part of the occupiers. Moreover, the earning power of a community depends largely on its health. The low state of health resulting from preventible causes means loss of wealth to the community. It is not the occupiers of insanitary dwellings alone who suffer from them. The loss of health causes loss of time and inefficient work, and if the employers of labour would realise how great this loss is, they would take steps in ther own interest to stamp out of existence the numerous insanitary conditions which exist all round and in the dwellings and workrooms of the artisan and labouring classes.

The Council feel that increased knowledge in sanitary science of those persons who are engaged in building and engineering operations must tend largely to the prevention of disease.

The expectation of the promoters of this Museum is that it will be a means of imparting this knowledge both to professional men and artisans; that as the object of the Museum is to encourage scientific investigation and the practical study of all matters relating to health, and the diffusion of this knowledge among the public, the Council feel that they are justified in appealing to the public to assist them in these endeavours by subscribing towards an institution which has no parallel in the Empire.

Sir Charles Dilke, President of the Local Government Board, was called upon to move the first resolution, viz.:—

"That, in the opinion of this meeting, the report of the Council of the Parkes Museum of Hygiene affords conclusive evidence that the Museum is meeting a great educational want of the time, and is eminently worthy of public support."

He said that the very full report which had been read made it unnecessary for him to delay the meeting for many minutes, especially as he was to be followed by so distinguished a man as Professor Tyndall, who was so well qualified to speak upon questions of public health and their scientific treatment. Besides, the meeting was no doubt anxious to hear from his Royal Highness the President one of those thoughtful speeches by which his public appearances were marked. The report which had been read was one that would obtain the sympathy and agreement of all, detailed as it was upon most of the points with which it dealt. Perhaps some purists as regarded the English tongue might be inclined to express a doubt as to the wisdom of the use of the foreign word "Hygiene" in the title, but the best defence of the use of the word was that it was Parkes's own favourite word for his favourite study; otherwise the good old English word would no doubt have been preferable. The report touched upon what was at once the strongest and the weakest point in connexion with a Museum of that kind. It defined the difference between an exhibition and a museum in words which were evidently carefully chosen and well considered by the Council. There could be no doubt that that was a subject which was a source of difficulty and weakness in many museums, and one which should be watched with the greatest care. The great danger to be guarded against was lest the Museum should become a mere means for advertising trade wares. We were a very enterprising people, and probably, with the exception of our kinsmen in America, we were the most advertising people in the world, and, therefore, there was always a danger lest such a museum as this,—which was so largely concerned with the daily life of the people in their own homes,—should be used by enterprising traders as a means of pushing their own particular wares.

For instance, with regard to appliances for the prevention of smoke in dwellings, the danger was that grates and cowls would be exhibited, not so much with the view of, in the first place, conducing to the public health and comfort, as with the view of selling the goods of the exhibitor. It was gratifying to know, therefore, that that was a danger which had been carefully guarded against. It was of the greatest advantage in a Museum of that kind to have not only appliances and materials, but a library and lecture-room. In calling together all these agencies under one roof the Council were likely, he thought, to do very much for the promotion of sanitary science. No one who had had any experience in dealing with sanitary matters could fail to be struck by the comprehensiveness of the field which the Museum covered, or could over-estimate the importance of the subject which it illustrated. One danger in connexion with that subject was that we all fancied we knew something about sanitary science, and were prone to act hastily upon conclusions arrived at with imperfect knowledge. It had been said that every man at forty was either a fool or a physician. If so, it was to be hoped that it might result from the opening of the Museum, and from the lectures to be given within it, that the age of wisdom in sanitary matters at least would be reached at an earlier period of life than that mentioned, and that there might be a greater preponderance of physicians than of the alternative variety of beings. Personally, he felt he occupied his position as a speaker at that meeting on account of the office which he had the honour to hold, and in that capacity he had had the necessity for the wide prevalence of sanitary knowledge forcibly brought to his attention in a variety of ways. Difficulties involving matters of sanitary science and health-conditions were constantly brought before him, as he was connected through his office with the enforcement of the Public Health Acts throughout the country, of the laws regulating the construction of the people's homes, of the laws for the regulation of unhealthy and dangerous trades, and with the provision of water supply, the prevention of river pollution, and with a dozen other branches of the vast health question. One effect of contemplating such a wide field of effort was that it produced in one's mind a feeling almost of despair at the amount of work that had to be done, but at the same time, one was impressed with the importance of facilitating the working of sanitary laws by bringing home to the people of the country a knowledge of the conditions and laws of health. He would only, in concluding, heartily re-echo the words with which the report concluded, and they would all agree that the Parkes Museum was in the highest degree worthy and deserving of public support.

Professor Tyndall, F.R.S., said,—I have been asked to second the resolution proposed by the President of the Local Government Board, and it is with no ordinary pleasure that I do so. I dare say the reason why this honourable task has been committed to me is that my medical and sanitary friends know that for many years past I have felt a deep interest in questions which interest them, and that I have sought to instruct myself in the alphabet of these questions by experiments of my own. The scientific mind,—and, indeed, the general healthy human mind,—dislikes confusion. It loves unity and order, and unity and order in science are impossible until we have illuminated the field of facts with the light of principles. The steadfast pole, as Schiller says, must be sought in the flux of phenomena. I think my medical friends will bear me out when I say that in the long history of their science no period can be pointed out more pregnant in the discovery of principles than the period in which we live. The history of the last few years has been a history of marvels in medicine. It would, however, be a grave error to suppose that what has been brought to light within these years is the product of them alone. Every great scientific generalisation, as, indeed, every great reformation in other departments of human activity, is preceded by a period of latency, to use a medical term, or a period of "permeation," to use a political term, during which the desire for fuller knowledge, and the thoughts of individual minds of exceptional penetration, operate in silence, so that what we see outwardly and visibly accomplished in a few years is usually the result of long antecedent and invisible action. Taking this precursory period into account we are able to understand the rapidity with which new and enlarged views of the nature of disease and the means of fighting against it have recently made way among us. The secret of a great physician's art is probably incommunicable. He operates by what Henry Moore, the Platonist, would call Divine sagacity, or rather by sagacity of divination; and, no matter how medical theories may change, this quality will always remain a dominant one. For ages, however, the high instinct of the medical man was exercised amid uncertain *data*. He saw his patients prostrate with plague or pestilence, and he knew by experience that the cause of this plague or this pestilence possessed the power of spreading itself abroad. But what the cause was remained to him a mystery. It was in most cases imagined that the contagium that could spread itself through the air, and by means of this vehicle infect whole populations, was some noxious gas which got into the system and poisoned it. But the specific nature of the poison in each particular disease riveted attention. To use an expression sometimes employed by a professor in this Museum, each disease was observed to "breed true." Small-pox begot small-pox, typhus begot typhus, scarlet fever begot scarlet fever, and so of the rest. Men of sagacity and penetration could not fail to observe the resemblance subsisting between these processes and those of ordinary germination. Could it be that the actions which produced such profound disturbance in the animal frame were due to the introduction within the animal body of a lower form of life? At first, the thought seemed too bold to be entertained, and it took no steadfast root in the mind of investigators. But the more the idea was contemplated the more probable it became, until, finally, the invention of microscopes of extraordinary power enabled the inquirer to subject the fluids and tissues of the animal body to a search so stringent as to bring out in many cases the definite cause of the maladies by which we are affected. The physician and the sanitarian have no longer to fight against phantoms, requiring only the fortuitous concourse of atoms to bring them into existence. Their enemy is revealed, and their business is to thwart him, to intercept him, and to slay him. It is not noxious gases, but organised germs, which, sown in the body and multiplying there indefinitely at the body's expense, produce the most terrible diseases by which humanity has been scourged. Contagia are living things. Men and women have died by the million that bacteria and bacilli might live. Reason repudiates this sacrifice of the greater to the less, and will invert it if possible. These virulent organisms, these ferments of disease, hang about the walls, the furniture, and clothes of the sick-room. How is the room to be disinfected? They are diffused in the air of our drains. How is that air, which is sufficiently noxious on its own account, to be prevented from entering our houses? We know how typhoid fever is generally spread. How are our water and our milk to be protected from that contagium? Our hospitals, it is said, infect their neighbourhood. Is not this preventible? Through the downcast shaft of a coal-mine the fresh air enters, sweeps the noxious gases of the mine along with it, and escapes through the upcast shaft into the open air. Can we not imitate this arrangement in our hospitals? Drawing for our intake upon the pure atmosphere, carrying it through the wards, and making it pass through a purifying fire before finally ejecting it, no contaminating of the surrounding neighbourhood would be possible. All these are questions for the practical sanitarian. They are questions on which the Parkes Museum of Hygiene may be expected to throw light, and the council of the Museum do not overstate their case when they speak of the vast importance of the work they have taken in hand. On the 13th of January, 1800, the royal seal was attached to the charter of the Royal Institution of Great Britain, with which I have the honour of being connected. As a portion of this large project, the founder of that institution had in view something closely similar to what the council of this Museum are now attempting to realise. Mere descriptions he knew were insufficient to interest and instruct the public. The public demanded something visible and tangible, and he therefore proposed that this institution should be made a repository for models of all contrivances and inventions which are calculated to promote the health, comfort, and general well-being of rich and poor. He would immediately and warmly have adopted the list of subjects and objects given in the report just read by the chairman,—planning and construction, ventilation, lighting, warming, and so forth. Indeed, his own list embraces all these things and a great deal more; and he added what I rejoice to see is to be a feature of this museum,—the diffusion of knowledge by means of appropriate lectures. As regards these technical objects, the scheme of Count Rumford did not succeed; though, thanks to the genius of the great men who were its first professors, the Royal Institution has flourished in other directions. But by what right do the council of the Parkes Museum hope to succeed where Rumford failed? There are two reasons for this hope: first, the scheme of the council is a more manageable one; secondly, they have gone through that period of latency, that process of permeation, which was wanting in Rumford's case. Public education in sanitary matters has reached a level that makes the Parkes Museum answer to a public demand. It is the direct outgrowth of a public need, and, as such, will enjoy a permanence greater than it could enjoy as a cut-and-dried institution imposed upon the public. Its success is a consummation devoutly to be wished, and I most heartily echo the concluding words of the chairman that the council feel themselves justified in appealing to the public to assist them in their endeavours, by subscribing towards an institution of such fair promise, and which is without a parallel in the British Empire.

The Archbishop of York, in supporting the resolution, said he supposed that it was as the doctor of another faculty that he had been asked to say a few words about the science of health in reference to the welfare of the people. As one of the clergy of the Church of England, he would only say that they had in that army of 20,000 men a body who were deeply interested in the sanitary condition of the people, but of very many of the clergy it must be said, without resorting to the painful dilemma of fool or physician, that they knew very little indeed about the science of health. Personally, he thought it was a very great shame that it should have to go forth that the Parkes Museum was the only museum of its kind in the country. Small as that institution was, he believed it would acquire growth, and exercise a very great influence upon the health of the people. A story was told of an American General who, seeking a health resort, found it very difficult to make a choice, for he was told that while one place was very good for the lungs, it was very prejudicial to the heart, that another place was too relaxing for those who needed a bracing climate, and so on. In some despair, he mentioned his troubles to a friend, who said, "Well, the fact is, General, it is very dangerous to live anywhere." Now, that had been our condition in this country up to the present time,—it had really been very dangerous to live anywhere, as the sad experience of many families had shown. He was pleased to think, however, that an improvement was being effected, though but slowly. He was told that the population returns would presently show that two years had been added to the average life of the population of this country during the last decade. If that were so, what an enormous value attached to the work of the sanitary reformer! Adding together these two years for the whole population was tantamount to adding a very large number of people to the population. And not only was life increased in quantity, but it was increased in quality, so that people, instead of going about their work listlessly, were able to discharge their functions with vigour and with profit to the community. Seeing how many institutions we had for the diffusion of information of all kinds, he thought that not only ought the Parkes Museum to be generously supported, but it should be supplemented by similar institutions in all our great centres of population.

H.R.H. the President put the resolution to the meeting, when it was carried unanimously, and his Royal Highness then said, "I have now the pleasure to declare the Parkes Museum open."

Sir T. Spencer Wells, bart., President of the Royal College of Surgeons, moved a vote of thanks to H.R.H. the Duke of Albany for presiding.

Dr. H. W. Acland, Regius Professor of Medicine at the University of Oxford, in seconding the motion, said it so happened that the present interesting occasion occurred at a time when

there had been great public attention paid to the question of the sanitary administration of the Army. One of the very last conversations that he ever had with one of the most remarkable men, without any question, who ever set foot on British soil,—his Royal Highness the late Prince Consort,—was on the subject of the administration of Netley Hospital. They all knew how his Royal Highness the President of the Museum was following in the footsteps of his father, and they all hoped that he would live long to continue to do so. The man whom his Royal Highness was there to commemorate was worthy of the honour, for there never lived a better man than Edmund Alexander Parkes. If science and goodness, force and gentleness, could be combined in one human being, they were so in the character of Parkes. In the army in Egypt, in India, or wherever the British army might penetrate, the work which Parkes initiated, and which had been carried on by successors, pupils, and colleagues such as Longmore, Maclean, Du Chaumont, and others, was shown to be fully appreciated while the influence of his example was widely felt.

Captain Douglas Galton having put the motion to the meeting, it was carried by acclamation.

H.R.H. the Duke of Albany, in reply, said,—I have to thank you most heartily for the kind manner in which you have accorded the vote of thanks to me. It has given me great pleasure to become President of the Parkes Museum and to perform the duties of that office on the present occasion. Following, as I do, so many speakers who have treated this subject with equal eloquence and learning, it will hardly be possible for me to say anything which you have not already heard, and it will, therefore, be needless for me to say much. Hygiene, as we now understand it, is a branch of knowledge of modern growth. It is one of the natural results of the great advance of science which this century has witnessed, and might, I fancy, not inaptly be defined as the application of scientific principles to the varying conditions under which we are called upon to live. Thanks to the labours of many eminent men, we have now advanced some way towards an accurate knowledge of the conditions which are necessary for health; and most of these conditions have long been familiar to the few. One object of the Parkes Museum will be to make them familiar to the many. A knowledge of the principles of hygiene is especially necessary for those who have to live in crowded centres of population, where the conditions of life reach a maximum degree of complexity. We have learned, and are daily learning, that many of the luxuries and conveniences of modern life may become sources of danger to us if they be ignorantly used. London would be almost uninhabitable were it not for its wonderful system of sewers; but while enjoying the blessing of effective sewerage, we have had to encounter the difficulty of keeping the air of the sewers out of our dwellings. We all appreciate the brilliant light which is given by a gas-lamp; but its wholesome use, we are now beginning to find, involves questions of ventilation which scarcely troubled those who were content with the comparative dimness of a candle. Again, the open coal fire has long been regarded as one of the chief luxuries of the Briton, but the collected smoke of the fires of 4,000,000 of people has become a nuisance too grievous to be borne, and one for which a remedy must be sought. How best to avoid some of these evils which follow in the wake of civilisation, it will be the function of this Museum to teach. It is notorious that many of our public and private buildings in this country have been constructed without due attention, or, indeed, any attention, to those details which alone make a dwelling wholesome. The experiences of my own family in this matter have, indeed, been singularly hard. We hope that this Museum will tend to hasten the end of this state of things, and that henceforward "healthiness" will be considered as an essential condition of true architectural beauty. For the healthiness of our dwellings we have to depend, not only upon the master mind which furnishes the plan, but even to a greater extent upon the intelligent hands of those who are called upon to carry out the details. Unless the work of these latter be done with intelligence and faithful honesty, the schemes of the wisest architect avail us little. The instruction which has been and will be given here to the artisans who carry out the sanitary details of our houses must be productive of good results. At least, let us hope that some of the specimens of defective workmanship to be found upon our shelves will impress upon them that death, disease, and sorrow may be the results of ignorance or carelessness on their part. It must not be supposed that the lessons which this Museum has to teach have reference only to the arts of construction. The subject of food and dietetics will receive its due share of attention, and, thanks to the generosity and learned thoughtfulness of Mr. Thomas Twining, the food collection is even now well suited for giving instruction and for affording to lecturers the means of practical illustration. Other branches of hygiene, such as clothing, preservation, and relief, will also be illustrated here, and although our space is limited, we nevertheless hope that it will be sufficient. For our aim is to have a small and select collection for the teaching of hygienic principles, rather than a cumbersome mass of objects representative of details, for the reception of which the largest building would soon become inadequate. By no means the least important part of the museum is the reading-room and library for the use of members. We trust this will become a centre of reference, not only for learners, but for teachers; and that our collection of books, already considerable, will rapidly increase. I should like to take the opportunity of saying that the sole object of those who for the past seven years have worked for the establishment of the museum is to disseminate and to help others in disseminating a knowledge of the laws of health. The museum and library will be open daily, and lectures and demonstrations are in course of arrangement by the council. It is hoped that the teachers of hygiene in the medical schools of London will freely use this Museum for giving practical instruction to their classes; and if we can be of service to any kindred society we sincerely trust that such society will put our good intentions to the test. Lastly, we must not forget that the Museum has been established as a memorial to the late Dr. Parkes, whose labours in the cause of sanitation need not be insisted on in this assembly. Although I had not the good fortune to be acquainted with him, I know, from what I hear, that his character was such as all might with advantage strive to imitate. He appears to have been one of those exceptional men who are most esteemed by those who know them best, and one whose noble character raised a sentiment of veneration in brother officers, colleagues, and pupils. Our endeavour will be to make the Parkes Museum in every way worthy of the man whose name it bears. To do this we look for the ungrudging and cordial support of all who are interested in sanitary progress. If such support be accorded us, we may fairly hope that the Museum will help materially in the dissemination of that branch of knowledge which, in the words of Dr. Parkes, aims at rendering "growth more perfect, decay less rapid, life more vigorous, and death more remote."

Dr. G. V. Poore read a telegram sent by Professor Virchow, of Berlin, who sent an expression of his warmest wishes for the growth of their admirable institution.

Dr. Dawson Williams read the following letter:—

"I have laid before the Queen the documents enclosed by you, and I am commanded by her Majesty to assure you that it has given the Queen much pleasure to learn the satisfactory progress of the Parkes Museum. HENRY PONSONBY."

This closed the proceedings, and the Duke of Albany having left, many of the company spent some time in examining the contents of the Museum.

ANOTHER NEW THEATRE IN THE STRAND.

BESIDES the new theatres which within the last year or two have been erected in the neighbourhood of the West End, we understand that another building of this character is about to be erected in the Strand. It is stated that the site of the intended theatre is the well-known Occidental Tavern, together with premises in the Strand, adjoining Simpson's Restaurant. The leases of these premises are, it is said, about to expire, and the new theatre to be erected on the site will have its main frontage and entrance from the Strand. We do not feel impressed with any desire to express hopes for the realisation of the project.

THE CISTERCIAN ABBEY OF MAULBRONN, WÜRTEMBERG.

MR. CHARLES FOWLER, Fellow, read a paper on this subject at the meeting of the Royal Institute of British Architects on Monday evening last, Mr. Horace Jones, president, in the chair.

Mr. Fowler began his paper by referring to the late Mr. E. Sharpe's mention of the Cistercian Abbey of Maulbronn, in Würtemberg, in his valuable book on the Architecture of the Order, which work had unfortunately never been completed. He proposed to limit himself to a more detailed examination of that single example, believing it to be the one in which the buildings were in the most perfect state of preservation. It was chiefly from the account of the abbey given in a monograph by Dr. Paulus, Professor of the Theological Seminary which now occupies the monastic buildings, that the author was led to visit the place, and it was to that literary source he was indebted for his historical gleanings on the subject. The founder of the abbey seemed to have been a certain Walter of Lomersheim, but the ecclesiastical patron was Günther, Bishop of Speyer, who played the most important part in the work, and procured such endowments for the monks as enabled them to begin to build about 1147. The year was not certain, but it was known that the building was left unfinished at Bishop Günther's death in 1161. In May, 1178, it was consecrated by Arnold, Archbishop of Treves. Bishop Günther was buried within its precincts, and his successors in the see of Speyer greatly favoured and protected the abbey, so that the monks were enabled to push forward their extensive additions to the original foundation. The site was picturesque, and well chosen in other respects as well. The church, like the others founded by the Cistercians, was on a large scale and simple in architectural detail. The total length was 210 ft., the internal width 68 ft., and the height of the nave to the originally flat ceiling 62 ft., and in the aisles 28 ft. Externally the church appeared to have transepts of the same height as the nave, but internally they were reduced each to a low aisle, with three eastern chapels on each side of the sacrarium. Over these cross aisles and chapels there was on each side a large chamber. That to the north formed the library. A spiral staircase led to that on the south. In the north transept a broad and easy flight of stairs led to the monks' great dormitory. The screen dividing the nave, and the piers of the nave, were described and illustrated by drawings. The vaulting was in the simplest form, with ribs of bold profile or merely chamfered. A flat ceiling originally covered both nave and aisles. A fragment was left standing in the south transept. The remains of the original ceiling were particularly interesting as proving that the roof to which they are attached is the original roof, dating from the twelfth century. The original doors were also to be seen at the west end of the church. They were covered outside with thick parchment, which was painted, and over which was fixed the elaborate ironwork. In 1424 Abbot Albrecht IV. caused the whole of the church to be vaulted by the lay brother Bertholt. At the same epoch arches were cut through the south wall of the church, and ten chapels built; the two canopied altars in the nave probably dated from about the same period, as well as the fine oak stalls around the choir and the traceried choir windows. As to these windows, in a fresco, bearing the date 1424, and representing the presentation of the church to the Virgin by its founders, Bishops Günther and Walter, of Lomersheim, the east end of the church is represented with the window as now existing. The exterior of the church was plain, almost to baldness, but the masonry was excellent, and the mouldings and details as sharp as when first executed. In accordance with the rule of the Order there were no towers, but over the crossing there was a wooden bell-turret with a spirelet, which, however, seemed to Mr. Fowler not to belong to the original construction of the church roof. The Galilee porch at the west end of the church was a very interesting feature, and a remarkably good example of the Transitional style of the thirteenth century, which produced so many fine works in Western Germany. It is dated from after 1220, and was described in detail. The remainder of the more strictly ecclesiastical buildings of the Monastery were grouped round the cloisters on the north side of the church. The great cellar, which was not of this class, was on the west side; it

was 67 ft. long by 35 ft. broad. It was a peculiar feature at Maulbronn, and was not found in any other of the principal Cistercian houses. Adjoining it were the entrance to the cloistors and the refectory of the lay brothers, both of which were described in sufficient detail. An inscription concurred with the evidence drawn from these particulars to date this part of the buildings from 1201. On the north side was the monks' refectory, the finest building of the whole group. It stood in the usual position, about the centre of that side of the cloisters opposite the church, in this case the north side. It was 89 ft. long, 38 ft. broad, and 33 ft. high to the crown of the vaulting. It was divided by a row of 7 columns down the middle. As the description and illustrations proved, this fine hall was in the best style of the Transition period. The whole was in a state of almost perfect preservation. Mr. Fowler believed the only restoration had been the glazing of the windows and the renewal of the pavement. A description of the kitchen followed, and another of the only other warmed chamber in the whole range of the Abbey buildings. Still fuller accounts were given of the cloisters, the chapter-house, and the abbot's house. This last was in great part rebuilt by Abbot Entenfuss (Duck-foot) in 1512; and his crest, a duck's foot holding a crozier, was carved on one of the pillars of the great hall. The Romanesque arcade at the back of this hall proved the original building to have belonged to the earliest erections of the Abbey. Entenfuss's building was chiefly remarkable for its size, being 100 ft. long by 50 ft. deep. The principal front had a picturesque oriel crowned with a lofty spire. The great hall was about 70 ft. by 35 ft. The building was now converted into residences for the masters of the seminary. Some walls and foundations to the west showed that the original building must have been much larger. The author concluded his paper by comparing Maulbronn with other Cistercian houses. He had already referred to its great cellar as an unusual feature, not seen in any of the English or French monasteries of the Order that he knew of; but he knew of at least one German parallel at Bebenhausen, near Tübingen, in Würtemberg. At least there was a similar arrangement, although the chamber was not thought to have been used as a cellar, but as a parlatorium or conversation-room. Other architectural features met with at Maulbronn were also found wanting in English Cistercian houses, but reappeared in France and Germany, as at Clairvaux and Bebenhausen. This last, Mr. Fowler observed, is not included in the long list of forty-six monasteries of the Order given by Mr. Sharpe. Bebenhausen had been a good deal restored and altered. It was now a royal hunting château, and was picturesque enough to be well worth a visit. He could also confidently recommend to the profession a visit to Maulbronn.

In the discussion which followed,

The Chairman said that he, in common no doubt with many other members of the Institute, had been very much interested in Mr. Fowler's description of this interesting abbey. There was another town (not far, he thought, from Maulbronn), namely Heilbronn, which was also very full of Mediæval work,—indeed, the whole of the district was full of it. The plan of the Abbey of Maulbronn was an exceedingly regular one, and no doubt the buildings were designed all at one time, even though different parts were built at different periods. There was some resemblance, unless he was mistaken, between the character of the architecture of this abbey and that of Our Lady of Trèves, and he believed that this similarity had been pointed out by some writer on the subject.

Mr. R. Herbert Carpenter, in moving a vote of thanks to Mr. Fowler for his paper, said he had travelled close by Maulbronn, but at the time was unaware of the existence there of so interesting a building as the abbey evidently was. He should certainly take the earliest possible opportunity of visiting it. With regard to the entrance through the cloisters into the centre of the buildings, Viollet-le-Duc mentioned a similar case as having existed in an abbey near Paris. In the plan published in the Institute "Transactions," illustrating Mr. Sharpe's lecture, no mention was made of such a warm-air chamber as that mentioned by Mr. Fowler as existing in the monastic buildings at Maulbronn, but in plans of other buildings of the kind Viollet-le-Duc located similar chambers where Mr. Mackenzie Walcott placed the kitchen; but such chambers were called by Mr. Sharpe simply "offices." Probably the most likely place for the kitchen would be between the monks' refectory and that set apart for the lay brothers. As to the position of the abbot's house, in his plan of Clairvaux Viollet-le-Duc placed the abbot's house on the west, and visitors to the monastery were able to go to the abbot's house and abbot's hall without passing through those parts of the buildings devoted to the monks. Mr. Fowler did not indicate how the abbot's guests at Maulbronn got to his house without passing through the other buildings, nor did he state the location of the infirmary. The transepts at Maulbronn were certainly very curious.

Mr. Paley, of Lancaster, said the arrangement of the transept at Maulbronn was very peculiar, and he thought that the plan exhibited by Mr. Fowler was suggestive of crossing-arches. The total absence of any vestibule to the chapter-house was also peculiar. The building was certainly a most interesting one, the more so as, in Mr. Fowler's opinion, it was still perfectly roofed and remained very much in the condition that it was in when it was vacated by the monks. As to the question of glass in the windows at Furness Abbey, many of the windows showed no trace of any groove for the glass, but probably when the austerity of the early rules was diminished the window-openings were filled with glass fixed in wooden frames or casements.

Mr. Blashill said that one of the first points that struck him in the plan of Maulbronn was the presence of three chapels in each transept. A similar arrangement existed at Fountains Abbey, and in a few other buildings of the kind. The little building to the left of the north transept, and between the transept and the chapter-house he should have been glad to hear more about. As Mr. Sharpe, who paid great attention to the subject, had pointed out, there generally existed a small building of peculiar shape separating the two high buildings of the chapter-house and church. Although this small building was nearly always of the same size, no two instances were alike. There were many different theories as to the use to which this building was applied, and many different purposes had been assigned to it, but Mr. Sharpe's conclusion was that this apartment was the penitentiary for recalcitrant monks, although he (Mr. Blashill) could hardly coincide in that view. With regard to the kitchen and the warm-air chamber, it was quite true that Mr. Sharpe did, upon several of his plans, call the building shown on the Maulbronn plan to the east of the refectory a kitchen; but, in his (Mr. Blashill's) belief, that was a mistake, for it would be placing the kitchen between the church and the living apartments of the monks, which would be tantamount to placing the kitchen in a modern house between the drawing-room and dining-room. The fact was that the apartment was not a kitchen, but a calefactory,—a place for the monks to warm themselves. At Tintern and at Fountains Abbey were to be seen fine arches of joggled masonry work spanning what some thought to be enormous fireplaces for cooking, and hence the apartments in which these arches were found were erroneously believed to be kitchens. He (Mr. Blashill) ventured to think that the fireplaces which once existed under the arches to which he had referred were solely for the monks to warm themselves in cold weather. The passage which Mr. Fowler had pointed out at Maulbronn as giving access through the centre of the buildings to the cloister was not uncommon, two or three instances of it being mentioned in Mr. Sharpe's book. As to glazing, at Tintern Abbey some of the window-openings showed grooves for the reception of the glass; others had external rabbets for the reception, presumably, of wooden frames filled with glass, but subsequently the last-mentioned method of glazing seemed to have been discarded in favour of grooves. At Margam, in Wales, and at Dore Abbey, Herefordshire, the chapter-houses were polygonal instead of being square. In the latter case his own excavations had very clearly revealed the fact.

The Chairman, in putting the motion (which was carried unanimously) said it had been suggested that one use to which the small apartment between the transept and chapter-house in these abbeys was put was for the purpose of a morgue or dead-house. With regard to the chapter-houses, they were generally rectangular, the two interesting exceptions mentioned by Mr. Blashill only going to prove the rule. No doubt Mr. Fowler's paper would have the effect of sending a great many members of the profession to Maulbronn to see the very interesting building of which it had treated.

Mr. Fowler, in reply, said he had not pretended to treat his subject exhaustively, because he had never thoroughly taken up the study of Cistercian abbeys. His paper was entirely due to the circumstance that he had happened to light upon what he thought to be a very interesting series of buildings, which, he thought, were well worth description. The buildings were, as he had said, in a singularly good state of preservation. So well-preserved were they, that the description which he had given of them was not in any way conjectural. There was no question as to the age of the buildings, for there had been scarcely any restoration or alteration in the main parts of the buildings. Mr. Carpenter had referred to the entrance to the cloisters from the outside, and asked how the abbot's guests reached his house without going through the monastery itself. There was a way round outside the buildings on the north. The small apartment which he had spoken of in his paper could not possibly have been the kitchen, because it was small and dark; it was certainly nothing but a calefactory. As to the appropriation of the small chamber between the chapter-house and the transept, he (Mr. Fowler) did not think it could possibly have been a sacristy, for it was too small for that purpose. Mr. Paley had spoken of the plan as revealing evidences of there having been a tower at the crossing, but having clambered into the roof he (Mr. Fowler) could find no trace of a tower having ever been carried up. There had evidently been some curious alteration made at the end of the church at some subsequent period. It had been suggested that the Galilee porch had been used as a consistory court. As to there being no vestibule to the chapter-house, none of the instances which he knew in Germany had a vestibule. At Bebenhausen (one of the earliest German monasteries) and in other establishments the chapter-house was approached direct from the cloisters. Both at Bebenhausen and Maulbronn the entrance to the monks' refectory was in a line with the row of columns which extended along the centre of the apartment.

EDINBURGH.

THE obsequies of Dr. William Chambers were performed with due solemnity on the 25th ult. A religious service, with full choir, and which was attended by civic and other dignitaries in official costume, was celebrated in the restored cathedral church of St. Giles, a work which, as our readers are aware, was due to the munificence of the deceased. The citizens of Edinburgh are not backward in showing their appreciation of high merit in any of their countrymen, and already a proposal to erect a monument to Dr. Chambers within the cathedral has taken shape. It has been suggested that the monument should take the form of a recumbent figure, with or without a canopy, as the subscribed funds will permit. Thus will be set on foot one of the purposes which Dr. Chambers had in view when restoring the cathedral—the making of it a Westminster Abbey for Scotland. Crowds have visited the new interior, and much gratification has been expressed as to the result. While the interior cannot be distinguished for high architectural merit, it has a dignified and impressive aspect, and there are peculiarities which lend to it a special interest. It is remarked that the new stained-glass windows, which were considered dull and heavy, do not appear so when they can, as now, be seen from a sufficient distance. A deeply-toned window of considerable size, when in juxtaposition with one of similar dimensions filled with colourless glass, suffers in consequence, and when the remaining windows are supplied with coloured glass the result will doubtless be more satisfactory. We are informed that, in addition to the proposed monument, the Town Council will be asked to fill in the great west window as a memorial of the restorer.

The spire of the new church at Viewforth has been completed, and is disappointing. It terminates in a dumpy extinguisher in a manner which is neither quaint nor beautiful.

Plans have been prepared by Mr. Sydney Mitchell for a new mission hall for the parish of St. Steven's. The site is at the south-east end of Brunswick-street, in the proximity of the parish schools and church. The style adopted

is Early Gothic, with facework of blue stone from Hailes quarry, the tracery being of red stone, from Corsehill, Dumfries.

A movement has been revived for the formation of a new bridge at Bell's Mills,—a much-needed improvement in a locality which is rapidly gaining in importance. The present bridge, of one arch on a low level, is said to be in an unsafe condition, and is very inconvenient. A subscription in aid has been set on foot, and the Town Council are to be asked to carry out the work. A plan has been prepared showing a bridge of three arches upon a much higher level than the present one. The approaches may be widened, and must be raised, and a convenient branch road to Grosvenor-place will be formed.

EXCAVATIONS.

Corfu.—On the south side of the Acropolis at Corfu a series of excavations have been begun; and on the spot where once stood the Temple of Dionysos a charming head of a marble statue of Venus has been found. It is universally pronounced by all connoisseurs who have seen it to belong to the best period of ancient Greek art, and to be one of the most excellent specimens ever found. The head is in possession of the Austrian Consul at Corfu, and copies are shortly to be produced by a Berlin firm in bronze.

Tivoli: Ancient Marble Table.—One of the most interesting ancient relics recently discovered is a *mensa ponderaria* or marble table found in Tivoli. It is 6 ft. long, and 2 ft. 6 in. broad, and rests on three marble trapezophori. It was found in a temple dedicated to Hercules, and, as an inscription upon it states, it was consecrated to the same divinity as the temple itself. The feet of the table are adorned with club and thyrsus. The surface of the table is provided with four round hollows, the diameters of which range from 11 in. to nearly 14 in. In these holes were originally fixed the standard measures which Marcus Varenus, the donor, had presented to his fellow-citizens. These measures served both for dry goods, like corn and seeds, as well as for oil and other fluids. When the measure was full it could be opened underneath, and thus rapidly emptied. This *mensa ponderaria*, or measuring-table, was fixed in a prominent spot, which was embellished in many ways, numerous other antique relics having been already found there in the excavations, which have only recently been commenced, and which promise much more of interest.

GUADALAJARA, CASTILE.

THE historical city of Guadalajara (an Arabian name signifying rock torrent) possesses various artistic monuments of undoubted merit. Of considerable importance during the Arabian dominion, Guadalajara became still more famous when it was occupied by the forces of King Fernando I. of Castile, and later by the victorious army of Don Alphonso VI. That monarch and several of his successors granted valuable privileges to the city. Queen Donna Berenguela retired to Guadalajara when she abdicated the united crowns of Leon and Castile in favour of her son. Here also Don Pedro Gonzales de Mendoza was born, who lost his life in the battle of Aljubarrota to save that of his king. Here, likewise, "the great cardinal" of Spain was born. Here, finally, Philip II. wedded Isabelle of France, and Philip V. was united to Isabella Farnesina. The palace of the Duke of Infantado, a portion of which we illustrate in this week's *Builder*, was begun in 1461 by Don Lopez y Hurtado de Mendoza. At the present day, the palace is the property of the Duke of Ossuna, the heir to the titles and estates of the Mendozas.

The building is in the Gothic style of the time. The façade presents a most unique appearance, caused not merely by the projecting bosses, but also by the irregular way in which the windows have been distributed, and the almost bizarre adornments,—not shown in our illustration. The only exception is formed by the two windows over the principal door and under the stone coat-of-arms, and half a dozen windows on either side, in the Renaissance style. On one side of the gate they are continued by a second similar series, which contrasts most curiously with the upper portion of the building with its Gothic semi-columns, pulpit-like bays, and small Arabian window openings. But the interior of the palace, especially the patio or courtyard, is still stranger and more confusing, with its galleries and loggias. The rich fancy of the sculptor and architect combined has united at the four corners clusters of the series of columns upon which rest the arches, formed apparently of loose stones, the panels between being superabundantly ornamented with forms of animals, well-combed lions, and griffins. A breastwork, in the Early Renaissance style, encloses the loggias, above the twisted columns of which the arches of the story below are repeated. At each corner a broad cornice projects from the interior wall to the corner column, upon which two knights support the ducal coat-of-arms.

The halls of the palace are rather neglected. The present owner, like most of his class, bestows little attention upon art, nothing having been done to the building in the shape of repairs for years. But the beautiful mosaics, in which the art of the Arabs has been happily blended with the taste of the Renaissance; the wooden ceilings, thickly covered with the first gold brought from the Indies, with their Media-Naranjas (semi-orange-shaped cupolas), reminding us of the Andalusian alcazars; and many fairly executed frescos, in the style of Giovanni da Udine, give us an idea of the former grandeur of the ducal house, whose only uncontested possession at the present day is their *hauteur*, which acknowledges no one but God supreme to it.

HEAD-QUARTERS, CLUB, AND DRILL-HALL,

FOR THE BLOOMSBURY RIFLE VOLUNTEERS.

THE new buildings lately erected in Cheniesstreet, and of which we give plans and perspective sketch, are interesting as the most comprehensive attempt yet made to provide a London Volunteer regiment with suitable accommodation. The spacious grounds and premises of the Honourable Artillery Company, for obvious reasons, are beyond comparison; and the Bloomsbury buildings, therefore, probably afford some practical suggestions, regard being given to the limited sites available in the metropolis. The site in question has a frontage of 50 ft. to Chenies-street by a depth of about 160 ft., and has been leased from the Duke of Bedford by Lieut.-Colonel Richards, commanding the Bloomsbury Rifles. Colonel Richards has also, we learn, at his sole charge, supplied the necessary funds for the erection and equipment of the buildings; the architect being Mr. Samuel Knight, of Cornhill, who is an old volunteer, and a captain in the regiment.

In explanation of the plans and construction, it should be stated that the drill-hall provides for squad and company drill only. Its dimensions, 70 ft. by 50 ft., however, enable an average battalion of eight companies to be massed in column for marches out, &c., and the entrance corridor is so arranged that the regiment may move off in usual military route, "right in front," and return "left in front."

The hall is roofed in one span by light iron trusses, and lighted and ventilated by a raised lantern running the entire length. The walls are faced internally with white brick, having a deep red brick dado. The floor is of stout deal, tongued, the hall being occasionally used for dinners, concerts, and entertainments of a social character. The raised platform at the end for the display of gymnastics, assaults at arms, &c., has been provided with a handsome proscenium, and all the apparatus of a small theatre; an amateur dramatic club of talent and activity being formed in the regiment. Arm-racks line the walls. Albo-carbon lights are used for lighting the hall at night.

The suite of officers' rooms on the first floor are panelled and ceiled in deal, stained dark oak; the mess-room fireplace is a handsome feature,—a fire-dog grate in a deep-splayed recess lined with red glazed bricks and tile hearth. A wide arched chimneypiece with embattled cornice, panelled with shields, bearing the coats-of-arms of present and past commanding officers, is carved in fine Caen stone.

Throughout the building the chief rooms have similar characteristic fireplaces, fire-brick being largely used for the grates, and Corsehill stone chimneypieces of Tudor design.

In the attic-story is provided residence for a staff-sergeant as caretaker, besides some convenient bed and dressing rooms for occasional use.

In the basement, extending to the area beneath the men's mess-room, are very ample and dry storage, a fireproof room, and, not least important, kitchen offices so equipped that a dinner of several courses for 250 or 300 persons can be conveniently cooked and served. It should be mentioned, however, that this extensive provision was only found necessary at a very advanced stage of the building, to accommodate the "Company" and "Regimental" dinners which otherwise would be held at a public tavern or restaurant.

Referring to the exterior, it should be noted that only the Chenies-street frontage comes into prominent view.

Tudor was chosen by the architect, as the English style having the semi-military character suitable to the purpose; and as far as possible precedents of Tudor date have been followed in the decorative treatment of the design; though details, especially in the carving, have been freely dealt with. The corbels to the window labels are carved as "volunteer" heads, of spirited and even grotesque character.

The principal front, with the embattled tower surmounted by a tall flag-staff, is built in red brick with dressings of red Corsehill stone. High up on the tower three massive shields are carved, suspended by ribands from rosette bosses; the central shield is charged with the royal arms, flanked by those of the Duke of Bedford, and the county of Middlesex. In a central panel is carved the "bugle," the regimental badge of the Rifle Brigade.

The arched portal of the entrance is inclosed by a pair of wrought-iron gates, of characteristic design.

The general works have been well carried out by Mr. B. E. Nightingale, the contractor; the gas work and cooking apparatus by Messrs. Berry & Sons; the carving, under the architect's instructions, was executed by the late Mr. Finlay, who met with his fatal accident at Hungerford, just at its completion. Mr. Duran was clerk of the works.

THE BAGGE MEMORIAL, SWAFFHAM.

THIS structure has been erected as a memorial of the late Sir William Bagge, bart., M.P., who represented West Norfolk from 1837 to 1857, and again from 1865 till his death in 1880.

It consists of a traveller's rest, in which a *niche* is provided to receive a bust of the late baronet by Mr. Hamo Thorneycroft, A.R.A. Mr. Blomfield, M.A., is the architect.

The plan is an irregular hexagon with arches in the larger sides. In two of the smaller sides are placed drinking-fountains with bowls of polished granite and dog-trough below.

Granite, Ancaster stone, and Ketton stone have been employed in the construction. The cupola is covered with Broseley tiles and lead, and the floor is of marble mosaic by Messrs. Burke & Co.

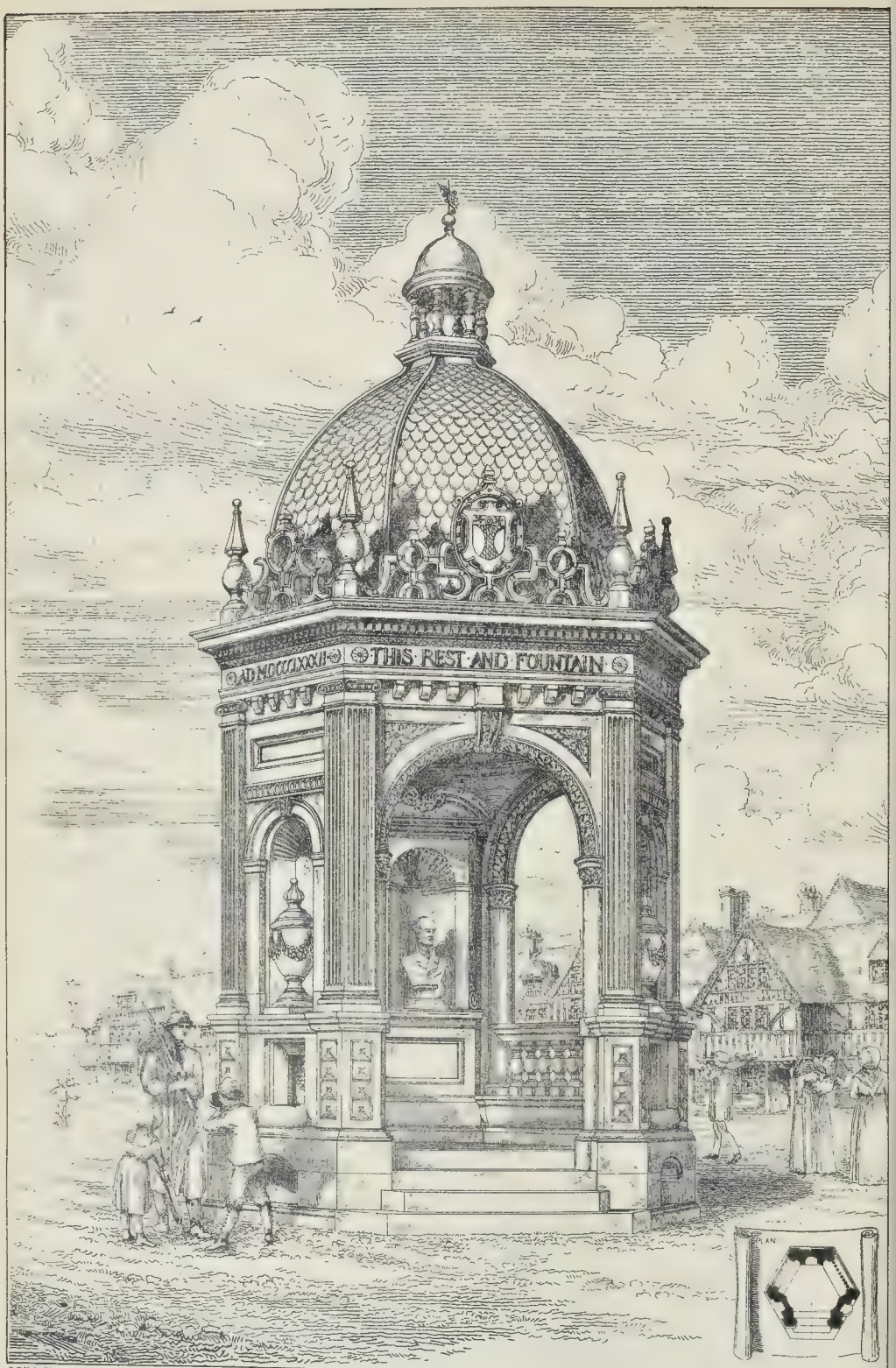
The work has been carried out by Messrs. Bardell Bros., of King's Lynn, the carving being executed by Mr. T. Earp.

MOSAIC WALL DECORATION.

THE subject here shown is part of the wall decoration of an entrance lobby in John-street, Edgware-road, executed by Mr. J. F. Ebner, of Clerkenwell-road, for the Northampton Wine Company. It represents the well-known scene (Hen. IV., act 1) between Prince Henry and Falstaff at the Boar's Head Tavern, Eastcheap, in which the man of flesh is ridiculed by the Prince for his boasting and cowardice in the affair at Gadshill.

The work is executed in glass-enamel tesseræ, and has all the characteristics of the traditionary mosaic of Rome and Venice, although emanating from a London *atelier*. The size of the picture is 5 ft. by 3 ft. 9 in.

The Tait Memorial, Canterbury. — The local Tait Memorial Committee have, we hear, decided to postpone coming to any decision as to the new sedilia to be placed in Canterbury Cathedral until an endeavour has been made to induce the trustees of the National Memorial Fund to alter their resolution of placing a recumbent figure of the late Primate in the cathedral, and to allow the memorial to take the form of a new reredos, which could be made to blend with the proposed sedilia.

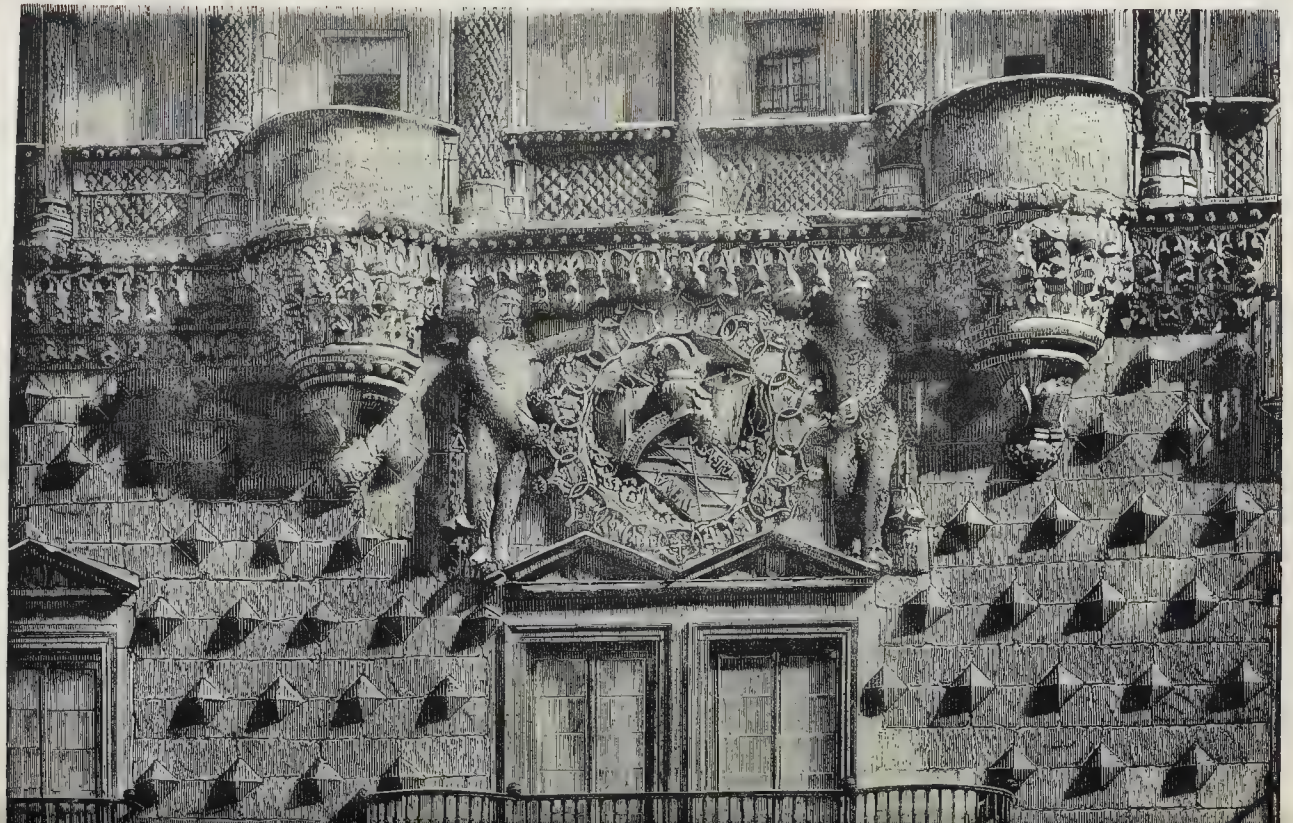


C. F. K[illingbeck]., Photo-Litho[grapher]., Hilborn. Wyman & Sons, Printers G[reat] Queen St[reet].

THE BAGGE MEMORIAL, SWAFFHAM.—Mr. Blomfield, M.A., Architect.



MOSAIC WALL DECORATION.



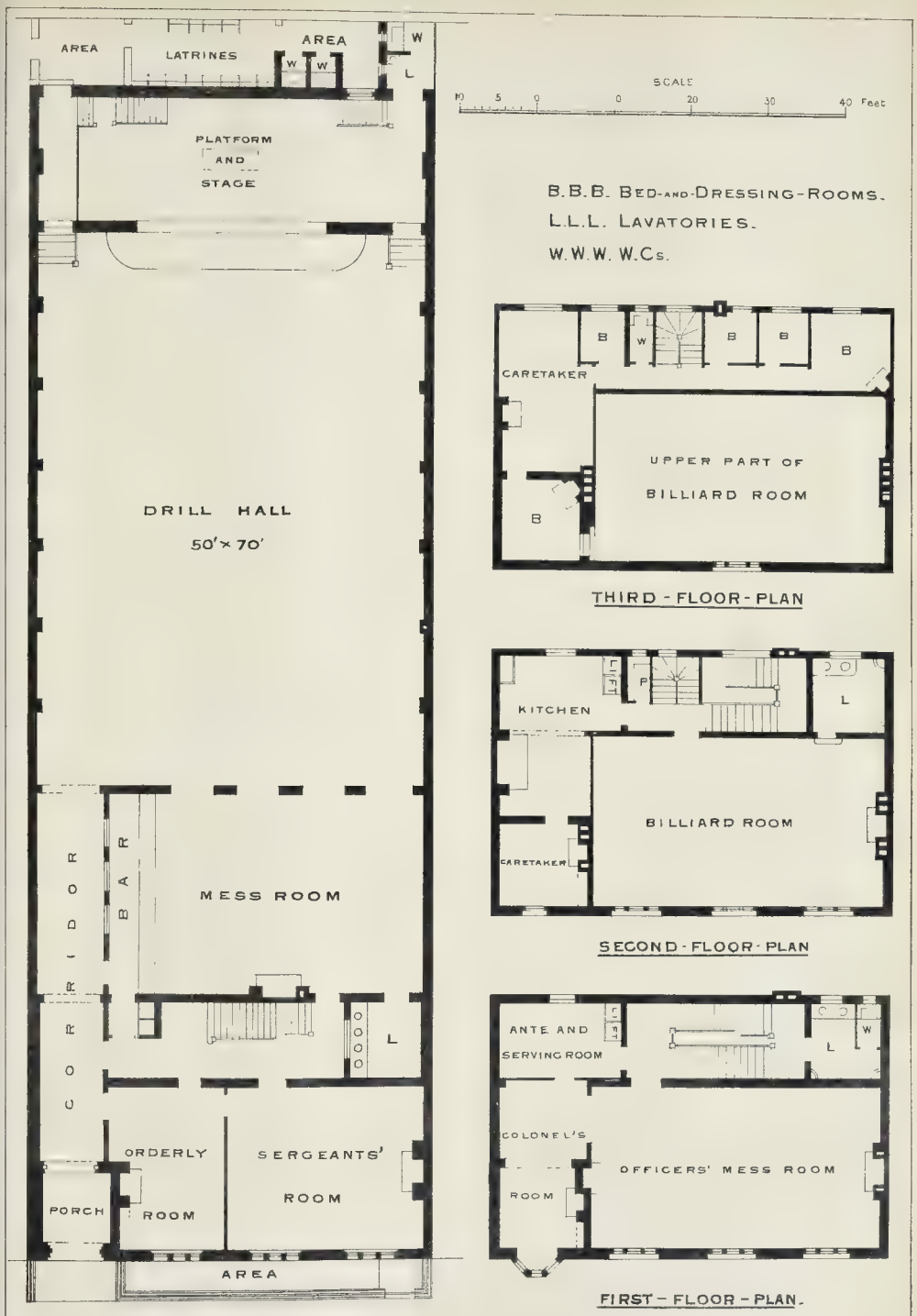


DOORWAY OF THE INFANTADO PALACE, GUADALAJARA, CASTILE.



HEAD QUARTERS, CLUB AND DRILL HALL, BLOOMSBURY RIFLE VOLUNTEERS.

Mr. Samuel Knight, Architect



SAMUEL KNIGHT, Archt (CAPTAIN, BLOOMSBURY RIFLES),
CORNHILL CHAMBERS, CORNHILL, E.C.

Whiteman & Bass, *Photo Litho* 236, High Holborn

Wyman & Sons Printers 74 Queen St

DRILL HALL, BLOOMSBURY: PLANS.

THE ROYAL COURTS OF JUSTICE CHAMBERS, STRAND.

VISIT OF THE ARCHITECTURAL ASSOCIATION.

On Saturday afternoon last a number of the members of the Architectural Association visited the extensive building now approaching completion on the south side of the Strand, a little westward of the site of Temple Bar, and opposite to the Royal Courts of Justice. The building, of the principal façade of which we gave a double-page view in the *Builder* on the 27th of January last, covers an area of about 10,000 square feet, and consists of basement and sub-basement, and ground, mezzanine, and five upper floors. The building is being erected under the superintendence of Mr. W. Wimble and Mr. Goymour Cuthbert, joint architects. Mr. Cuthbert (assisted by Mr. Brady, the clerk of the works) received the visitors, and conducted them over the building, which has many points of interest, as, owing to the hemmed-in position of the site, some difficult problems in planning and construction have had to be overcome. Mr. Cuthbert, who very fully and clearly explained the construction of the buildings to the visitors, said that the building was intended for three different purposes. The sub-basement, which is from 27 ft. to 30 ft. below the Strand level, will be occupied by the steam-engines and "dynamos" for electric lighting. The sculleries, wine and beer stores, and other departments of the restaurant business will also be located in this sub-basement. The first or upper basement has been made to assume the appearance of a very spacious Norman crypt, 139 ft. long and 79 ft. wide, the massive blue-brick piers which support the superstructure having been encased in stone, some of the round piers or columns being of large diameter. The vaulting is in brickwork, plastered. This crypt is intended to serve as part of the restaurant, which will also occupy the whole of the ground floor, with the exception of the staircases, the entrance to the chambers above, and the passage-way on the east side leading from Essex-court in the Temple to the Strand. The building has a frontage to Essex-court, and this frontage has been plainly executed in red brick and stone, so as to harmonise with the other buildings near it. The basement, sub-basement, and other parts of the building will be ventilated by means of Messrs. Robert Boyle & Son's system, the principle adopted being similar to that used by them for the ventilation of ships' holds or saloons. The ventilation will be effected almost entirely from the roof, where inlet or down-cast cowls will be fixed for conveying fresh air downwards through pipes into the building, the well-known air-pump cowls or ventilators being used for the extraction of foul air. The ground-floor portion of the restaurant has the upper portions of the iron stancheons which carry a part of the superstructure encased in plaster-work, in the form of clustered pilasters, while the lower portions are encased with American walnut and Sequoia wood,—the latter being a wood which looks very well in conjunction with walnut, "linen" panelling made of it showing to particular advantage. The walnut-wood casing of the stancheons is further relieved by some excellently-painted tile panels of chrysanthemums, the flowers represented being some of those grown in the Temple Gardens, and exhibited at last year's show. These tiles have been executed by Messrs. Doulton & Co., who have, indeed, supplied other hand-painted tiles on which the decoration of the interior chiefly depends. The whole of the front vestibule, one side of which will be open to the street, is lined with Doulton-ware. The ground-floor portion of the restaurant is provided with a dado of American walnut and Sequoia wood, relieved at intervals with painted tile panels. The windows are filled with stained or obscured glass of such a character that, while being pleasing in effect and preventing disagreeable outlooks, it will intercept a minimum amount of light. The windows on the east side of the ground-floor portion of the restaurant, the sills of which are about on a level with the roof of a portion of the passage leading through from the Temple to the Strand, have beneath and external to them small top-lighted spaces arranged between the wall of the restaurant and the wall of the passage, and these spaces will be used as tanks for fish or as cases for ferns, &c., thus continuing the light of the windows below the sills, and imparting additional cheerfulness and brightness to the apartment. The front portion of the first-floor will be devoted to the purposes of a club connected with the legal profession, while the remainder of the floor and the upper floors are chiefly devoted to offices, all of which are well lighted, and planned with special reference to being let in larger or smaller holdings. They are, for the most part, arranged on either side of a central corridor, into which the doors open, the windows being equably spaced on the side opposite to that giving on to the corridor. The fire-places being built in the corridor wall, and at regular intervals, a clear space is left from end to end of the building on each side of the corridor between the corridor and the outer walls, and cross partitions can be made where desired, so that it will be possible to rent an office consisting of one room about 14 ft. square, containing its own entrance from the corridor, its own fire-place, and, of course, its own window, or any number of such multiples of 14 ft. may be let either in the form of one large room or as a series of rooms, self-contained and communicating with each other through doors in the partitions. The Strand front of the building is in the French Renaissance style, but with somewhat bolder in detail and a more sparing use of carving than is usual. The whole of the ground-floor portion of the façade is in polished red Peterhead granite, supplied by Messrs. Manuelle, and some of the blocks are of large size. The two large granite piers on either side of the principal entrance carry their share of the superstructure independently of any iron stancheon. The stone used for the upper part of the main façade is a red sandstone from Aspatria, Cumberland. The stone used for the staircases, of which there are two, is Spinkwell. The principal staircase is noteworthy as being made with cast-iron strings and risers, the treads being 3 in. thick and of Spinkwell stone. The weight of the staircase is thus kept clear of the walls, and it will be possible to reverse or replace the treads without difficulty when they become worn. The iron portion of this staircase is being made and fixed by Mr. Clarke, of Moorgate-street. The general constructional ironwork has been supplied by Messrs. Measures Bros. The first floor is fireproofed on Messrs. Homan & Rodgers's system. The offices will be served by rapid passenger and deed-box lifts, which, together with the service-lifts of the restaurant (the kitchens for which, it should be stated, will be on the top of the west wing of the building) will be worked by high-pressure hydraulic power, and are being made by Messrs. Archibald Smith & Stevens, of Battersea. The buildings will be supplied with water from an artesian well, which has been sunk by Mr. Thomas Tilley, well-engineer, to a distance of 238 ft. below the Strand level. The white glazed bricks used for lining the walls of the passage leading from the temple to the Strand have been supplied by the Farnley Iron Company. Milner's Safe Company (Limited), London, are supplying all the strong-room doors to several compartments in the building. Ten of these doors are to be fitted to strong-rooms in the sub-basement, each being 6 ft. 1 in. by 2 ft. 10½ in. To another room they are also supplying one of their fire and burglar proof doors 7 ft. 3 in. high by 5 ft. wide. The party-wall doors are also being supplied by the company. Mr. Brady is the efficient clerk of works. The contractors are Messrs. Ashby & Horner, to the excellence of whose work Mr. Cuthbert made reference in the presence of the visitors on Saturday last. The amount of the contract was about 60,000*l.*, but with electric-lighting arrangements and other extras the cost of the building will probably amount to 70,000*l.*

On the motion of Mr. W. H. Atkin Berry, a vote of thanks was given to Mr. Cuthbert for his kindness in conducting the visitors over the building.

Formby.—A new Sunday-school adjoining the Wesleyan Chapel, Formby, was opened on the 18th ult. The building, which has been erected by Mr. William Wilkinson, of Southport, from plans prepared by Mr. W. Allan, of Bradford, is of red brick, tiled with blue slates, the woodwork being all in pitch-pine. There are two roomy class-rooms for the elder scholars, and the schoolroom itself will accommodate upwards of 300 children. The school has been built at a cost of about 600*l.*

THE CONVERSAZIONE OF THE INSTITUTION OF CIVIL ENGINEERS.

On Wednesday evening the annual conversazione of this institution was held in the South Kensington Museum, when Mr. Brunlees (the president) and Mrs. Brunlees received a large company of ladies and gentlemen, numbering about 2,800. Among them were Lord Justice Baggallay, the Chinese Minister, General Foord, General Rundall, Sir J. W. Bazalgette, Mr. B. Baker, Mr. C. E. Cooper, Sir F. Abel, Mr. T. Hawksley, Sir H. Rawlinson, Sir J. Coode, Sir J. Douglas, Sir W. Siemens, Sir W. Thompson, Professor Leone Levi, Mr. J. Fowler, Sir J. Hawkshaw, Mr. J. Abernethy, Mr. E. Woods, Mr. G. B. Bruce, and the secretary (Mr. J. Forrest). The president and Mrs. Brunlees were occupied for a long time in formally receiving their very numerous guests. This ceremony took place in the second Architectural Court, which was specially decorated with a large collection of plants and flowers. These would have formed a fine show by themselves, and the effect of the palms and large ferns interspersed with the architectural objects was very striking. In some parts of the building ottomans and chairs were placed among the works of art, and the refreshment-rooms were used to their utmost capacity. The Italian court was a great centre of attraction, the Hungarian band, under Herr Berkes Lagos, being stationed in the small chapel on the north side of the court, and performing some of their sprightly music. The Lord President's Court, however, competed keenly with it for popularity, as Mr. Edward Plater's Glee Union appeared there at intervals, and gave brief selections of glees, madrigals, and part-songs. The ten rooms devoted to the national collection of pictures by British artists, including some of the pictures left to the nation by Robert Vernon and Jacob Bell, the gallery containing the Raffaelle cartoons, and the two galleries containing the Sheepshanks collection and the Jones Bequest, were all thrown open to visitors and illuminated by the electric light, attracting many visitors.

LANCASHIRE AND CHESHIRE ANTIQUARIAN SOCIETY.

MEETING AT MANCHESTER.

The first meeting of this Society for the present session was held in Manchester on Saturday last, when a visit was paid to Chetham Hospital. The members assembled in the dining hall of the hospital, there being a good attendance, the president, Professor Boyd Dawkins, occupying the chair. An interesting paper on "The Architectural History of the Buildings" (Chetham's Hospital) was read by Mr. H. Taylor, who went back to the original foundation of the hospital, and traced its history through various ages to the time of the founder of the present institution. In conclusion he said: "Rumours have been afloat from time to time that the valuable site is to be sold, and this venerable relic of the past destroyed. Should such be the case, it will not redound to the credit of the citizens of Manchester to part so easily with such a prize." The thanks of the meeting were accorded to Mr. Taylor for his paper, on the motion of the Ven. Archdeacon Anson, seconded by Mr. J. O. Nicholson. Subsequently the members of the society were taken through the hospital, and the various architectural features of the building and other matters of interest to the antiquary were pointed out, the books and rare valuable manuscripts in which the hospital abounds being described by Mr. John Eglington Bailey. The explanations given of the remains of the original building which date from "the last of the Norman barons (1425)," suggested to those who were present the contrast of the Manchester of to-day with the Manchester of the time when Thomas de la Warre, "the priest lord," completed the edifice on the site of which, and including much of the original building, the present college now stands.

Institution of Civil Engineers.—During the past twelve months there has been an increase of 1 honorary member, 51 members, 172 Associate members, and 40 students, with a decrease of 10 Associates, making an aggregate gain of 254, and bringing up the total to 4,400 of all classes, or an addition in the year at the rate of more than 6 per cent.

THE HYGIENIC EXHIBITION AT BERLIN.

THE opening of the above display on the 12th ult. must have been a gratifying occasion for those who have been identified with the work since its commencement, and who were not deterred by the destruction of the original building from erecting another, which, together with its surroundings, is far superior in effect and general character to that which was destroyed by last year's fire. The ceremonial opening on the 12th was preceded on the 10th by a meeting of the central committee, at which the leading officials gave an account of their work in connexion with the Exhibition. From the explanations of Herr Hobrecht (the Minister of Works) it seems that the Emperor's gift of 5,000*l.*, and the donation of 10,000*l.* by the city of Berlin, formed a basis for the funds necessary for the erection of the new building; voluntary signatures towards the guarantee fund having been also received to a satisfactory extent. Dr. Weigert, the treasurer, acknowledged the loyal and conscientious manner in which the various insurance companies had met the claims of exhibitors. Such objects as had been specially insured at a given value were paid for in full, while two-thirds of the amount claimed was paid in cases where the insured value had not yet been specified. Not a single legal process has resulted. Herr Kyllmann, the architect, referred to the fact that the new building was much more complete than the old one would have been. The cupola would, he stated, only be finished in three weeks. He explained that the building commission had endeavoured to construct the Exhibition in such a manner that ideal requirements and practical necessities should alike be regarded; due attention being paid to facilitating the grouping of the objects displayed, and assuring the comfort of visitors. He referred to the panorama as forming the chief ornamental attraction of the display. Herr Henneberg reported that the expenses so far (including 9,000*l.* deficit from the previous undertaking) had been 30,000*l.* The calculations made showed that even if the attendance of visitors was not more than 4,000 daily (at 6d. each), no financial deficit could arise, while it was expected that a much larger number would come to inspect the display.

The principal architectural features of the exhibition have already been referred to in these columns.* It only remains to add that the arrangements seem to answer the requirements of the case in every respect. Much credit is given by the German press to the energy which was displayed in the reconstruction, the work having been subjected to certain unforeseen delays in consequence of the long winter. The relatively complete state of the internal arrangements is also spoken of as being in marked contrast with the usual state of things in this respect. It may be mentioned that the roof is of corrugated zinc, supported by light iron columns.

With respect to the decorative treatment of the interior, the absence of drapery and hangings is considered by many to be a decided gain, as in most cases these lose their freshness and become dusty. The ornamental work has been carried out as modestly as possible; the two special points of attraction being the entrance (which is only now being completed) and the panorama. In the garden is a terrace with cascades; the separate buildings which possess no special artistic interest being collected together in one portion of it; the park-like grounds being thus left free of large constructions and rendered cheerful by the gay little kiosques scattered over them. The fitted-up house is an object of special interest, to which detailed reference will be made on a future occasion. A notable feature of the entrance is the bust of the Empress of Germany, by the young sculptor Peter Breuer, while the exhibition of models of public buildings (with a view of illustrating their arrangements for heating and ventilation) relieves the eye from the monotony produced by the objects of strictly practical utility of which the greater part of the display is composed.

The panorama of Gastein, painted by Albert Hertel, forms one of the principal attractions of the exhibition. It will be remembered that in last year's fire there was a panorama destroyed which had been painted by Christian Wilberg, the pioneer of the present renewed development of an art which had been, to a certain extent, left in the background. The subject was the supply and utilisation of water in ancient Rome, and the objects represented included aqueducts and baths introduced into a landscape comprising the pictorial features of the once flourishing country districts around that city. It was intended to have it reproduced for the present occasion, but the sudden death of the artist (within a few weeks of the destruction of his work) obliged the promoters of the exhibition to entrust the work of designing and executing a new panorama to another painter. Herr Hertel was selected for the work, and has produced a realistic picture of Gastein, the celebrated mineral-water source, which is frequently patronised by the Emperor of Germany. The published comments have been uniformly favourable as to the manner in which the romantic surroundings of that well-known spot have been depicted.

It would be difficult to group within the limits of a single notice even a brief mention of the numerous objects of interest which the exhibition contains, but a general idea of its scope and completeness is afforded by the contributions of the leading public bodies connected with hygienic science. The Imperial Sanitary Department takes a prominent position and its collected information forms an important basis for further efforts in the cause of sanitation. The Hygienic Institute of the University of Munich is known to be the realisation of a wish of its present director, Pettenkofer, that his particular study should be placed in a technical position worthy of the important element it forms in modern civilisation. Bavaria had been even already in advance of other countries in this matter, having at each of her universities a professor of hygienic science. The building was commenced in 1877, and, according to the plans exhibited, is not one of those expensively-constructed edifices in which scientific institutions are now often domiciled, but is modestly built with special regard to the requirements of the studies carried on within its walls.

In addition to a number of exhibits bearing on meteorology and medical electricity, special interest attaches to a box-like apparatus contributed by Professor Fodor, of Buda-Pesth, for analysing earth gases. He also exhibits appliances for defining the force with which the earth forms organic substances, and illustrating the effects of earth and air upon various kinds of decomposition. Pettenkofer's researches in this direction are known to have been very minute, and it is doubtless in view of the attention which the subject has received in Germany that practical inventors have been devising methods of carrying out minute examinations of the earth upon the principles laid down by that eminent authority.

The injurious effects of illuminating gas upon the health have been occupying the attention of Professor Polak, director of the Breslau Pharmaceutical Institute, and he has contributed an ingenious apparatus for determining its component parts.

As might be expected, the popular school of cookery has been a decided success, and its appropriateness on the present occasion cannot be questioned.

CHIMNEYS.

WE can never take a walk down "the sweet shady side of Pall-mall," and note the ragged skyline of the palatial clubs which there do congregate, without experiencing a feeling of thankfulness that the architect of the Houses of Parliament elected to dispense with the too-familiar chimney-stack, and carry his multitude of smoke-flues to a decent exit in lofty and picturesque towers. But for this fortunate inspiration we can only too well imagine what would, in all probability, have been by this time the appearance of his greatest work. The buildings which line our narrow thoroughfares can better afford to wear the grotesque decorations of the smoke-doctor, though we could well wish them away; but the New Palace at Westminster has the broad river in its front, and its effect as seen therefrom would have been hopelessly marred if subjected to that treatment of its crest-line which has befallen too many of the other works of its illustrious architect.

Of the efficacy of the chimneys at the New Law Courts it is, perhaps, too soon to speak; we will therefore hope for the best. We see, however, what has happened to the new Foreign Office, and it is not without concern that we note that a large proportion of houses recently built in the fashionable quarters of the metropolis, houses distinguished by much artistic excellence, are gradually disclosing their weak points. One by one the obnoxious cowls appear, and we can only too truly conjecture from their appearance that there is trouble at the domestic hearth.

Amongst the lost arts we must, it is feared, include the art of building chimneys which will fulfil their proper function; and the smoke nuisance not only poisons the air we breathe, and undermines our health, but it defaces our architecture into the bargain.

It is very much to be suspected that the building of chimneys is left in a great measure to chance, or they would not be so bad as they are. The conditions which should be observed to secure success are well known and are easily obeyed. First the chimney-stack should discharge at as high a level as convenient so as to ensure that the outer column of cold air shall have a marked preponderance over the equal column of warmer and therefore lighter air in the flue. The modern custom is to cut off the chimney-stack as soon as it shows itself above the roof. The additional height is quickly made up by the substitution of a zinc tube, and shows that the original error lay in robbing the stack of its due altitude. Secondly, the area of the flue is almost always in excess of the requirements. The traditional 14in. by 9in. was, as has often been pointed out, determined by the fact that the climbing boys who swept the flues could not ascend safely in less space. But with the disuse of boys for this service the reason for the old dimension of the flue vanishes. The late Mr. Cubitt found as the results of experiment that a better size was 9in. by 9in., and that this was enough for all ordinary purposes. For many years the writer has adopted this form of flue and his experience of its efficacy exactly agrees with Mr. Cubitt's.

Thirdly, the outer casing of chimney-stacks is generally too thin. A half brick is the usual allowance, not "of the best material and workmanship." Now, we know that this is no protection against cold and wet, and that if the upper part of the chimney is cooled the ascending current is checked in consequence. The writer never on any account employs less than 9in. in such a situation, and he is confident that nothing less should ever be allowed if the draught of the flues is to be satisfactory.

And fourthly, the fire is too often quite unprovided with air from the outside. So that the heavier column spoken of above is not brought to bear on the base of the lighter one in the flue and a sluggish action at the best is the result. The builder who is anxious that his flues should "draw," should be careful to provide a copious supply of fresh air in the region of the fire, and this can be done without draught by a modification of the expedient which, though a very old one, is usually associated with the name of Mr. Tobin.

With the above precautions it is not probable that any trouble will arise from smoky chimneys, but it must be owned that sometimes the evil is met with in spite of every precaution. The "best laid schemes o' mice and men gang aft agley," and the action of smoke from an open fire is now and then to say the least capricious, and often baffles all our best endeavours.

This is a difficulty which should be resolutely faced, and if some form of cowl is inevitable it is the architect's duty to take up its design. If there is one characteristic which more than any other distinguishes the builders of past time from their modern *confrères* it is the frankness with which they accepted, and the skill with which they turned to artistic account, the necessities of their time one by one as they arose. Evasion and subterfuge were alike undreamed of in their philosophy. They set themselves without hesitation and without reserve to their task of rendering comely whatever was found to be necessary or useful. There is not a beauty in the old work but is the result of the judicious treatment of what was at first a difficulty, and features which we copy long after the original necessity to which we owe them has ceased to exist, survive simply as evidence of this special and peculiar gift of our ancestors. The faculty was so complete and universal that its exercise seems almost like the result of instinct, and thus to lose its merit as art.

Amongst the many instances of the directness and certainty with which the early builders developed to the utmost the artistic possibilities

* See p. 443, *ante* (April 7th).

of every new problem as it presented itself we may cite the domestic chimney itself. The hall louvre was always a picturesque feature, and we should regret its abandonment in favour of the fireplace, but for the various and picturesque forms which the architects devised for the chimney-stack which replaced it. If we trace the history of this feature from its first appearance as a single shaft with side piercings at its summit until its glorification under the Tudors, one cannot fail to be struck with the ingenuity, the perseverance, and the versatility of its designers.

Hitherto the modern architect,—in face of the enormous probability that as soon as his building leaves his hands it will be disfigured by some sort of smoke-extracting apparatus,—has been quite careless as to what shape such apparatus shall assume; and there is something almost comic in the *sang froid* with which, after taking infinite pains about the design and details of every other part of his work, he leaves to those who care nothing about it the task of crowning it with an array of cowls.

It is only fit that we should, while on this subject, bear grateful testimony to the freedom of the Board Schools designed by Mr. Robson, from the disfigurements adverted to. This is, no doubt, in some measure due to his use of a combination stove and grate, but to whatever cause it is to be ascribed it is a fact that the skylines of his schools remain as he designed them, and he is to be congratulated accordingly.

The conclusion at which we are compelled to arrive is that although by care we may very considerably diminish the necessity for cowls or some cognate contrivance, cases will arise in which they are indispensable, and therefore they should form the subject of the architect's attention. Here is a new field for the exercise of whatever skill in the art of design is left amongst us, and we would suggest the matter as a fit one for the Institute prizes. In making a serious attempt to devise a suitable form for a necessary adjunct of our buildings we should be following the steps of the architects of old who never shirked an opportunity of the kind. Whether our endeavour would be attended with the success which invariably waited upon the efforts of our predecessors it would perhaps be rash to predict,—but at any rate the attempt should be made.

THE DOMESTIC ARCHITECTURE OF INDIA.

MR. C. PURDON CLARK, C.I.E., architect, read a paper before the Indian Section of the Society of Arts, on the 25th ult., entitled, "Some Notes upon the Domestic Architecture of India." He said there is evidence of an attempt at an early date to crystallise an existing style, either indigenous or foreign; and at whatever period that portion of the sacred writings of the Hindus called the "Shilpa Shastra," was composd, the Hindus then possessed and practised ecclesiastical, military, and civil architecture. Fifty years ago attention was directed to the "Shilpa Shastres," and Ram Raz, a most able native scholar, undertook their investigation; but death coming before the completion of his work, this mine of technical information has remained unexplored. His treatise, published in 1834 by the Royal Asiatic Society, makes the date of these books contemporaneous with the decline of Buddhism.

As Ram Raz shows that minute directions are given in the "Shilpa Shastres," from the choice of a site to the final embellishment with bright colours, even to the house-warming, it will be assumed that, wherever Hindus build, one style must be found. They do their best to follow its directions, there is little doubt; but in practice, local influences and traditions, the requirements of climate, the plenty or scarcity of certain building materials, all play their part in producing local peculiarities, which, in some cases, have developed into apparently distinct styles. These and the modifications of the ingrafted arts of alien conquerors were scientifically examined, grouped, and described by Mr. James Fergusson, who, whilst preparing his "Universal Illustrated Handbook of Architecture," published in 1855, succeeded in reducing this chaos to rule and order.

To the notice of the traveller, India presents a most heterogeneous population; and almost every style in the history of art may be found there, Indianised, either in existing buildings or ancient ruins. Assyrian, Burmese, and Chinese influence can be traced in the Hindoo ornamentation of Southern India. The different varieties of Saracenic, all more or less Indianised, in the Moghul art of Sindh, the Punjàb, and Bengal. Moorish forms appear in the Deccan. A debased Greek treatment, strangely Byzantine in expression, marks the ancient ruins of the Afghan frontier and some temples in Cashmir. Gothic and Renaissance forms are also represented in places where the Portuguese ruled; and, lastly, an English pseudo-classical style, bald and hideous beyond description, introduced by our own people in the last century, still remains, for police-stations, and kindred constructions, the official style of the Indian Public Works Department. It is not possible to describe, within the compass of one lecture, the local peculiarities of even the principal divergent styles of house-building in the different countries of Hindostan. The Mahratta States round Bombay, although exposed to wave after wave of alien influence, possess an art of strong character, which, if not indigenous, is at least of respectable antiquity. I will go to them for my first illustrations, passing afterwards to a Persianised town in the Punjàb.

There is a strong family likeness between the intramural houses of the cities of Bombay, Surat, Broach, and Ahmedabad. In each, narrow frontages mark the business centres; but in the maze of crooked streets behind the great bazaars, are found spacious façades, which would be considered worthy of place in any of the great streets of Europe.

The fronts of the larger houses, placed in alleys, are impossibilities to the photographer; whilst the elaboration of their ornamentation defies any other means of representing their ten thousand points of light and shadow. Some houses have no columned porch, but a small terrace, 2 ft. or 3 ft. wide, and as many high, answers many of the purposes for which the porch is intended. Early in the morning, the men of the house assemble there, and, sitting on low stools, perform a part of the ritual of their toilettes. With brushes made from the twigs of the "Babul" or "Avalí," they solemnly scrub their teeth, varying the exercise with talk, giving instructions for the day to servants and clerks, and even transacting business. During the rains, the porch affords shelter to beggars, or people overtaken by heavy showers, and at night serves as a bed-room for the servants of the house. Here travellers and houseless beggars are also allowed to sleep,—a cheap charity to the giver, but a priceless boon to the recipient. The beggar is the rich man's guest, though self-invited, and no policeman dare direct him to move on. The principal door is in the centre of the porch. On entering this we come to a large and somewhat dark hall, called "othan" or "parsal," used sometimes as a store or lumber-room; by some, as a public office or "kacheri"; or, if the owner of the house is an artisan, as a workshop. Into this hall any dying member of the family is brought, and laid out on a blanket, two or three hours before he breathes his last. During marriage ceremonies, it serves as a ladies' receiving-hall, and here, also, the servants of the house and lower-class guests take their food. The rooms on either side of this hall have set uses. That on the left is generally occupied by the aged head of the family when too infirm to ascend the step-ladders which do duty for staircases. The principal staircase is situated near this, and is watched by the patriarch, who notes all ascending. In former days the armed servants of the household performed this duty, but under the security of the British rule this relic of feudal times has disappeared. The room on the right side has its door in the courtyard and an entrance from the hall. It is used as a store and lavatory; one side is paved and enclosed with a low wall, sometimes but a few inches high; in one corner of this is a stand, generally in brickwork, for a row of water-pots, from which the bather fills his brass vessel and, pouring it over his head, fulfils the rites of purification required so often by his religion. On the side of the hall, opposite to the entrance, is a door of the same size, sometimes an open colonnade; through this the courtyard is entered. Beyond are rooms, and overhead the broad balcony, running round at the level of the first floor, leaves but a comparatively small central space open to the sky. In small houses the balcony is carried by beams, but here a colonnade is necessary. The central portion, sunk some inches below the curb surrounding it, is paved and used as a general bathing-place, well drained by a small gutter running to an underground pit just below the front steps of the house. On one or either side are swings for the recreation of the ladies of the house; and here they pass most of their time, some sitting on the swings and singing to amuse the others, who, sitting on the floor, labour at the interminable duty of sorting the cereals and pulses which form the staple food of the people.

Leaving the cloistered court, we come to another hall, the women's room, where the wife, brothers' wives, and sons' and nephews' wives pass most of their time engaged in domestic work under the superintendence of the owner's mother, who, during her life, is the chief lady of the house. To the right of this hall are two rooms, one for storing grain, the other an infirmary. The first room on the left is set apart for the worship of the family gods. The next room is the kitchen, with a fireplace in one corner. A raised stand of masonry runs along another side of the room, somewhat like a dresser, with a row of hollows on the upper surface, to hold steadily the large brass and copper pots containing the daily supply of water for cooking purposes. It is from 2 ft. to 3 ft. high, and the front is pierced with open arches, where are kept the utensils of the kitchen. Above on the walls are open shelves for the storing of spare cooking, dining, and drinking pots, all kept to a burnished brightness. From the ceiling hangs a swinging frame, which serves to keep fresh vegetables required for immediate use. In larger houses there is still another court-yard behind; in this, an open yard separates the wood fuel store and stables from the residence. On ascending the staircase, the balcony round the court is found to be partitioned off into rooms on two sides, leaving two open corridors which serve as passages, or, in certain seasons, for drying grain, and during the hot weather as bedrooms when the moon shines only. The central door leads to the principal room of the house, the divan-khana, or council-hall.

Leaving Bombay, with its perpetual summer, for Lahore in the north, we find the central court, even in small houses; but modified to suit the exigencies of the colder winter climate. The style is also changed by the adoption of true brick construction instead of the trabeate buildings of Bombay, where the brick walls, though thick, are but the filling of a large wooden framework of column and lintel, which would stand of itself, and is often put together before the bricklayer comes on to work. Such a construction will stand earthquakes and cyclones; but, if neglected, makes but a poor ruin, and, therefore, there are no very old buildings of the mixed wooden and brick style to be found in India.

The brick buildings of the Punjàb seem to be lineal descendants of the brick architecture of the Tigris and Euphrates country. How long arch and dome have been used it is difficult to say, but both are well understood; and to this day the native builder will construct vaults of brickwork which only an engineer would attempt here. In the Punjàb cities wood is still used largely in house building, but not as an essential part of the construction, excepting where the space is insufficient for masonry.

The chief difference between the architectural styles of Bombay and the Punjàb lies in the façade, which, in the north, is broken by projecting windows, generally arranged in groups of three. When of wood, the forms approach those of the well-known "Mushrabeyehs" of Cairo houses; when in stone or brick, the window is but a slice, including three sides of a "chuttrí" pavilion with its dome, carried by a corbel of lotus-flower shape. The brickwork is excellent, the bricklayer seemingly trying to vie with his fellow artisan, the carpenter. Except when glazed, the bricks are cut and carved one by one as wanted; often this is done after fixing. Moulded work does not seem to be known, even to the glazed terra-cotta makers, who obtain their forms by rough modellings, and after the clay is dry and hard, finish with carver's tools.

Turning from the houses to their builders, I will select some notes on house-building customs, folk-lore, &c., from a valuable mine of information, placed at my disposal by Mr. Kipling, who for twenty years has been in constant communication with the most interesting, and, in my opinion, the best people of India, the artisan classes.

The native prefers looking after his own work. Houses are seldom built by contract.

Those built in cantonments for Europeans are sometimes given out to contractors; but the native house proper is the enterprise of the owner. He engages a "mistri," who is at once architect and clerk of the works. Materials are purchased by the "mistri" and the owner, or his agent or servant in company. Wages are paid to common labourers daily, and to craftsmen at irregular intervals. The accounts invariably get complicated by reason of advances, and what a London tradesman calls the "dead horse" is never fairly worked off. When any difficult work is in hand, or a spurt necessary, the workmen are treated with tobacco, sherbet, or sweetmeats. One "mistri" will sometimes have two or three houses building at once. Scarcely any drawings are made; there are designs extant, but they are seldom drawn to scale. Once begun, the work goes steadily on, and no notice is taken of the many holidays. Rain only stops it.

When a Mahommedan starts a foundation of a house, he gets an auspicious day fixed,—as often as not by a Brahmin,—and the ordinary Hinduised Mahommedan of the eastern district will entertain Brahmins at a dinner. A strict Mahommedan will get a moollah, or respectable man of weight and character, to lay the first brick; he distributes goor (sugar) to the poor, or gives a dinner. And when the house is finished, he gives an "inam" of a shawl, or a turban, or money to the "mistri."

Very orthodox Hindus will sacrifice a goat at the beginning of a house, and "Ganasha," the elephant-headed god who presides at all beginnings, and whose quaint figure finds a place over most Hindu doorways, is worshipped. His sign heads every baniah's account-book, and is the ubiquitous "swastika," or cross fylfot of our heraldry.

When the house is finished, or at a convenient time after, an auspicious day is fixed for the ceremonial entrance, or "juth khana," the house warming.

Generally, in districts with increasing prosperity, brick is taking the place of "adobe." In the cities the price of wood forbids the extensive use of wooden balconies, &c., that once prevailed. The door or window-frame is often wrought separately, sometimes in another town, and though it may appear to be set in the expanse of brick wall in a chance-hap sort of way, frequently has an effect which more studied designs miss; naturally, a deeply-recessed, well-carved door or window-frame can scarcely come amiss anywhere.

In some districts there is a quaint custom. When a carpenter has made a particular good "chanleat" door or window-frame, he takes it to the house into which it is to be built, and spreading a sheet on the ground, he lays his work down and sets himself alongside to receive the congratulations of his townsfolk. These take a practical form, and cowries, pice, and white money rain on the sheet. They say that once as much as 100 rupees testified to the skill of a carver. But this is unknown in the large cities.

Since it is unlucky to start but with the left leg, some "mistris" say steps should be odd numbers, so that the left comes first into the upper room; but this is not constantly observed. The risers of native steps are always high and awkward. At Jeypore they go up slopes instead of steps.

"THE OLD HOUSE," HEREFORD.

THE handsome half-timbered building, erected in 1621, and well known by photographs as "The Old House," standing detached and conspicuous as it does in the centre of the business quarter of the ancient city, has lately been restored and adapted to the purposes of a banking business by the Worcester City and County Banking Company.

Oliver Cromwell is reported to have slept in it on one occasion, and for a time it bore his name as "Cromwell's House."

Originally it had houses right and left, as it formed part of the ancient "Butcher's-row." One after another of these has been pulled down, and at last the town-hall itself, which was one of them, fell a victim to the necessities of the age. Probably "The Old House" would have shared a similar fate had it not been for its historical interest, and constituting the principal architectural link in the city between the past and present.

The two upper floors, with their numerous overhanging many-mullioned windows, have been but little altered, but the lower floor has suffered terrible mutilation from successive shopkeepers, and only one small portion remained of a picturesque pent roof that originally ran along each front. The restorer's work has therefore been chiefly required here,—the repairer's above. To retain the old forms and yet make the building serviceable for banking purposes was a task of some difficulty, as it necessitated windows on the blank sides; but a brass plate has been affixed to remind posterity of the fact that in the year 1882 the form of the building was altered into that of a detached structure, which, of course, it had really been for at least a century previously.

Another change has been rendered necessary by the gradual but entire covering to a height of nearly 2 ft. of the stone chamfered base. Owing to its position in the centre of the street, it was impossible to lower the ground without making a railed-in trench, which has been carried out, the plan of lifting the massive wooden framework bodily having to be abandoned on account of its cost, though the porch was treated in this way, and certain portions of the building which had sunk in consequence of the rotting away of the timbers and the thoughtless manner in which successive shopkeepers had treated the ground-floor.

The whole exterior, with its black beams and cement panels, has been carefully repaired, and the grotesques and other carvings scraped and cleaned where practicable, but in some instances, notably in the handsomely-carved barge-boards, simple oiling had to be adopted, owing to the great amount of neglect and decay they evinced.

Care has been taken with the ancient portions of the interior, and several interesting frescos, carvings, and other ornamentation have been revealed to view. The new carving has been principally executed by Mr. Robert Clark, of Hereford. Mr. Ben Gay, of Bristol, supplied the new tinted glazing in the banking-room; Messrs. Brawn & Co., of Birmingham, the iron and brass work; Mr. Ebner, of Clerkenwell, the oak parquetrie; and Mr. W. Godwin, of Lugwardine, the encaustic tile floors. Mr. Peachy was foreman throughout; Mr. T. Collins, of Tewkesbury, the contractor; and Mr. E. H. Lingen Barker, of London and Hereford, the architect, he having been selected in a limited competition.

THE ESTIMATES FOR VIENNA TOWN HALL.

THE new Town-hall of Vienna continues to be the source of great perplexity to the Municipal Authorities. Some six months ago they were unpleasantly surprised to learn from the Department of Works that the estimates for the building of the edifice had proved too small by the sum of 1,800,000 florins. After much grumbling, and useless discussion, however, the Town Council yielded to the inevitable and voted the entire amount of the deficiency, but stipulated expressly that this additional 1,800,000 florins was in no case to be exceeded. The City Fathers in the Austrian capital take things easily, and even when this large sum was granted in excess of the estimates, it never struck any one that it would be as well to make any inquiry as to the real state of the work, to ascertain how such a discrepancy had arisen, or whether the additional sum demanded would complete the edifice. What the Council did do, however, was to decide that the laying of the last or crowning stone of the edifice should take place on the 12th of September next, being the second centenary of the defeat of the last Turkish army which ever besieged the city. All preparations were ordered to be made for the removal of all the municipal offices into the new building by that date; but now, after the lapse of five or six months since the voting of the extra grant, fresh rumours begin to crop up in the Rathhaus Building Committee to the effect that even with the additional grant the architects will find it impossible to finish the building. The Council were naturally surprised and wrathful even at the mention of a thing that seemed so palpably impossible. It was at length suggested that the members should proceed to the building, and examine the state of the work for themselves before anything further was done. A deputation of the Council did, in fact, eventually proceed to the new Rathhaus, and with what they saw there, or rather what they missed there, they were dumbfoundered. Upon examining the building more carefully, it was discovered that the most glaring negligence had prevailed, and it was clear that, so far from the building being ready for the final stone to be laid in September, the edifice cannot possibly be finished this year. In the extensive basement the necessary heating and ventilation arrangements had been entirely forgotten, and all parts of the work were more or less in arrears. No windows have yet been put in, nor have any steps been taken in that or a score other matters. The ceremony of laying the crowning stone may be gone through, but it will be months before the edifice is finished and ready for occupation. But what is worst of all, the city authorities will find it necessary to make a second additional grant, amounting, it is estimated, at from one million to two million florins.

THE VIENNA CITY RAILWAYS.

SIR,—My attention has been called to a notice headed as above in your number of the 19th inst., and as it contains so many serious inaccuracies I trust you will kindly afford me space for correcting them.

The Vienna Railway is *not* all designed "to run above ground on viaducts," and will *not* "be very expensive." On the contrary, a considerable length of it will be constructed in "open cutting," with retaining-walls, similar to the open sections of the District Railway in London. It will cost *less* per mile than any metropolitan railway yet constructed. The estimated outlay is under 200,000*l.* per mile, including land purchase and "equipment," but exclusive of rolling stock and engines, and *not* 370,000*l.* per mile as stated by your informant, which figure happens to be about the cost of the Berlin Elevated Railway, which is a double railway with four lines of rails, intended chiefly for military purposes.

"The Vienna authorities," by which phrase your informant probably means the "Municipal Corporation," cannot now take up a "rival scheme," nor can, nor could, they at any time interfere in any way with the "concession" granted to Mr. Brunlees, of Glasgow, and the writer by the Imperial Government in January last, when all "other schemes" were summarily disposed of. Nor do I propose to adopt any such "modifications" as are suggested by your informant. Neither can I find any confirmation of the statement "that Dr. Werner Siemens has laid any project for a metropolitan "network" of electric railways before the city authorities," who would not be the proper persons to apply to, and who have no power to grant railway concessions.

I am told some one obtained a "licence" from the Government to lay a short "experimental narrow-gauge electric tramway" in the Prater, outside the district concessioned to the promoters of the Vienna City Railways, several months ago, on the condition that it should be taken up again in twelve months, but it has not been proceeded with.

Some time since, in company with the principal promoters of the Vienna City Railways, I had a long conference with Dr. Werner Siemens and his partner, Mr. Halske, at Berlin, on the question of working our lines, when constructed, by electricity; but after serious investigation it was concluded that it is not yet practically demonstrated that it can be economically done, or indeed safely done at all, where numerous branches enter on a "ring railway" such as ours. Mr. Edison has been earnestly engaged on the same problem for the "New York Elevated Railways," where the conditions are more in his favour, but up to the present unsuccessfully, and I am confident that if any one can succeed in the practical solution of this interesting subject it will be our clever American cousin.

In the remainder of the notice complained of your informant falls into so many errors in reference to existing facts that I conclude he has never been in Vienna. He says:—"The old part of the city '*lies high*,' and here Dr. Siemens proposes to *tunnel*." The old part of Vienna is perfectly flat, as most people know, and at a level very little over that of the neighbouring Danube. To tunnel underground therein, and to make *elevated* viaducts in the higher and newer parts of the city, through the Gürtel Strasse, outside the lines of the old fortifications, would be a manifest absurdity, and I venture to say Dr. W. Siemens, no more

than the writer, has ever even heard of this fantastic project, nor has he dreamed of "supplanting the railway for which Mr. Fogerty has obtained the concession," or "supplementing it" by electric continuations. At all events, here in Vienna, and in constant intercourse with the *only* authorities,—those of the Ministry of Commerce, who would have been officially informed,—I have never heard anything of such intentions on his part, and I am certain he would have written to me if he entertained them, as no man knows better the meaning of the phrase, "Concessioned Railway," and its unassailable character.

I am inclined to think that the notice you have inadvertently inserted in your influential journal is an "intentional hoax," similar to grossly inaccurate statements recently supplied to other journals in London by disappointed and malicious competitors whose names have been furnished to me by the editors.

Having failed to prevent the grant of this important concession to the English syndicate, they now endeavour to throw cold and not very clean water on it by insinuating that it is of no value, and will be superseded by some other project invented for their purpose at the moment, in order, so they imagine, that the public will be hindered thereby from subscribing for the share capital if ever it should be offered to them.

Fortunately, the promoters are strong enough to be independent of the public, and the only thing approaching to accuracy in the article before me is the opening statement "that they have given notice to the Government here that they are prepared to fulfil the condition of the concession as to the first instalment of the capital, and to commence the works as soon as they receive the official permission to do so," *i.e.*, on the approval of the "working drawings" now in rapid course of preparation in these offices.

JOSEPH FOGERTY, M.Inst.C.E., F.R.I.B.A.
Engineer to the Vienna City Railways, and Concessionnaire.

Vienna, 24th May.

PROGRESS OF BUILDING IN NORTHUMBERLAND AVENUE.

NEW HOTELS, THEATRES, &c.

THERE are few localities within the metropolis where building is proceeding at a more rapid rate than in the recently-formed Northumberland-avenue, every portion of which will now shortly be covered with public buildings of some size. As is well known, the Metropolitan Board of Works expended something like half a million sterling in the purchase of land and buildings to construct the avenue, the cost of Northumberland House and grounds alone amounting to 400,000*l*. The Board have, however, been practically more than recouped for this large outlay. With the exception of a small plot of land on the north side of the Avenue, near its junction with Craven-street, the whole of the sites on both sides of the Avenue have been disposed of for building purposes, and we are confidently informed, but do not vouch for it, that the Board are now in receipt of ground-rents representing upwards of six per cent. upon the outlay incurred in the original purchase.

The greater portion of the frontage on the south side will be occupied by two monster hotels, both of which are now in course of construction. In continuation of the buildings at the south-west angle of the Avenue, now occupied by the National Liberal Club, the building designated the Northumberland-avenue Hotel, said to be one of the largest in the world, has recently been commenced, and a large number of workmen are at present employed in excavating and getting in the foundations, preparatory to the superstructure being proceeded with, which it is expected will be commenced in about a month. The hotel will have a frontage to the Avenue of no less than 353 ft. in length, extending in a south-easterly direction to the buildings recently erected by the Society for Promoting Christian Knowledge. The style of architecture will be the Italian Renaissance, and the building, having several floors, will be carried to a great height, the main roof being 110 ft. above the ground line. On the ground-floor there will be a dining-room of unusually large dimensions, together with several coffee-rooms, billiard-rooms, and entertaining-rooms, and the enormous capacity of the hotel may be judged when it is stated that it will contain upwards of 700 reception and bed rooms. The architects are Messrs. Isaacs & Florence, of Verulam-buildings, Gray's Inn-road, and the builders Messrs. Perry & Co., of the Tredegar Works, Bow. Mr. Charles Till is the clerk of the works.

The Hôtel Métropole, which is of somewhat similar dimensions and character to the above-named buildings, is likewise actively in progress, the elevation having already been carried several feet above the ground line. This hotel has a frontage to the south side of the Avenue of 320 ft. in length, with a frontage of similar length to Whitehall-place. The two hotels have thus a frontage to the Avenue of 653 ft. in length.

On the north side of the Avenue, immediately adjoining the Grand Hotel, a new theatre is about to be erected for Mr. Charles Wyndham, and the building will be immediately commenced. An announcement on the site states that the theatre will be opened on the return of the Criterion company from America. Mr. Verity is the architect.

On the same side of the Avenue, a short distance eastward, the Charing-cross Turkish Baths are in course of erection, and adjoining them is a handsome and lofty building called Wessex Lodge, which has just been completed. Near the south-eastern end of the Avenue, close to the Embankment, two other plots have been secured, on one of which it is announced that offices and residential chambers are about to be erected, suitable for banks and insurance and other companies; and on the other site it is likewise stated that shops, residential chambers, and offices will be erected. The whole of the sites on both sides of the Avenue will thus shortly be covered with buildings, all faced with Portland stone, which is one of the conditions on which the land is leased from the Metropolitan Board.

THE NEW FIRE BRIGADE BUILDINGS IN SCOTLAND YARD.

FOR some time past a new block of buildings for the Metropolitan Fire Brigade has been in course of erection at the east end of Scotland-yard, near Northumberland Avenue. The buildings, which are fast approaching completion, have a frontage of 71 ft. in length, and are 73 ft. in height, containing five stories above the ground-floor. The elevation of the buildings is in red brick, with Mansfield stone piers, cornices, and windows, all of which are of two and three lights. The carved and fluted Mansfield piers impart a very effective appearance to the elevation. The building is surmounted by a Mansard roof, in which are three domes, above a cornice and balustrade with vases, all in Mansfield stone. At the west angle of the building there is an octagonal tower, 106 ft. in height, chiefly in Mansfield stone. It is intended as a look-out tower for the use of the members of the brigade, its summit being reached by an internal circular staircase. The tower commands an extensive view of the metropolis, in various directions. The building contains a large number of apartments, consisting of living and bed rooms for members of the brigade, the ground-floor portion of the building having ample space for fire-engines, with stabling accommodation in the rear.

Mr. Alfred Mott, for the Superintending Architect of the Metropolitan Board of Works, is the architect, and Mr. C. W. Reading, of Buckingham Palace-road, is the contractor. Mr. Thrush is clerk of the works.

IMPROVEMENTS AT THE WALWORTH RAILWAY STATION.

THE Walworth Station of the London, Chatham, and Dover Company's Metropolitan Extension Section between Ludgate-hill and Victoria is considered to be the most profitable station on the route, and yet it is the most inconvenient for the large number of passengers who daily make use of it. The approaches are bad, the booking-offices are under a dark arch, and altogether inadequate to the enormous traffic which daily takes place between the station and Ludgate-hill; whilst waiting-rooms and covered platforms are conspicuous by their absence. Repeated complaints have been made of the want of accommodation and ordinary convenience at the station, but hitherto nothing has been done in the way of satisfying the reasonable demands of that large section of the inhabitants which makes use of the station The directors have at length, however, resolved to carry out several important improvements, some of which are now in progress. The central platform between the main line and the Metropolitan Extension line to Victoria is being covered in with a roof supported on ornamental iron columns, and we understand that waiting-rooms are to be erected in connexion with the several platforms, whilst the booking-offices are likewise to be enlarged, and the approaches very much improved.

THE LONDON AND COUNTY BANK BUILDINGS AT NEWINGTON.

THE London and County Banking Company have just completed the erection of a new block of buildings at Newington Butts, in addition to their present banking premises. The buildings, which are situated nearly opposite the Elephant and Castle Hotel, have a frontage to Newington Butts of 64 ft. in length, and are upwards of 50 ft. in height, comprising the ground and three upper floors. The ground-floor portion of the elevation is in Portland stone, rusticated, and has a range of five arched windows, with two entrances to the building at the east and west ends respectively, each entrance being surmounted by an elaborately carved tympanum resting on carved and moulded trusses. The carving around the windows is likewise very elaborate, the key-stones of the windows consisting of sculptured figure-heads. At the foot of the first-floor windows, the elevation of which is also in Portland stone, there is a balustrade. The first floor has a range of seven windows, four of which are surmounted by pediments, resting on columns. The second and third floors of the elevation are in white Suffolk brick, with Portland stone windows and dressings. The treatment of the second floor windows is one of the most ornamental portions of the frontage. The whole of the basement and ground floor will be occupied as the banking premises, the banking-room being 60 ft. by 27 ft., and occupying an area of upwards of 1,600 ft. It is intended to be elegantly fitted in mahogany, and the floor laid with encaustic tiles. The upper floors of the building are intended to be occupied as the offices of the Inland Revenue Department for the South London district.

Messrs. Glover & Salter, of the Poultry, are the architects, and Messrs. Higgs & Hill are the contractors.

AMERICA.

Chicago.—The progress made by Chicago still continues remarkably rapid. At the present time it numbers about 600,000 inhabitants, and is the third largest industrial city in the States. In the year 1882 it added 40,000 to its population. The entire trade of the place in that year is estimated to have amounted to a turnover of 229,000,000*l*. sterling. The Bankers' Clearing-house returns rose to 478,800,000*l*. sterling. In cattle, pigs, and tinned meats Chicago remains the first city in the Union. In 1882 there were 4,000,000 pigs slaughtered, and 690,000,000 lb. of meat and lard canned and packed. In the matter of building the city continues to show the greatest activity. Last year there were 3,000 new houses erected, and the total amount spent in the city on the building trades in 1882 is reckoned to have been not less than 4,000,000*l*. sterling. All the new streets are now paved with wood, blocks of cedar being generally employed.

Subterranean Projects for New York.—The proposal for an underground railway running the direction of Broadway and Madison-avenue, right through New York, appears to be gaining favour in that city. One of the objections is the unavoidable disturbance to the traffic of that great thoroughfare while the line was building, but this would, of course, only be comparatively temporary. The project now mooted is not merely a subterranean railway, with two double lines of rails, but rather the creation of a sort of second Broadway underground. It is proposed that the present cellars shall be turned into shops; that there shall be wide pavements for foot-passengers as well as the railway; and that the whole shall be lighted with electricity. For the accommodation of the numerous network of tubes, pipes, and cables of the water, gas, and electric companies, it is proposed to

construct special gangways. Of the rails, one pair would be for short journeys, the trains stopping at every street corner, the other for long journeys and quick trains, stopping only at mile intervals. The luggage traffic would be done chiefly at night.

BUILDING PATENT RECORD.*

APPLICATIONS FOR LETTERS PATENT.

2,507. A. Diss, West Bergholt. Construction of chimney-pieces, &c. May 19, 1883.

2,522. A. Snelling, London. Cowls for chimneys, &c. May 21, 1883.

2,535. F. H. F. Eagel, Hamburg. Manufacture of artificial stone, &c. (Com. by E. Murjahn, Hamburg.) May 21, 1883.

2,576. J. Garlick, Birmingham. Construction of floorings, platforms, &c. May 23, 1883.

2,601. A. Clark, London. Fire-proof screen for separating the stage from the auditorium of theatres, &c. May 24, 1883.

NOTICE TO PROCEED

has been given by the following applicants on the date named:—

May 22, 1883.

280. J. H. Starling, Erith, and E. A. May, Belvedere. Manufacture of bricks, tiles, &c. Jan. 17, 1883.

1,894. W. Berry and P. Stuart, Edinburgh. Pavement. April 14, 1883.

2,063. D. Jones, London. Apparatus for improving draught in chimneys, &c. April 24, 1883.

2,475. A. Rudolph, San Francisco, U.S.A. Window-sashes. May 17, 1883.

May 25, 1883.

2,052. R. Hudson, Gildersome. Manufacture of metallic roofing, &c. April 23, 1883.

ABRIDGMENTS OF SPECIFICATIONS.

Published during the Week ending May 26, 1883.

4,592. H. Blair, Glasgow. Ventilating appliances for soil-pipes, &c. Sept. 27, 1882. Price 6d.

This ventilating appliance consists of two pieces of piping fitting into each other between which an air-inlet or grating is formed.

4,652. T. Young and G. C. Wood, Sheffield. Appliances for securing windows and doors. Sept. 30, 1882. Price 2d.

A two-armed catch suspended in a bracket moves out automatically and secures the window when it is closed (*Pro. Pro.*)

4,731. J. Drewitt, London. Connecting spindles to locks and latches. Oct. 4, 1882. Price 6d.

The knobs are fixed to the spindles by a divided metallic ring fixed in a groove in the neck of the knob, and the spindles are connected to the locks or latches by a split cotter pin, which passes through one of a series of holes in the spindle.

THE LAND-TAX.

SIR,—The interesting paper read by Mr. Evans at the Surveyors' Institution, and which you print on page 691, refers to a subject which intimately affects every Briton, and more especially those of us engaged in building. I am sorry however, that the paper contains so little historical matter, and, as the concluding recommendation appears to me to be entirely wrong, I propose, with your permission, to supply, as briefly as possible, such facts and figures as will conduce to a better understanding of the subject, which is one worthy of being carefully and impartially studied by every man in the kingdom. The land-tax was first imposed upon England and Wales by 4th William and Mary, 1692. Scotland was subjected to it in 1707; but, like the window-tax and its successor, the house-duty, it has never been imposed in Ireland. In ancient times the land of England belonged to the Crown, and was let out to its tenants on conditions of military service and other duties, and payments of various kinds. After the restoration of the monarchy, in 1660, this military service was felt to be so irksome by the Crown tenants that they passed a law (for at that time they composed the Parliament) commuting it into a money payment; but the payment was to be made, not by themselves, who were relieved of an onerous duty, but by the general public, in the shape of an excise duty upon all beer and spirits brewed for sale. That prepared for their own use was to be free and untaxed. This arrangement continued until 1692, when the *full compensation*, which was said to have been made thirty-two years before the loss of the military service of former times, became so lessened that an Act was passed levying a tax of 4s. in the pound on the full yearly value of all lands, tenements, and hereditaments at a rack rent, without any abatement, but with exceptions in favour of universities, hospitals, and schools; on salaries of public officers, except soldiers and sailors in actual service; and on personal property, excepting household furniture. A certain valuation, believed to be very imperfect, was made, and the tax produced the sum of 1,922,000*l.* on that valuation or assessment. The tax was continued by annual Acts of Parliament, sometimes at 4s. in the pound, sometimes at 3s., sometimes at 2s., and once (1732-33) at 1s., but always on the valuation of 1692, until 1798, Scotland, as has been already stated, being joined to England and Wales under the Act in 1707. By 38th George III., chaps. 5, 60, the land-tax was made perpetual, on the original valuation of 1692, at 4s. in the pound, on all manors, lands, tenements, hereditaments, mines, ironworks, salt-springs and works, parks, chases, warrens, woods, fishings, tithes, tolls, annuities, &c., in short, on all profits from real property, and the tax was apportioned in shares, or, as they are called, "quotas" on each county in Great Britain, so that the money to be raised in England and Wales should amount to 1,989,673*l.*, and in Scotland to 47,954*l.*, or a total altogether of 2,037,627*l.* Provision was made for its redemption in the manner stated by Mr. Evans, at eighteen or twenty-three years' purchase, according to value, and Mr. Wm. Pitt, who was then Premier and Chancellor of the Exchequer, and in desperate straits for money, and not very particular how he got it, excused the iniquity of this forestalling of the wants of posterity by declaring "that the measure would not preclude that or any other Parliament from imposing another land-tax, or from augmenting or reassessing the existing one," but endeavoured to comfort them by a statement of his conviction that it would not be done, and up to now he has been right. But who can doubt that some rearrangement is necessary when the gross inequality of the incidence of the tax is proclaimed. I have already said that by the Acts of 1798 certain quotas were apportioned to each county, the total number being 513, 495 of which were for England, eleven for Wales, and seven for Scotland; and these were again divided amongst the counties according to what appears to have been their wealth at that time, and a sort of rough justice was maintained in the apportionment. But, as time went on, inequalities arose from unequal prosperity or otherwise, until at the present time we find one county,—Cumberland,—pays on its assessment not more than 3·8ths of a penny in the pound, while another,—Middlesex,—pays 1s. 6½d.; and the average of all the counties in England is 3½d., in Wales 1 1/16d., and in Scotland 3·16ths of a penny, or a general average of 1¾d. in the pound instead of 4s., and the amount collected has been reduced by redemption to 1,051,433*l.* in 1882. Whether that redemption took place in great part at the beginning of the century, or has been very gradual and is still in progress, I have no means of ascertaining, and Mr. Evans does not tell us, but in 1866 a great change was effected in the assessments by the transference from Schedule A to Schedule D of all mines, quarries, ironworks, and other kinds of real property. There is another consideration which should not be overlooked. If it was a fair thing to make an assessment on the actual value in 1692, it cannot be an unfair thing to make an assessment on the actual value now. That actual annual value in 1879-80 was, according to the "Statistical Abstract," and excluding all canals, railways, mines, quarries, ironworks, &c., added by the Act of 1798 not less than 172,136,183*l.*, a real 4s. in the pound on which would yield 34,427,236*l.*, instead of the miserable and paltry 1,051,433*l.* of last year. In other words, the land-tax was equal in William and Mary's reign to about one-fifth of the total revenue. In our time it is less than one-eighty-fifth of the total revenue of the country. And yet Mr. Evans proposes to compel redemption. On the contrary, I think enough has been shown to induce its re-enaction on a new valuation, and it ought to be extended to Ireland. That land does not bear its proper share of the burden of imperial taxation, and that therefore it cannot be improper to reimpose the land-tax, will be evident to all who examine the official returns. According to these the revenue for 1881-2 was made up as follows:—

Customs	£19,287,000
Excise	27,240,000
Stamps	12,260,000
Land and House Tax	2,725,000
Property and Income Tax	9,945,000
Post-office	7,000,000
Telegraphs	1,630,000
Crown Lands	380,000
Interest on Advances and Suez Canal Shares	1,219,262
Miscellaneous	4,136,019
Total	£85,822,281

Of all these items, the only part paid by owners of landed property as such is as follows:—

Land Tax	£1,051,433
Property and Income Tax, Schedule A, Lands and Tenements	3,563,403
Total	£4,614,836

Under the second item is included all house property, and is to that extent erroneous for my purpose; but as it stands, the contribution of land and houses combined is less than one-eighteenth of the gross total. And it must not be forgotten that the small contribution thus made by landowners must be and is made up for by the trading and working classes, who have thus good reason to complain of the gross inequality of taxation.

The following list gives the amount in the pound paid by different counties towards the land-tax in England:—

	s.	d.		s.	d.
Bedfordshire	0	4½	Lincoln	0	2
Berks	0	4¾	Middlesex	1	
Bucks	0	5¼	Monmouth	0	
Cambridge	0	3¼	Norfolk	0	[illegible]
Cheshire	0	1½	Northampton		
Cornwall	0	3⅜	Northumberland	0	
Cumberland	0	0⅜	Notts	0	3⅜
Derbyshire	0	1⅜	Oxon	0	5½
Devon	0	3⅞	Rutland	0	4¼
Dorset	0	4½	Salop	0	2⅝
Durham	0	1	Somerset	0	3½
Essex	0	3⅞	Stafford	0	1½
Gloucester	0	3⅜	Suffolk	0	4⅞
Hants	0	3½	Surrey	0	2 3/16
Hereford	0	2⅝	Sussex	0	2¼
Herts	0	4½	Warwick	0	2¾
Hunts	0	4 5/16	Westmoreland	0	1½
Kent	0	2⅜	Wilts	0	2⅝
Lancashire	0	0 5/16	Worcester	0	3⅛
Leicestershire	0	3⅛	Yorks	0	1½

In Wales.

	s.	d.		s.	d.
Anglesey	0	2½	Flint	0	0¾
Brecknock	0	1¾	Glamorgan	0	0⅜
Cardigan	0	2 1/16	Merioneth	0	1⅜
Carmarthen	0	1⅜	Montgomery	0	1⅝
Carnarvon	0	1½	Pembroke	0	1½
Denbigh	0	1 1/16	Radnor	0	3¼
Scotland	0	0 1/16			
Average	0	1¾			

Comment on the above is unnecessary.

E. GRIMES.

MEDALLION IN MEMORY OF THE LATE REV. ARTHUR RIGG.

IN accordance with the wish of numerous old pupils who received their early education at the Engineering School at Chester, a permanent memorial has been provided in memory of their old master, whose lamented death we recorded in 1880.

To carry out this purpose a committee was formed, the chairman being Mr. Percy G. B. Westmacott, president of the Institution of Mechanical Engineers, Mr. Samuel Worssam, Oakley Works, Chelsea, being hon. secretary.

A consideration of the subject led to the unanimous conclusion that a marble medallion, erected in the College Chapel, Chester, would be the most suitable form of memorial. The suggestion met with the ready assent of the diocesan authorities, and the carrying out of this resolution was most kindly undertaken by Mr. J. S. Westmacott, of No. 49, Hugh-street, Pimlico.

Sculpture at the St. George's Hall Liverpool.—We were wrongly informed as to the Christian name of the sculptor to whom this work has been confided, under certain conditions. His name is "Thomas Stirling Lee, of Merton Villa Studio, 280A, King's-road, Chelsea."

* Compiled by Hart & Co., Patent Agents, 186, Fleet-street.

MANCHESTER CATHEDRAL RESTORATION.

A Vestry meeting of the inhabitants of the parish of Manchester was held in the Cathedral on Monday morning, for the purpose of authorising the churchwardens to apply for a faculty to enable them to make such alterations and restorations at the Cathedral and Parish Church as had been recommended by the architect, Mr. J. S. Crowther. There was a very small attendance. Mr. Geo. Milner, the senior churchwarden, occupied the chair.

The chairman said the restoration of the cathedral involved the removal of the north gallery, and he should just like to read to them the opinion which had been given by Mr. Crowther upon the point. He called special attention to that, because he supposed that was the only point upon which there could be any difference of opinion. The restoration itself had already been agreed to, and must go forward. The architect said, with reference to the north gallery:—

"An examination was then made into the condition of the floor frame, when it was found that the principals, originally framed with timbers too slight for their bearing and for the weight they had to carry when the gallery was filled with people, had in consequence of their insufficient strength, and from having been constructed with unseasoned timber deflected so seriously from a straight line as to disrupt the joint and the frame, and in some cases the tenons had no hold in the mortises. The principals were at once supported in the centre by wooden props, so as to render the gallery, as it was then supposed, temporarily safe, so far as such an expedient can give security, but the whole structure is so inherently weak, and so badly framed together, even with its supports, I feel bound to say it is in a most unsatisfactory condition, and that a heavy responsibility will attach to the authorities if it be not at once taken down. But independently of the state of the structure of the gallery, the restoration of the pier arches of the north aisle, which will shortly be commenced, will involve the taking down of the gallery, as it would not be practicable to carry on the works connected with the restoration of this portion of the fabric of the cathedral without the removal of the gallery whilst they are in progress."

That was the opinion they had had from an architect whose competency no man would doubt, and after such advice the churchwardens, even if there were no restorations proceeding, would be unwise in allowing the gallery to remain in its present condition, as the responsibility was laid upon their shoulders.

It was unanimously resolved:—

"That the churchwardens of the cathedral and parish church of Manchester be authorised to apply to the Ordinary for a faculty to enable them to take down the north gallery in the said cathedral and parish church, and to carry into effect the alterations and additions as proposed in the report of Mr. J. S. Crowther, architect, as shown on the plan submitted to this meeting, and signed by the chairman."

RE RAIN-WATER CONDUCTORS.

SIR,—In answer to your correspondent, "A. B. C.," on page 725, last week's issue, the best conductors are those of lead, not light cast iron, as now commonly used. In this instance, as in many other cases, science (if one can call it so) of the present day is completely out-pacing the past, and in a great number of cases not for the good of the community.

Iron rain-water conductors have long been condemned by practical minds on account of their oxidising properties, which, by the action of rust, gradually but surely eat away the pipe, and as this rust increases in bulk, it scales off, and falling into the pipes is sure to stop them, especially at plinth bends, which are usually sharp.

The peculiarity of iron pipes is that they rust away more at the back than the front, the oxidisation taking place both inside and out at the same time. In fact, to use iron as a substitute for lead, for the purpose of conveying water from gutters, roofs, &c., is simply a penny-wise and pound-foolish policy.

If the pipes are free from sand or blow-holes to commence with, in the course of a year or two they require painting, and the place where it is of the greatest consequence to paint invariably cannot be reached by the painter's brush.

If your correspondent "A. B. C." will take a walk up Gower-street, W.C., he will see some scores of lead rain-water pipes which have been fixed for many years, and are now in as good a condition as when first put up.

JOHN SMEATON.

SIR,—The complaint made by your correspondent, "A. B. C." about the liability of 3 in. and 4 in. circular cast-iron pipes to crack is, unfortunately, very common, and as many good buildings are constantly being disfigured and injured, it is a wonder that the cause should be allowed to continue. By looking at a catalogue of any of the iron-foundry companies you will observe that the ordinary rain-water pipe is marked No. 1, while there is a better quality which is marked as "heavy rain-water," and, in some cases, a heavier still, known as a soil-pipe, a 6 ft. length of which, 3 in. in diameter, weighs about 45 lb. If pipes of this description were used, instead of the "cheap and nasty" sort so common, and properly jointed with red lead to prevent the joints being cracked by frost, I venture to say that there would be no need to appeal to science in the matter. I may say that in Paris the ordinary rain-water pipe is fluted, and made in 3 ft. lengths, and much heavier than those known as No. 1 here. I fancy they may have been compelled to adopt that description of pipe, as the result of a broken pipe on the white stone front of a Paris house would be disastrous.

A PLUMBER.

THE FUTURE OF THE JOURNEYMAN.

IT has often been said between workmen of the building trades, "What a pity it is that there is no asylum or guild to take care of the poor old worn-out mechanic: his only hope is the workhouse." Now, if a young man, entering the building trade as a bricklayer or stone mason, plasterer or carpenter, were to say to himself, What will this lead to,—fortune or the workhouse?—his answer would have to be his life, and if he did not surround himself with benefit societies and trade unions, the answer of his life might be the workhouse.

I have known a great many old men,—good and true,—who have laboured all their life, brought up a family, and at last found a home in "the mansion," as it it called by the men. An old man called on me a few days ago. I have known him for years as a first-class staircase hand; he told me he was getting old, and masters would not employ old men turning grey. What was he to do? "There is nothing but the workhouse for me," he said; and that is the cry of hundreds every year. Now, is there no remedy for this? I see very often in your paper an architect's will, or a builder's will, but I never saw a trifle left for the workmen who helped to make these large fortunes. If some one who professed to take an interest in the workmen were to take this in hand, and build an asylum or build an alms-house, it would be more Christian-like in our own land; and if the workmen were asked to give, say 2d. per week for a time, neither the young nor the old would fear the workhouse or the name of pauper.

C. SPENCE.

A JOINER'S SHOP AND ITS MANAGEMENT.

SIR,—Some three years ago you were kind enough to allow me to answer one of your correspondents who had given, as I then said, some most ridiculous advice to young practical men.

A writer in your issue of the 19th ult. comes forward with considerable courage,—courage, I venture to say, beyond his capacity,—to expose abuses he opines to exist in the management of joiners' shops, but fails to suggest remedies for the state of things he so eloquently deplores.

I desire once more, by your permission, to reply to these anonymous slanderers. It seems to me that it is, to say the least of it, unfair to make a series of accusations against a by no means undeserving class of men, and to still further tantalise the suspected ones by adopting either a *nom de plume* or accepting the shelter of initials to the communication.

In effect, the letter of "M. A. F." brings a charge of incompetency against both employer and foreman. We are gravely told that the employers are by no means aware of the "wheels within wheels" in the management of a joiner's shop. As a matter of fact, many of the employers,—most of them,—have been journeymen and foremen themselves, and are fully up to the little dodges practised by some (few, I think) of the foremen of to-day.

"Favouritism largely prevails," we are told, and we are further informed that foremen prefer employing men they are acquainted with rather than strangers. Dear me, what an awful amount of moral turpitude this displays!

The "foreman's favourites are sure to get the pick of the work," says "M. A. F." Well, I put it to "M. A. F." if he were going to commission some one to perform some important duty,—say, writing an essay upon the management of a joiner's shop,—whether he would not rather put the job into the hands of some person whose capability he had previously tested? Remember always that the favoured man of one foreman will be an entire stranger to the majority of foremen generally, they having, in their turn, men whom they have tried and have confidence in. Of course I lay it down that the foreman's favourite is the man who can do his work well and in a reasonable time. Depend upon it, sir, the London builder of to-day is too shrewd a man of business not to notice the men in his shop who cannot earn their money; and if the builder himself is too fully occupied, his position will warrant and his experience suggest the employment of a man above the shop-foreman who will perform the employer's part.

But "M. A. F." gives advice to the foreman as well as information to the employer; he "desires to call attention to the wholly unnecessary repetition of lines and sections in setting out work." Where does all this occur Of course, the builders will be thankful for the hints "M. A. F." gives about the "seasoning, drying, and shrinking of work"; but the worst of the matter is, that the reading of this portion of the letter is followed by the painful reflection that the majority of builders are so ignorant that they will not understand the technical language of "M. A. F."

"M. A. F." advises young men to learn to draw, &c. All well and good, if at the same time they attempt an improvement in their general education.

HARRY DUNKLEY.

THE ARCHIEPISCOPAL PALACE AND CHAPEL, CROYDON.

SIR,—Will you permit me to correct some errors in your report of my paper on "The Archiepiscopal Palace and Chapel of Croydon"? In justice to you, I must say the errors were consequent upon the badly-written draft I placed in the hands of your reporter. For "Helwardly" read "Kilwardby," and the date of the mandate referred to 1273, not 1270. For "Freynes" read "Reynolds"; for "Mitford," "Ufford"; and for "Withesay," "Wittlesey." On the 4th of May, 1382, Archbishop Courtney received his pall. The guard-chamber referred to by Ducarel is certainly still in existence. For "Temple" read "Kemp."

HYDE ROUMIEU GOUGH.

LEADED LETTERS IN MARBLE.

SIR,—Can you or any of your readers inform me where to procure prepared lead for leading letters in marble?

MASON.

DISTRICT SURVEYORS AND TIMBER STAGES.

A SUMMONS taken out by Mr. Fredk. Wallen, the district surveyor of St. Pancras West, against Mr T. T. B. Cobbett, for erecting a timber-merchant's stage, was heard on Wednesday, the 23rd ult., at the Marylebone Police-court. Mr. Wallen conducted his own case. Defendant appeared by Mr. Richard Nevill, counsel, instructed by Messrs. Poole & Hughes. Plans and a model of the structure were produced in court. The stage consisted of nine upright posts about 14 ft. high, with six cross-beams on the top, and was entirely open on all sides and at the top, and only used for the purpose of stacking timber and deals.

Mr. Wallen said that January last he found the stage had been commenced. He advised Mr. Cobbett that he considered it a building, and suggested that as timber buildings were contrary to the Building Act, he should apply to the Metropolitan Board of Works for permission for a special building. Subsequently he found that Mr. Cobbett had erected the open stage in question, whereupon he took out the present summons against him for erecting a building without giving notice, and informed the magistrate that he considered it to be a building. Though there was no legal definition of what constituted a building in the Act, yet in the decision of Justice Byles in the case Gourley *v.* Stephens, quoted in the Law Reports, 7 C. B., N. S., any structure of considerable size must be a building; the present stage on plan was 22 ft. long by 20 ft. wide.

Cross-examined by Mr. Nevill, Mr. Wallen said he could not positively say the stage was actually framed together; the timbers were fastened by iron dogs. He admitted he had never summoned a builder or any one for putting up a timber stage before, nor had he ever heard of any other district surveyor doing so. It was, in his opinion, the first time the question had been raised; he was aware that a clause prohibiting the erection of timber stages had been inserted by the Metropolitan Board of Works in the draft of the Floods Prevention and Building Act Amendment Act, 1878.

Mr. Nevill here handed Mr. Wallen a copy of such printed clause, which he read. The clause was to the effect that "It should not be lawful for any person to erect or set up in any place within 30 ft. of any highway, any stack of timber or wood, or any timber stage, without consent of the Metropolitan Board of Works, more than 25 ft. in height, under a penalty of 5*l.* and 40*s.* per day for every day it continued to exist." He was aware the timber trades of London strongly opposed this clause, and it was withdrawn by the Board. He considered the Board withdrew it because the present Building Act was strong enough to deal with timber stages. The Metropolitan Board were no party to the present summons. Defendant's counsel asked if the three top-beams were removed would Mr. Wallen consider the three separate sets of disconnected posts and frames a building?

Mr. Wallen. Yes; they would each be then separate buildings.

Mr. Nevill.—Then a set of three posts and top cross-beam forming a swing for children in a gentleman's garden would be a building?

Mr. Wallen.—Yes, but I should not take any notice of it.

Mr. Nevill, for defendant, submitted that this staging could not be a building under the clauses of the Building Act. It was simply a trade fixture used by Mr. Cobbett as part of his stock-in-trade. It was the first time since the passing of the Building Act, twenty-eight years ago, that the question had been raised by any district surveyor, and if Mr. Wallen was right all the other district surveyors had been wrong for all that time. Moreover, the Metropolitan Board of Works themselves had entirely failed in trying to acquire powers over timber stages. The decision Mr. Wallen referred to of Mr. Justice Byles in the case of Gourley v. Stephens, referred to an enclosed building with a roof on it, and used as a shop for selling goods in. He, Mr. Nevill, begged to remind the magistrate that under the Act the stage in question was neither a public building, nor dwelling-house or factory, and he submitted it was simply a trade fixture, being neither a permanent construction nor any part of the buildings in the yard, Mr. Cobbett being able to remove and sell it just in the same way as the deals and timbers resting on it, and he would ask the magistrate, considering the magnitude of the interests involved in the question affecting all the timber and cabinet trades of London, not to decide the question off-hand, but to give a formal decision, and if necessary grant a case for a superior court.

The following witnesses were called on behalf of the defendant.

Mr. Hamilton, architect, said he had been in practice several years; had never known district surveyors interfere in the case of timber stages; had been for many years managing clerk of Mr. G. Legg, district surveyor for Hackney, who never interfered in the case of timber stages; they considered them merely trade fixtures unless they were roofed in, and then of course they had to deal with them.

Cross-examined by Mr. Wallen.—He advised Mr. Cobbett about the erection of present stage; the application made to the Board by Mr. Cobbett was for an entirely different construction,—for a building with a roof, not for an open stage.

Mr. Merrifield, clerk of works, stated he had so acted for many years; had superintended the making of the model of the stage now in court, which was correct; had often erected timber stages; never knew a district surveyor to take any action about them. They could not be classed as buildings, but were trade implements.

Cross-examined by Mr. Wallen.—He considered the present open stage a mere scaffold; it had neither top, bottom, nor sides, and could not therefore be classed as a building.

Mr. De Rutzen, the magistrate, said he would give his decision on June 6th.

Mr. Nevill asked that it might be so stated that his client could, if necessary, appeal.

Mr. Wallen.—It is only a question of fact, and there is no appeal.

Mr. Nevill.—The facts are not disputed, it is a question of law.

The Magistrate.—I will willingly grant you a case: the question is whether a timber stage is legally a building or not.

TIMBER STAGES AND THE METROPOLITAN BUILDING ACT, 1855.

SIR,—It was assumed by Mr. Wallen, the district surveyor of St. Pancras West, last week, when he summoned Mr. Cobbett for erecting a timber stage as a building contrary to the Act, that there had hitherto been no legal decision on the question. In this he is wrong.

It is quite true that no district surveyor has ever yet raised the question, but it has been raised by other public bodies at Bow-street Police Court, as the following statement will prove:—

In June, 1871, a summons was taken out by the Strand District Board of Works against Mr. Macey, contractor, of Milford Wharf, Strand, for erecting a large timber stage on the land forming part of his premises on the Thames Embankment. The question was heard at great length. The Metropolitan Board of Works supported the Strand District Board in the case, and Mr. G. F. Fry, the surveyor to the Strand District, and Mr. Vulliamy, the Superintending Architect to the Metropolitan Board of Works, gave evidence for the prosecution; and Mr. Whichcord, architect, was also called in.

Mr. Vaughan, the magistrate who heard the case, went into the question at issue at great length, and inspected the plans; and he afterwards met the various surveyors on the spot and himself surveyed the stage, and finally, on July 8th, 1871, he gave his decision that open timber stages were not legally buildings, nor included in the provision of the Metropolitan Building Act, and dismissed the summons.

Mr. C. J. Shoppee acted on behalf of Mr. Macey in the case. There are many surveyors who could have put Mr. Wallen right as to the particulars of this question. It is quite true the Metropolitan Police Magistrates are not compelled to recognise any decision but that of a superior court, but doubtless Mr. Vaughan had good reasons for his decision. There is no doubt that their want of success in this instance caused the Metropolitan Board of Works to insert the clauses in the Bill to attempt to regulate timber stages, which were rejected. What becomes, therefore, of Mr. Wallen's argument?

A TIMBER MERCHANT.

Widnes.—A new church, to be dedicated to St. Paul, is being provided at Widnes, Cheshire. The total cost of the structure when completed will be about 7,000*l.*, but probably the nave only will be built at the present, the erection of the chancel and transepts being left to a later period.

CASE UNDER THE EMPLOYERS' LIABILITY ACT.

DIXON *v.* BLEAKLEY.

At the Birkenhead County-court, on the 18th ult., Thomas Dixon, of Rice-lane, Egremont, a joiner, sued Alexander Bleakley & Son, of Claughton-road, builders and contractors, for 20*l.* damages.

The action was brought under the Employers' Liability Act, 1880.

It was alleged that the plaintiff, acting under the defendants' foreman, was employed in putting a beam on to the roof of the Wirral Children's Hospital on the 23rd of January last. He, with some thirteen other workmen, early in the morning, were upon a scaffolding on which rested two purlins, about 8 cwt. each, and a gable (in part, its other part resting on a wall) about 30 cwt. A plank on which all stood gave way, with the scaffolding. One man who was injured subsequently died; the plaintiff was thrown on the joists below and was rendered unconscious, his head and various parts of his body being bruised. After having been attended to at the Borough Hospital, he was placed in the hands of his own doctor, and was unable to work for seven weeks.

For the defence, it was contended that there was no defect in the plank known to the defendants or the foreman, nor was there any negligence on their part, of which the plaintiff could complain; that the erection of this scaffolding had, in fact, been entrusted to the plaintiff himself; and that only six men were on it when it gave way.

His Honour gave a verdict for the defendants.

Miscellanea.

Decorative Co-operators' Association.—A meeting was held at Grosvenor House on Wednesday, by permission of the Duke of Westminster, of the promoters and friends of this association. The Earl of Carnarvon took the chair. The scheme of the association is one similar to that of the Maison Leclaire, in Paris, which, founded in 1842, now affords employment to 1,200 decorators, and has, during the last ten years, made a total net profit of 73,000*l.* The association's offices are at 405, Oxford-street, and it is stated in the prospectus that co-operation could be more easily applied to house decoration than to any other productive industry. The chairman said that their object was not to favour any one particular class. They were of opinion that by allowing the workman to participate in the profit of his labour the work would be better and more quickly done. It was proposed that interest at 5 per cent. per annum should stand as a first charge upon profits, after which one quarter net profits would go to the managers, one quarter to a mutual fund, and the other half to the workers and the reserve fund.—Mr. Arthur Balfour moved: "That in the opinion of this meeting the best hope for a permanent improvement in the condition of the working classes lies in the gradual and successful application of the principle of giving to the workman a direct interest in his labour, by securing to him a share of the profits resulting from that labour." This was seconded by Sir T. Brassey, M.P., and carried unanimously.—Another resolution, pledging itself to support the association, was also carried. The existence and method of working of M. Leclaire's scheme were made known in this country by the *Builder* many years ago, and on the death of M. Leclaire, a few years since, we returned to the subject.

The New South London Fish Market.—The new fish-market near the Elephant and Castle is now in an advanced stage of completion, and was opened on Tuesday last. The market is part of the scheme promoted by Mr. Plimsoll, and sanctioned by the South London Markets Act of 1882. It has an entrance from the New Kent-road, and as the site is in immediate contiguity to the Chatham and Dover Railway, every facility is offered for the arrival and immediate disposal of fish. It is also approached by wide streets, and it is to be hoped that, when in full working order, the new market will supply a want greatly felt by the public of South London. The market occupies a site of 129,717 square feet. The business done on Tuesday and Wednesday is reported to be fairly satisfactory. In this connexion we are glad to note that the prospects of the success of the new Central Fish Market, recently opened by the Corporation, are reported to be improving as the market becomes better known.

Church Decoration.—A work of partial decoration at present confined to the east end of the chancel of St. Luke's Church, Pallion, Sunderland, has just been completed. Above the large east window a riband has been carried round, with legend:—"Jesus said: 'My flesh is meat indeed, and my blood is drink indeed.'" The adjoining wall is tinted a warm stone colour, inwrought with diapers and ornament, mostly in dull rust-reds and sage-greens. The diaper on either side of the window consists of the sacred monogram "I. H. S.," surmounted by a crown, and the rose, which latter constitutes the window bordure. The reredos occupies the whole of the lower wall space, except a small slip, tapestry veiled, on either side. Upon the four panels of this reredos have now been painted in gold and colours, each on a richly diapered white screen, figures of the four evangelists, above which rise centrally a gilded cross. The whole is by the firm of Powell Brothers, of Leeds.

Institute of Patent Agents.—The first annual meeting of this Institute was held on Wednesday afternoon at 57, Chancery-lane; Mr. J. H. Johnson, the president, in the chair. The report of the council congratulated the members on the progress which had been made since the Institute was incorporated in August last. The co-operation of a large number of patent agents in London, in the provinces, and abroad, had been secured, and the advantages, both to the profession and to the public at large, of such an institute had already been proved. Up to the end of the financial year, which closed with the month of April, seven meetings had been held. Papers had been read, followed by discussions. The report having been adopted, together with the statement of accounts, the business of the meeting, which was chiefly of a formal character, was proceeded with.

Freemasons' Hall.—At Grand Lodge on the 6th of June, the Board of General Purposes will recommend the rebuilding of "the Temple," which was burned down on the 3rd of May, on a scale to accommodate 1,500 persons. This it is proposed to effect by adding to the area of the late hall the dining-hall of the Freemasons' Tavern, and obtaining from Mr. Bacon, the lessee of Bacon's Hotel, the necessary space for the new dining-hall and improved kitchen accommodation. The cost is roughly estimated at from 30,000*l.* to 35,000*l.* beyond what will be received from the insurance company.

St. Martin's-in-the-Fields.—The interior of the well-known Church of St. Martin's-in-the-Fields, Trafalgar-square, one of Gibbs's chief works, has lately been cleaned and tastefully decorated, and was re-opened for divine service on Sunday last. The work has been carried out by Mr. F. Stevenson, under the direction of Mr. Henry Jacques, surveyor to the Vestry.

A New Scotch Railway Bridge.—The Great North of Scotland Railway Company have accepted the tender of the Teeside Iron and Engine Works Company, Middlesbrough, and of Messrs. Abernethy & Co., engineers, Aberdeen, for the ironwork of the new bridge across the Lossie, on the Buckie extension line of railway.

Christ Church, Clevedon.—Messrs. Jones & Willis have supplied some stained-glass windows for this church, and Messrs. Stephens & Bastow the open pitch-pine seats which form the first instalment of some considerable alterations and improvements planned and superintended by Mr. E. H. Lingen Barker.

The Parkes Museum.—The inaugural lecture of the Summer session will be given this (Friday) afternoon, at 5 p.m., by Professor F. De Chaumont, F.R.S., who will give a "Sketch of the Origin and Development of the Science of Hygiene. The Director-General of the Army Medical Department will preside.

Stained Glass.—In Baverstock Church, near Salisbury, a three-light memorial window, illustrating the "Resurrection of Our Lord," has just been erected by Messrs. Gibbs & Howard, of Charlotte-street, Fitzroy-square, London. The figures of our Lord and the rejoicing angels, which fill the tracery and the upper portions of the two side lights, are treated in tones of white upon a background of strong colour. The same firm have erected a series of porch-lights in the Church of St. Andrew, Nottingham. The subjects are all from the New Testament, and comprise,—The Annunciation, The Presentation, The Saviour among the Doctors, The Carpenter's Shop at Nazareth, &c.

The Amalgamated Engineers' Society. The Amalgamated Engineers' Society have issued the annual report for 1882. The general secretary (Mr. John Burnett), in his remarks, says:—A year ago he ventured to predict that the prospects of the engineering trade were most encouraging, and he is glad to say these hopeful anticipations have been, to a great extent, realised. The foreign demand for our engines and machinery had increased vastly, both in quantity and value; and, indeed, it may safely be asserted that never before were the engineers of Britain called upon to produce so much of their work to meet the requirements of foreign customers. The number of branches of the Society was increased during the year from 412 to 420, and the total number of the members from 46,101 to 48,388, and no less than 22,243*l.* was added to the accumulated funds of the Society. The total amount of income for the year was not so large as in some previous years, but that was due to the special levying being remarkably small, amounting to only 1s. 3d. per member for the year. The total income in 1881 was 136,506*l.*; in 1882, it was 124,408*l.*, being a decrease of 8,098*l.*; owing to the donations being much lighter than in the previous year. In 1877, the funds stood at 275,270*l.*, but owing to bad trade that sum was at the end of 1881 reduced to 130,074*l.* In the past two years, however, there have been fewer unemployed men, the donation benefit paid last year being only 21,936*l.*, that being the smallest amount paid since 1874. Under the head of contributions the Society received 115,176*l.* The expenditure for 1882 shows a considerable saving over the previous two years; in 1881, the expenditure was 116,623*l.*; last year, it was only 102,165*l.*, a reduction to the extent of 14,458*l.* The accumulated capital of the Society is 168,200*l.*, which is equal to 3*l.* 9s. 6½d. per member.

Continental Passenger Traffic. — On the 21st ult., the steamer *Ipswich* was launched from Earle's shipbuilding yard at Hull, the christening ceremony being performed by the Mayoress of Ipswich. The *Ipswich* is a sister ship to the *Norwich*, recently launched from the same yard. Both boats are intended for the Great Eastern Company's service between Harwich and Antwerp. They are about 1,000 tons register, 260 ft. in length, 31 ft. beam, and are fitted with twin screws to secure a speed of 14½ knots an hour, and to prevent the rolling found with single screws. The saloon accommodation is forward of the engine-room, as in the latest Atlantic liners, to avoid the heat and smell from the boilers. Both vessels will be placed on the Antwerp route this summer, and the company's hotel at Parkeston Quay, Harwich, will be ready for the reception of passengers next month.

Barton Sanitary Authority.—On the 35th of last month Mr. Arnold Taylor, one of the Inspectors of the Local Government Board, held an inquiry at Urmston, near Manchester, as to an application of the Barton Raral Sanitary Authority for sanction to borrow 8,200*l.* for works of private street improvement in the townships of Flixton and Urmston. Mr. John Price, Assoc. M.I.C.E., engineer and surveyor to the authority, having explained the nature of the proposed works, the streets were visited by the inspector, who said he would report favourably to the Local Government Board in due course.

TENDERS.

For building Thurlow Towers, Streatham, for Mr. Michael Pope. Messrs. Batterbury & Huxley, architects.

For road and foundations, and levelling site:—
Mr. H. Potter, Clapton (schedule).

For works above ground-floor level:—

Lathey Bros.	£3,632 0 0
Nightingale	3,383 0 0
J. & C. Bowyer	3,288 0 0
Higgs & Hill	3,198 0 0
Holliday & Greenwood	3,088 0 0
W. Downs	3,079 0 0

For detached country residence at Orpington, Kent. Mr. St. Pierre Harris, architect, 1, Basinghall-street and Orpington:—

Pughe	£1,320 0 0
Wood	1,280 0 0
Crossley	1,240 0 0
Taylor & Son	1,230 0 0
Balding	1,179 0 0
Lay	1,055 0 0
Wright (too late)	1,195 0 0
Brett & Son (accepted)	995 0 0

For alterations and repairs to Pine Ridge, Orpington, for Mr. A. Brown. Mr. St. Pierre Harris, architect:—
Treadwell (accepted for alterations).
Bond (accepted for decorations).

For County Police-station, Ifield, Sussex. Mr. C. W. Whitaker, County Surveyor. Quantities by Mr. C. F. Doll:—

Terry, Storrington	£813 0 0
Bidgood, London	795 0 0
Etheridge Bros., Horsham	778 0 0
No name, Crawley	760 0 0
Redford & Potter, Horsham	741 0 0
R. & F. Parsons, Brighton	730 0 0
Woolgar & Sons, Horsham	720 0 0
Beard & Foster, East Grinstead	715 0 0
R. & C. Gates, Crawley	693 0 0
Morris, East Grinstead	670 0 0
Peters & Co., Horsham	658 0 0
Longley, Crawley	630 0 0
R. Cook, Crawley (accepted)	615 0 0
Pannell Bros., Horsham	599 0 0
Priestley & Gurney, London	594 0 0

For the erection of stone stairs to the Infirmary at Bethnal-green Workhouse. Messrs. T. & W. Stone, architects:—

Higgs	£159 0 0
Richardson	125 0 0
Young	112 0 0
Beale	111 0 0
Steel Bros.	95 0 0
Wheeler & Hannan	95 0 0
Lege	90 0 0
Johnson	86 0 0
Thomerson & Son (accepted)	81 10 0

For repairs at St. Peter's Church, Hackney-road:—

Niblett	£434 0 0 !
Roberts	427 0 0
Taylor	395 0 0
Shurmur	390 0 0
Anley	366 0 0
Thomerson & Son	293 10 0
Jarvis & Sons	293 0 0 !

For pulling down and rebuilding the Refuge and Soup Kitchen, Ham-yard, Great Windmill-street. Mr. Henry Hall, architect. Quantities by Mr. Morgan H. Young:—

Adamson & Sons	£2,091 0 0
Dove Bros.	2,055 0 0
Hall, Beddall, & Co.	1,974 0 0
Bywaters	1,944 0 0
Grover	1,887 0 0
Langmead & Way (accepted)	1,775 0 0

For the construction of new roads and sewers on the Hanger Hill Estate, Ealing. Mr. Robert Willey, architect, 66, Ludgate-hill:—

Killingback, Camden-town	£9,150 0 0 !
Pizzey, Hornsey	8,995 0 0
Adamson & Sons, Ealing	6,643 0 0
Nowell & Robson, Kensington	5,956 0 0
Ford & Everett, Westminster	5,850 0 0 !

For the rebuilding of No. 43, Wigmore-street, Cavendish-square, for Mr. E. Zuccani. Mr. Robert Willey, architect:—

Penny & Co., Ealing	£2,500 0 0
Dowsing & Sons, Notting-hill	2,380 0 0
Woodward, Finsbury	2,339 0 0
Clarke & Bracey, Coleman-street	2,225 0 0
Merritt & Ashby, London-wall	1,909 0 0
Hatton, Brixton	1,901 0 0

For erecting new committee-room, master's residence, and offices and rooms for male and female attendants, for the trustees of the Stockwell Orphanage, Clapham-road. Mr. Alfred Wright, 190A, Brompton-road, architect. Quantities by Mr. J. Goodchild:—

		Extra for Portland Stone.
Dove Bros.	£4,529 0 0	£48 0 0
B. E. Nightingale	4,383 0 0	50 0 0
H. Hart	4,370 0 0	57 0 0
F. Higgs	4,375 0 0	35 0 0
Holliday & Greenwood	4,173 0 0	69 0 0
Croaker Bros.	4,160 0 0	65 0 0
J. Smith & Son	4,121 0 0	60 0 0
W. Johnson	4,100 0 0	60 0 0

For forming roads and sewers on the Somers Lodge Estate, Upper Tulse-hill. Mr. Alfred Wright, surveyor:—

R. & G. Neal, Wandsworth	£3,074 0 0 !
W. Stubbs, Bankside	1,810 0 0
James Neal, Wandsworth	1,796 0 0
W. Harris, Camberwell	1,678 0 0
R. Finnigan, Northampton	1,125 0 0 !

For alterations, &c., at 16 and 18, Kingsland-road. Mr. C. Dunch, architect:—

W. Shurmur	£396 0 0
W. Palmer	395 0 0
B. T. Wood	370 0 0
J. E. Taylor	313 0 0

For the erection of shop and dwelling-house, High-street, Shoreditch, for Mr. W. Casey. Mr. S. J. Algar, architect:—

Pritchard	£1,995 0 0
Wire	1,974 0 0
Pocock	1,965 0 0
Shurmur	1,944 0 0
Carter	1,697 10 0
Merritt & Ashby	1,686 0 0

For rebuilding the Bell public-house, for Messrs. Truman, Hanbury, & Buxton. Mr. Bruce J. Capell, architect:—

J. Goodman	£2,910 0 0
C. Marr	2,760 0 0
J. & H. Cocks	2,658 0 0
Staines & Son	2,592 0 0
J. Anley	2,385 0 0
W. Shurmur (accepted)	2,349 0 0

For alterations to the Telegraph public-house, Deptford. Messrs. Bird & Walters, architects:—

J. B. Axford	£210 0 0
W. Shurmur	169 0 0
G. Jennings	170 0 0
T. D. Lang	159 10 0

For the erection of a warehouse and two shops at Kennington-cross, for Mr. John Young:—

B. Cook	£3,171 0 0
W. Smith	3,021 0 0
J. Ford & Sons (accepted)	2,759 0 0

For the erection of the hospital at Stratford-on-Avon, including boundary-fences and entrance gates, and cooking and hot-water arrangements by Messrs. Benham & Sons, of Wigmore-street, London, and all other necessary internal fittings. Mr. E. W. Mountford, architect, London. Quantities by Mr. Edward Crutchloe, Victoria-street, Westminster:—

Boyce, London	£5,970 0 0
Sharman, London	5,380 0 0
Kibler, Wellesbourne	5,140 0 0
Claridge, Banbury	5,075 0 0
Greenway, Stratford-on-Avon	4,967 0 0
W. King & Son, London	4,960 0 0
Smallwood, Henley-in-Arden*	4,900 0 0
Callaway, Stratford-on-Avon	4,810 0 0

* Accepted.

For new business premises, corner of London-street and Queen's-road, Reading, for Mr. Thos. Simmons. Messrs. Brown & Albury, architects:—

General works.

Kingerlee (accepted)	£1,257 10 0

Plumber, Glazier, and Painter.

Freeman (accepted)	£262 10 0

For rebuilding the Hind's Head, Tutchen-end, Bray, for Mr. P. S. Langton. Messrs. Brown & Albury, architects:—

James Hughes	£887 15 0
Vickery & Co.	810 0 0
James Partlo	807 0 0
William Woodbridge	794 0 0
George Wernham (accepted)	727 0 0

For the erection of recreation hall at the Darenth Imbecile Asylum, near Dartford, Kent, for the managers of the Metropolitan Asylums District. Messrs. A. & C. Harston, architects, 16, Leadenhall-street, E.C. Quantities supplied:—

Wall Bros., London	£6,100 0 0
W. H. Archer, Gravesend	5,995 0 0
B. E. Nightingale, Albert-embankment (accepted)	5,792 0 0

For the erection of two houses in Essex-street, Mile-end, for Mr. H. P. Duprey. Mr. T. W. Moss, architect:—
Wilson & Exton (accepted).

For alterations to 205-206, High Holborn, for Mr. Carlos Siegmann:—

H. Cornish (accepted)	£270 0 0

For enlargement of Dorking Wesleyan Chapel. Mr. F. Boreham, architect, 52, Finsbury-pavement:—

Richards & Son	£949 0 0
Holloway	925 0 0
Edsar	850 0 0
Pledge	843 5 0
Hamblin	779 0 0
Heselgrave (accepted)	749 0 0

For constructing roads and sewers on the Hanger Hill Estate, Ealing. Mr. Robert Willey, surveyor:—

Ford & Everett, Westminster*	£5,850 0 0

* Accepted.

For alterations and additions to Nos. 16 and 17, Richmond-villas, Finsbury Park, for Mr. George Searle. Mr. D. Taylor, architect, Wood-green, N.:—

Mills	£423 0 0
Mattock Bros.	413 0 0
Kirby & Chase	365 10 0
F. Voller, Wood-green	318 0 0

For alterations at the Old Foresters, Kender-street, Queen's-road, Peckham, for the New Westminster Brewery Company. Mr. H. W. Budd, architect:—
Lamble (accepted).

For building smithy and stable at the One Tun public-house, Brentford, for Messrs. Fuller, Smith, & Turner. Mr. G. More, architect:—

Nye	£192 0 0
Spicer	180 0 0
Brunsden	174 0 0
Lamble (accepted)	163 0 0

For alterations, &c., at 107, Chalton-street, Somerstown, for Mr. T. B. Westacott. Mr. W. J. Miller, architect:—

Jackson & Todd	£330 0 0
Spencer & Co.	310 0 0
Beaves	298 0 0
Lamble	247 0 0
Steed Bros.	225 0 0

For first portion of Glamorgan County Asylum, Parc Gwyllt. Messrs. John Giles & Gough, architects. Quantities by Mr. C. H. Goode:—

James & Sons, Bridgend	£74,750 0 0
Wm. McGaul, Bridgend	73,247 0 0
Booth Bros., London	70,300 0 0
David Davies, Cardiff	69,200 0 0
John Garlick, Birmingham	68,680 0 0
Gibbs & Flew, London	68,100 0 0
J. Barnsley & Sons, Birmingham	66,900 0 0
H. J. Sanders, Southampton	66,785 0 0
Thomas White, Swansea	66,000 0 0
Thomas, Watkins, & Jenkins, Swansea	65,717 0 0
P. Horsman & Co., Wolverhampton	64,460 0 0
Edmund Gabbutt, Liverpool	63,350 0 0
Henry Lovatt, Wolverhampton	62,800 0 0

For alterations and additions to premises, Corn Hill, Bury St. Edmunds, for Mr. James Floyd. Mr. William Eade, architect:—

W. Rednall	£700 0 0
A. Andrews	566 0 0
J. Robinson, jun.	530 0 0
J. Williams (accepted)	522 7 0

For alterations and additions to the Wesleyan Chapel at Harwich. Mr. William Eade, architect:—

Bennett Bros. (accepted)	£575 0 0

For erecting six houses on the Eastward Ho Estate, Felixstowe, for Messrs. Bugg & Jolly. Mr. William Eade, architect:—

W. Wagstaff (accepted)	£1,800 0 0

For erecting a pair of semi-detached houses on the Eastward Ho Estate, Felixstowe, for Messrs. Bugg & Jolly. Mr. William Eade, architect:—

W. Wagstaff (accepted)	£750 0 0

For the erection of the new Board school, caretaker's house, &c., for the Ecclesfield School Board, Hillsbro', near Sheffield. Messrs. Wilson & Masters, Hartshead-chambers, Sheffield, architects :—

Contract for the whole of the work.

T. G. Turner	£4,537	0	0
Powell & Son, Sheffield	4,500	0	0
J. Greenwood, Attercliffe	4,469	0	0
J. Chambers & Sons, Sheffield	4,368	0	0
J. & G. Summers, Wakefield	4,304	8	8
J. Mastin, Sheffield	4,290	8	9
J. Springward, Malin Bridge	4,257	0	0
G. Longden & Sons, Sheffield	4,048	0	0
J. Harrison, Sheffield	3,930	0	0
W. Smith, Sheffield (accepted)	3,919	0	0
Amount of lowest separate tenders,	£3,922	15	4

For houses in Regent's-street, Kettering. Mr. R. W. Johnson, architect, Melton and Kettering :—

Margetts	£1,005	0	0
F. Barlow	997	10	0
Shurmur	980	0	0
C. & F. Hensen	966	10	10
Payne & Son	965	0	0
Farey	907	0	0
H. Henson (accepted)	900	0	0

Above exclusive of bricks and internal fittings.

For St. Andrew's Schools, Kettering. Mr. R. W. Johnson, architect :

Branson & Son, Northampton	£1,895	0	0
Margetts, Kettering	1,485	10	0
Manby, Kettering	1,459	0	0
Barlow, Rothwell	1,310	0	0
Payne & Son, Kettering	1,268	0	0
Shurmur, Kettering	1,265	0	0
C. & F. Henson, Kettering	1,243	15	0
H. Henson, Kettering	1,235	0	0
G. V. Henson, Kettering (accepted)	1,210	0	0

For structural alterations to premises, South-street, Dorking, for the Steam Laundry Company, under the superintendence of Messrs. Peak, Lunn, & Peak, surveyors, Guildford :—

W. Shearburn, jun. (accepted)	£280	0	0

For rebuilding Nos. 138 and 139, High-street, Guildford. Messrs. Peak, Lunn, & Peak, architects :—

				Deduct for old tiles.		
W. Swayne, Guildford	£2,535	0	0	£10	0	0
Garnett & Mills, Guildford	2,563	0	0	10	0	0
Pearce & Clark, Guildford	2,473	0	0	nil.		
Harris, Woking	2,234	10	0	6	0	0
Smith & Sons, Guildford	2,139	0	0	nil.		
Strudwick, Guildford	2,105	10	0	nil.		
G. & R. Smith, Guildford	2,054	3	6	6	15	0
Mitchell Bros., Shalford*	2,049	0	0	10	0	0

* Accepted.

For pulling down and rebuilding cottages in James-street, Southampton-street, Camberwell, for Mr. Henry Soden. Mr. H. C. Macpherson, architect :—

J. O. Richardson, Peckham*	£1,468	0	0

* Accepted.

For rebuilding stable and new cowshed, &c., Cheamhall Farm, Surrey. Mr. Inman, architect :—

Henry Keal, Sutton (accepted)	£350	0	0

For new cowshed, store-house, and alterations, Park Farm, Cheam, Surrey :—

Henry Keal, Sutton (accepted)	£440	0	0

For the erection of coffee tavern, Park-street, Luton, for the Bedfordshire Coffee Tavern Company, Limited. Mr. Chas. Bell, architect. Quantities supplied by Mr. Henry Lovegrove, 26, Budge-row :—

Smith & Sons	£1,734	0	0
Smart Bros.	1,677	0	0
G. Green	1,652	0	0
Allen & Sons	1,650	0	0
S. Foster	1,645	0	0
G. E. Mills	1,639	0	0
J. Robinson	1,634	0	0
A. D. Poatson	1,570	0	0
G. Brown	1,495	0	0

For the erection of dwellings in flats, East-street, Walworth, for the London Artisans and Labourers Dwellings Company, Limited. Mr. Edmund Woodthorpe, architect to the company. Mr. Henry Lovegrove, surveyor to the company :—

Martin, Wells, & Co., Aldershott*	£55,058	0	0

* Accepted.

For new tabernacle, Talbot-road, Westbourne-park. Messrs. Habershon & Fawckner, architects :

Haynes	£6,450	0	0
Tongue	5,840	0	0
Jones & Co.	5,833	0	0
Gregar	5,729	0	0
W. Oldrey	5,450	0	0
Holland	5,348	0	0
Holliday & Co.	5,309	0	0
Allen & Sons	5,300	0	0

For new galleries, grained roof, decoration and repairs to the Acton Congregational Church. Messrs. Saville & Son, architects, 1, Argyle-square. Quantities supplied :—

J. Emery	£2,064	0	0
J. Grover	1,955	0	0
W. Smith	1,753	0	0
Scrivener & Co.	1,725	0	0
F. Lamble	1,681	0	0
J. Auley (too late)	1,670	0	0
W. Royal	1,448	0	0
Spencer & Co.	1,395	0	0

For the erection of a Primitive Methodist Chapel at Stratton St. Margaret, near Swindon, Wilts. Mr. William Drew, Swindon, architect :—

Coleman	£1,136	0	0
Henley	1,098	10	0
Barrett	803	15	0
T. Colborne (Stratton-cross-roads)*	825	0	0

* Accepted.

For the erection of a Wesleyan Chapel at Capel St Mary, Suffolk. Mr. William Eade, Post-office Chambers, Ipswich, architect :—

Upson Bros.	£850	10	0
J. Welham	835	0	0
W. J. Fellgett	824	0	0
F. B. Capon	786	0	0
Alfred Cox	775	0	0
Saunders & Son	763	0	0
G. Kenney	750	0	0
R. S. Smith	746	0	0
R. Hawkins (accepted)	600	0	0

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VOL. XLIV. No. 2105. SATURDAY, JUNE 9, 1883.

ILLUSTRATIONS.

London Street Architecture: No. 193, Fleet-street (Double-page Engraving).—Messrs. Archer & Green, Architects 776
Episcopal Residence for the Right Rev. John Virtue, D.D., Bishop of Portsmouth (Double-page Engraving).—Mr. J. S. Hansom, Architect 778
Polytechnic High School, Charlottenburg, near Berlin (Double-page Engraving).—Professor Lucae and Baurath Hitzig, Architects .. 780, 781

CONTENTS.

Portes Cochères 763
Architecture among the Poets 764
Assyrian Antiquities 765
The Question of Wages from a French Point of View 766
On the Importance of due Provision for Justice in the Decision of Architectural Competitions 768
High Buildings 769
Etchings at the Burlington Fine Arts Club 770
Ventilators and Ventilation 770
The Development of Ecclesiastical Architecture in Russia 771
A Neglected Art-Epoch 771
Rural Sanitary Authorities and their By-laws 772
The Architectural Association 773
Sale of Building Sites for Artisans' Dwellings 774
Cologne Cathedral 774
Wood Stone 774
The Polytechnic High-School, Charlottenburg 774
No. 193, Fleet-Street 774
New R.C. Episcopal Residence, Portsmouth 787
The Sanitary Exhibition at Knightsbridge 787
The Origin and Development of the Science of Hygiene 788
The Berlin Bourse 790
Foreign Notes 790
A New Hospital for Bristol 790
The Bricklayers' New Club-House Buildings 791
The Statistics of Telephones 791
The Metal Workers' Exhibition at Berlin 791
Rapid Railway Building 791
New System of Lightning Conductors 791
A Remarkable Picture 791
The Sewerage of Southport 791
Notes from Birmingham 792
Madame Tussaud & Son's Wax Works 793
The New Fish-Market in South London 793
Brighton 793
New Club Premises, Belfast 793
The Headquarters of the Metropolitan Fire Brigade 793
Perm Cattle Statuary 794
Building Patent Record 794
The Queen's Theatre in Long Acre: Sale at the Auction Mart .. 794
District Surveyors and Timber Stages: Mr. F. Wallen, District Surveyor of St. Pancras West, and Mr G. T. B. Cobbett 794
Arbitration Case: Longcroft Bch. Mansion, near Burton-on-Trent 794
Work at West Ham 794
Art Problems 794
Red Sea and Mediterranean Junction and Valley of the Jordan.. 794
Tensile and Cross Strains 795
The Journeyman 795
Decoration of St. Paul's 795
A Joiner's Shop and its Management 795
Provincial News 795
Church-building News 796
Dissenting Church building News 796
Stained Glass 796
Proposed New Masonic Temple 796
Miscellanea 796

Portes-Cochères.



O English traveller who has ever crossed the Channel can fail during his first visit to Paris, or for the matter of that to Boulogne, to have been struck with the singular difference in the appearance of the French or Belgian house-fronts as compared with those at home; and the feature of the large *porte-cochère* or carriage doorway is certainly sufficient in itself, were there no other dissimilarities, to attract even the most unobservant eye. That strange and characteristic outcome of our English domestic civilisation known as the area, and the perhaps even more marked feature, with all its London associations, of the "airey railins,"—for as such are they familiar to your thoroughbred Cockney,—have no existence on the other side of the Channel. Those who know their Paris well, can, it is true, recall the Rue de l'Élysée which overlooks so pleasantly the stately garden of the present home of the President of the French Republic. Here there is so decidedly an English look about the houses that it is evident the late Emperor had some idea of introducing into his capital something of the domesticity of the city among whose people he had passed so many happy years of his life. There is a distinct smack of Belgravia, of, say, Wilton-place, about the Rue de l'Élysée; but let us hasten to note that the innovation did not seem to meet with favour, and the more palatial style of the older houses in the neighbouring aristocratic thoroughfare of the Faubourg St. Honoré, with their stately and exclusive *portes-cochères*, has continued to reign supreme in spite of attempted changes.

To all who know Italy, the French *porte-cochère* is clearly only the modernised *portone* of every Italian *palazzo*, adapted to their use by the French, as one of the many other refinements of the classic peninsula, which, in days gone by, was the great arbiter of taste. And the French architects have wisely, throughout all the changes of style within the last three centuries, seen the advantage, pictorially and practically, of the central carriage-way known as the *porte-cochère*. When we say central, we are in a measure incorrect, for there exists no rule as to its position in the façade; though it is on the design of the *porte-cochère* that largely depends the variety of that uniformity of which careless English travellers are so fond of accusing the street architecture of Paris. In few features do the French architects show more their acquaintance with the details of their profession, and their knowledge of the pictorial value of the *porte-cochère*, than in the treatment of this important element of the façade.

Always, of course, putting aside the Boulevard de Sebastopol, one of the first of the modern thoroughfares laid out in Paris, and at a period when French taste had certainly arrived at literally a dead level of monotony, and yet, curious to say, a *boulevard* always pointed to when French streets are spoken of, always, we repeat, putting aside such an example, let any visitor to Paris stroll along the Boulevard St. Germain, the most modern of the great thoroughfares of Paris, or let him walk along the Boulevard Malesherbes or the Boulevard Hausmann, or even a very much more working thoroughfare, such as, say the Boulevard Henri Quatre, and he will have ample opportunities for observing the nature of the *porte cochère* as it is treated by the modern French architect. It is a singular feature of this characteristic detail in the façade of a foreign house that it will be found not alone in the aristocratic neighbourhoods; throughout the capital in almost every *maison de rapport*, where even such comfortable rents as 30*l.* a year for a second or third floor *appartement* are paid, the *porte cochère* exists also, as a matter of course, and very skilfully is its introduction into the plan considered.

The method in which a town-house is laid out by the French architect offers a most singular contrast to the method which prevails in our English towns. In the first place, all those tacitly accepted traditions of the necessity for the kitchen being downstairs, with unvarying accompaniments of back kitchen, scullery, larder, pantry, &c., coal-hole and dust-bin, with the equally traditional necessity for the front and back parlour, and dining-room, conveniently opening out of the hall ascended to by the obligatory flight of steps (those front steps which the mistress with two or three servants finds the cook of the present day growing more and more unwilling to "do down"); all these and many other universally accepted conditions are unknown to the French architect. His conditions, however, if not quite so stringent, are very conveniently determined. The ground-floor is the property of the porter or *concierge*, whose *loge* forms a conspicuous feature in the plan of the *porte cochère*, yet never interfering with its essentially carefully-considered architectural beauty of detail. The *loge* of the *concierge* is always a charming little retreat; a stranger might be tempted rashly, perhaps, to envy M. Pipelet and his wife their pleasant home with its clean muslin curtains, its pretty plants and general tidiness, but we are bound to admit that when one falls into foreign ways,—bad habits some might term them,—one comes to understand to some extent, notwithstanding the many services the porter is able to render, that antipathy which seems to exist on the part of the public at large for the guardian of the door, in consideration of the fact that the door all day remains wide open,—let us rather say doorway,—to keep which scrupulously well swept, the *boîte aux ordures* (the French equivalent for our dust-hole) emptied every morning, the green plants in the yard (mostly shrubs in boxes) in good order, and every piece of brass, especially the handsome water-tap, in a chronic state of brilliancy, the oak staircase well swept and waxed, comprise the duties which, even in the most out-of-the-way neighbourhoods, every *concierge* who respects him or her self takes a pride in fulfilling.

In plan the *porte-cochère* of course takes up a large share of the ground-floor, which, however, it may be remarked, is by no means as exclusively used for domestic purposes on the Continent as is the case with us; a fact, doubtless, traceable to the Mediæval traditions of the days when the ground-floor,—as we see in most of the older Italian *palazzi*,—required to be more a fortress than a comfortable home.* The fact, however, of the *porte-cochère* taking up so much of the ground-floor is often most ingeniously compensated by making the space to the right or left of the doorway, as the case may be, into an excellent shop. This, of course, is in those thoroughfares where the presence of shops is not objected to; but it is curious abroad generally to notice how few of such prejudices, so common in England, exist. Here, again, we can see the evidence of the traditions of Italy, where the princely *palazzo* and the humble *bottega* will be found shoulder to shoulder, often, indeed, practically under the same roof. When the introduction of the shop into the ground-floor is not necessary, there are always numerous other alternatives, the adoption of which it will be found gives to a line of foreign houses so much of that variety of character, of "style," in a word, not unjustly found wanting in most of our uniformly-built thoroughfares. In those houses, which, like our own, are exclusively occupied by the owner,—often, indeed, in those occupied by a number of tenants,—the yard at the back into which the *porte-cochère* opens has planned round it the stables and coach-house, an admirable arrangement of which we have more than once spoken in these columns.

We English are justly accused of showing no small degree of exclusiveness in our modes of existence. With a knowledge of this peculiar trait in our character it has always seemed to us strange that the *porte-cochère* should never have acclimatised itself in England. The successful manner in which as a carriage drives up and disappears across the pavement under the dark archway of the *porte-cochère* in a foreign house, landing the visitor, or the

* It is most interesting to trace how singularly such conditions as these, dictated by the historical necessities of past existence in the great foreign cities, have had their direct influence upon modern domestic architecture abroad, conditions which amply suffice to explain those numerous differences which exist between our ideas on such points and those of our Continental neighbours.

master, at the foot of the staircase, undisturbed by the gaze of the public, and dryshod in the wettest weather, has always appeared to us a most attractive feature of the *porte-cochère*, and one which it seems would singularly recommend its adoption in our country, especially to that very numerous section of our community with whom exclusiveness has crystallised into a positive tradition. There cannot possibly be imagined a greater contrast between this system and that which exists with us, where the carriage drawing up at the side of the pavement often obliges the visitor to walk a considerable distance to the doorway. No contrivances of awnings or carriage-carpets can ever be anything but clumsy in comparison with the *porte-cochère*. It is impossible to exaggerate the danger of ladies in evening dress stepping from their carriage across a wide pavement to the open door.

It might possibly be argued against the *porte-cochère* in England, as it is against many foreign features, that our climate is not adapted to its use. We fail, however, to recognise this argument. Throughout Germany, in cold Munich, in wintry Berlin, in Brussels, in Ghent and throughout Belgium, in icy Vienna, in Paris, all with climates differing after all very little from our own, and certainly visited with winters much more severe, the use of the *porte-cochère* is universal. A very simple arrangement in winter, of double doors at the foot of the staircase which opens directly on to the *porte-cochère* entirely obviates all possibility of cold draughts.

But the chief objection to the *porte-cochère* in England will ever simply remain the necessity, attendant on its introduction, of an entire and absolute change in the traditional plan of the house as understood by the English public. Good-bye, as a matter of course, to the well-beloved hall, redolent of so many recollections, but more often of the odours from the basement kitchen; good-bye to the essentially British idea of the front door and all its associations, and that very general feature, endeared to us all, of the dining-room on one side and the drawing-room on the other, with those concomitant advantages of the family hearing all that is proceeding at the front door; good-bye to the pleasant thunder of the knocker and the tinkling of the "visitors'" or the "servants'" bell; good-bye, in many cases, to that so essential and eminently useful feature of a town-residence, — the front garden, — happy hunting-ground of the intruding terrier and the domestic "Tom"; good-bye to that convenient receptacle of so many scraps of paper, the kitchen-area, the picturesque railings, the romantic back-door, and the dust-hole; good-bye, in fact, to many another feature of our comfortable *bourgeois* existence, with its well-organised routine in which we have been trained up from father to son; good-bye, in fact, to many of the elements of that British home-life, the enjoyment of which we are so fond of boasting we possess in so much higher a degree than the "foreigners." And yet, with our knowledge of all these facts, we cannot give up a belief that a small effort of ingenuity on the part of some young architect might lead to the introduction into our English houses of many of the good features of the foreign *porte-cochère*.

ARCHITECTURE AMONG THE POETS

*(Concluded).**

OUR poet-laureate of to-day has a keen sensitiveness to beauty of colour and detail in architecture, although the references to the art in his writings are not so frequent as might have been expected from his obvious power and pleasure in word-painting. Their tendency however, is very marked; they are the complete opposite of the cold and classic taste of the last century. Tennyson is entirely of the "romantic" and Mediæval school in his artistic leanings; and while Gray referred in a half-satirical sense to

> "Rich windows that exclude the light,"

we feel that such windows would be a source of keen enjoyment to our contemporary poet, and that the fact of their unpractical character in "excluding the light" would weigh for little or nothing with him. The whole of the gorgeous interior imagined in his "Palace of Art," is, in fact, a building to exclude the light; and though ostensibly the poem points a moral against doing so, we feel that the poet enjoyed the building of this sinful aërial palace none the less. His "four courts" within the precincts of the palace remind one a little of Bacon's provisions for the pleasaunces of his ideal palace.*

> "Four courts I made, east, west, and south, and north;
> In each a squared lawn, wherefrom
> The golden gorge of dragons spouted forth
> A flood of fountain foam.
>
> And round the cool green courts there ran a row
> Of cloisters, branch'd like mighty woods,
> Echoing all night to that sonorous flow
> Of spouted fountain floods."

This seems like a kind of idealising of some of the Cambridge cloisters. In the interior of his palace he is conscious of the pleasure in the cool seclusion of over-arching enclosure which has always been one of the attractions of internal architectural effect to sensitive and imaginative minds,

> "Full of long-sounding corridors it was,
> That over-vaulted grateful gloom,
> Through which the livelong day my soul did pass,
> Well pleased, from room to room;"

and one touch about the stained glass windows is admirable,—

> "The deep-set windows, stain'd and traced,
> Would seem slow-flaming crimson fires—"

the epithet "slow-flaming" giving a kind of mysterious life to the window colours, without disturbing the deep repose of the scene.

From amid the strange scenery of the "Idylls of the King" there peer out picturesque bits of antique tottering architectural remains, imagined as the relics, in those old days, of days still older. The poet's eye for picturesqueness of detail is shown in the description of the half-ruined castle in which Geraint first met Enid; a bit of effect which always reminds us of a certain etching of Albert Dürer's, where a great heavy war-horse is seen, foreshortened, standing amid odds and ends of detail,—

> "Then rode Geraint into the castle court;
> His charger trampling many a prickly star
> Of sprouted thistle on the broken stones,
> He look'd and saw that all was ruinous.
> Here stood a shatter'd archway plumed with fern;
> And here had fallen a great part of a tower,
> Whole, like a crag that tumbles from the cliff,
> And like a crag was gay with wilding flowers;
> And high above a piece of turret-stair,
> Worn by the feet that now were silent, wound
> Bare to the sun."

The imagined aspect of Camelot, the ancient city which had been built by heathen kings before Arthur conquered, seems to have clung very much round the poet's imagination in later years. In an early poem, "The Lady of Shalott," he refers to it merely as "Towered Camelot," but the wish to bring it more vividly before the reader seems to have grown upon him in writing the later Idylls,—

> "Oh, brother, had you known our Camelot,
> Built by old kings, age after age, so old,
> The king himself had fears that it would fall,
> So strange, so rich, and dim; for where the roofs
> Totter'd toward each other in the sky,
> Met foreheads all along the street of those
> Who watch'd us pass; and lower, and where the long
> Rich galleries, lady laden, weigh'd the necks
> Of dragons clinging to the crazy walls."

It is to be feared Camelot was an unsanitary place; though it is historically evident that human beings did live, and in many parts of the East do now live, amid picturesque heaps of buildings which would seem as adverse to life and health, to a modern European Sanitary Commission, as anything could well be. Before quitting Tennyson's ideal architectural sketches, we may refer to one suggestion of detail, not strictly architecture, but decorative work, in the "Princess": the description of the gateway, on either side of which,—

> "Two great statues, art
> And science, caryatids, lifted up
> A weight of emblem, and betwixt were valves
> Of open work in which the hunter rued
> His rash intrusion, manlike, but his brows
> Had sprouted, and the branches thereupon
> Spread out at top, and grimly spiked the gates."

The idea of the subject of Actæon with his horns ramifying over the gateway might really be very effectively carried out as a wrought-iron design.

In Tennyson's references to actual architecture as part of the scenes of his poems, there is not only a great deal of picturesque and vivid expression, but also that knowledge of the subject which belongs to a critically-cultivated taste in art, and which some poets have so much wanted in their artistic references. Such critical feeling increases the value of the poet's references to the subject; it enables him not only to say the right thing, but to say it in the right way. This is admirably illustrated in one of his later small poems, "The Daisy," a great portion of which is, in fact, a kind of poetical reminiscence of the points of interest in a run through part of Italy. In this little poem the various phases of architectural interest in various localities are touched most happily and picturesquely, each in a line or two, or at most a stanza of four lines:—

> "What Roman strength Turbia show'd
> In ruin by the mountain road;
> How, like a gem, beneath, the city
> Of little Monaco, basking, glow'd."

The white towers by the blue sea formed the contrast that all painters in pigments or in verse have loved:—

> "What slender campanili grew
> By bays, the peacock's neck in hue;"

then at Florence:—

> "In bright vignettes, and each complete,
> Of tower or duomo, sunny sweet,
> Or palace, how the city glitter'd
> Thro' cypress avenues, at our feet."

But the architecture of the Lombard plains had no sunshine to gild it; it was all, on that occasion, a plague of rain:—

> "Of rain at Reggio, rain at Parma;
> At Lodi, rain, Piacenza, rain.
>
> And stern and sad (so rare the smiles
> Of sunlight) looked the Lombard piles;
> Porch-pillars on the lion resting,
> And sombre, old, colonnaded aisles.
>
> O Milan, O! the chanting quires;
> The giant windows' blazon'd fires;
> The height, the space, the gloom, the glory!
> A mount of marble, a hundred spires."

This is a charming example of light architectural criticism, put into poetic form, seizing and recording in the most suitable phrases the leading elements in the effect of each style. In the combination of architecture with landscape there is a lovely little touch in one of his earlier poems, "The Gardener's Daughter," in which an exquisite description of English meadow landscape gets the last touch of interest from the presence of the cathedral city in the distance, seen beyond the "slow broad stream," which,—

> "Creeps on,
> Barge-laden, to three arches of a bridge
> Crown'd with the minster towers."

Tennyson's poems also present us with one of the not very frequent instances in poetry in which images borrowed from architecture are used to illustrate something in itself of deeper and higher interest. This is in the very pathetic little poem, "The Deserted House," in which the body from which the life has departed is compared, in a good deal of detail, to the house deserted by its inmates:—

> "Life and thought have gone away
> Side by side,
> Leaving doors and windows wide:
> Careless tenants they!
>
> * * * *
>
> Close the doors, the shutters close,
> Or thro' the windows we shall see
> The nakedness and vacancy
> Of the dark deserted house."

There is a very powerful piece of imagery of the same class, it may be observed, in a poem by Edgar Allan Poe, in which the human body is compared to a castle; but the contrast is here not between life and death, but between sanity and insanity. Through the windows of the castle there used to be seen fairy dances of the thoughts inside, but now only—

> "Vast forms that move fantastically
> To a discordant melody:"

as in Tennyson's poem, the metaphor is carried out in detail, and in a very powerful manner. Browning, again, has used the idea of the body as the house, of which the soul is "the householder," in his remarkable epilogue to "Fifine," where the soul contemplates the old worn-out house it is leaving,—

> "Every crumbling brick embrown'd with sin and shame;"

and remembers, among the vexations of its past experience there,—

> "All the worry of flapping door and echoing roof."

But this symbolic view of the body as the house or castle of the soul has often appeared in metaphorical and religious writing. It is only occasionally that a new force and picturesqueness is given to it by some poet of real power taking up the idea and expressing it in the vivid manner which brings it home to our fancy with new meaning and pathos.

Turning, lastly, to the varied pages of

* See pp. 491, 526, 558, 628, 696, *ante*.

* In the essay "On Building." Except that Bacon actually wrote in prose, this charming essay might be quoted as among the architectural poems, for it is poetical enough, with the additional advantage that it could be realised; though, it is true, only by a millionaire.

Browning, instinct everywhere with vivid and picturesque expression, we find among them references to architecture which are marked by a fuller combination of force of descriptive power with real knowledge of the subject than is to be found in the pages of any other English poet of any age. Like Clough, Browning is quite an art-critic in knowledge and perception, with a much greater power of detailed characterisation. As an example, which will at once and by itself justify this view, take the remarkable passage in "Sordello" (book v.), which is introduced as a poetical amplification of the proverb, "Rome was not built in a day," but which is really a comprehensive sketch of the history of architecture. Begin at the beginning, he says in effect,—

> "Study mere shelter, now, for him, and him.
> Nay, even the worst,—just house them! Any cave
> Suffices; throw out earth! A loop-hole? Brave!
> They ask to feel the sun shine, see the grass
> Grow, hear the larks sing? Dead art thou, alas!
> And I am dead! But here's our son excels
> At hurdle-weaving any Scythian; fells
> Oak and devises rafters; dreams, and shapes
> His dream into a doorpost, just escapes
> The mystery of hinges. Lie we both
> Perdue another age. The goodly growth
> Of brick and stone! Our building-pelt was rough,*
> But that descendant's garb suits well enough
> A portico-contriver. Speed the years,—
> What's time to us? At last, a city rears
> Itself! Nay, enter,—what's the grave to us?
> Lo, our forlorn acquaintance carry thus
> The head! Successively sewer, forum, cirque,—
> Last age, an aqueduct was counted work,
> But now they tire the artificer upon
> Blank alabaster, black obsidion,—
> Careful, Jove's face be duly fulgurant,
> And mother Venus' kiss-creased nipples pant
> Back into pristine pulpiness, ere fix'd
> Above the baths.
> * * * *
> The work march'd step by step,—a workman fit
> Took each,—nor too fit,—to one task, one time,—
> No leaping o'er the petty to the prime,
> When just the substituting osier lithe
> For brittle bulrush, sound wood for soft withe,
> To further loam-and-rough-cast work a stage,
> Exacts an architect, exacts an age."

"That way was Rome built," he concludes after one or two more details; and how admirably true is the distinction between the Rome of the aqueducts, the brick Rome, and that of the Caracalla baths; how complete the characterisation of the particular excellences of Late Roman sculpture,—rich and sumptuous execution without much of intellectual expression. The passage, taken as a whole, might almost pass as a *resumé* of Viollet-le-Duc's elaborate "History of the Habitation"; and if it is remembered that this poem was written forty-five years ago, before any of Viollet-le-Duc's historical and critical essays,—before the birth, one might say, of the modern school of architectural criticism,—we must form a high idea indeed of the critical intuition of the poet who could introduce such a passage as this merely as a passing illustration in a poem devoted to other and more serious considerations. In a previous page he refers to the relation between the old Roman structures and the architecture of the Renaissance:—

> "New structures, that inordinately glow,
> Subdued, brought back to harmony, made ripe
> By many a relic of the archetype
> Extant for wonder; every upstart church
> That hoped to leave old temples in the lurch,
> Corrected by the theatre forlorn,
> That, as a mundane shell, its world late born,
> Lay, and o'er-shadow'd it."

Again, how characteristic of northern Mediæval architecture is the description (in the Third Book) of that

> "Grim town
> Whose cramp'd, ill-featured streets huddled about
> The minster for protection, never out
> Of its black belfry's shade and its bells' roar:"

the minster gloomy even at sunset:—

> "When the sun stepp'd both peaks
> Of the cleft belfry like a fiery wedge,
> Then sunk, a huge flame on its socket edge,
> With leavings on the grey-glass oriel pane
> Ghastly some minutes more."

Equally does the poet make us at home in the old patched castle at Goito, with its room with Saracenic decorations:—

> "A maze of corridors contrived for sin,
> Dusk winding-stairs, dim galleries got past,
> You gain the inmost chambers, gain at last
> A maple-panell'd room; that haze which seems
> Floating about the panel, if there gleams
> A sunbeam over it, will turn to gold
> And in light-graven characters unfold
> The Arab's wisdom everywhere; what shade
> Marr'd them a moment, those slim pillars made,
> Cut like a company of palms to prop
> The roof, each kissing top entwined with top
> Leaning together."

Among the miscellaneous poems, it may be observed that Browning long ago saw and felt what many architects do not seem to see or know, that Giotto's Campanile is incomplete; and in "Old Pictures in Florence," he raises a charge against Giotto's ghost* for having disappointed him thus in leaving the work incomplete; Giotto's round O, indeed, was perfect according to the tradition, but he did not perfect his Campanile; and it is proposed by the poet as a fit task for modern Italy, to bring about that,—

> "The campanile, the duomo's fit ally,
> Shall soar up in gold full fifty braccia,†
> Completing Florence, as Florence, Italy,"

And he adds, with a pardonable pride:—

> "At least to foresee that glory of Giotto
> And Florence together, the first am I!"

One charming bit of architectural painting of Browning was before quoted in these columns, the contrast drawn, in the poem "In a Gondola," between the architectural façade of a Venetian Palace towards the main canal,—

> "Window just with window mating,
> Door on door exactly waiting
> Like the staid face of a child":

and the "playing-face" of the same building in the rear, where—

> "No two windows look one way
> O'er the small sea-water thread
> Below them."

The "Statue and the Bust" is an essentially Florentine poem, full of picturesque passing allusions, among which the poet has fixed the Riccardi Palace in the minds of all his readers as,—

> "The pile which the mighty shadow makes,
>
> (For Via Larga is three-parts light
> But the palace o'ershadows one,
> Because of a crime which may *God* requite):"

the crime being the strangling of the true Republican freedom in Florence by the Medici, who built the Riccardi Palace as their abode when they arose into power. How fine is this touch of the dark mass of building, the home of oligarchical tyranny, over-shadowing the otherwise bright street.‡ The splendid drama, "Luria," is full of touches, too, of Florentine effect and Florentine art, notably a remarkable one in which he represents Luria, the Moorish General, as having made a sketch on the side of his tent how the façade of the cathedral might be completed,—

> "*Braccio.* Did he draw that?
> *Secretary.* With charcoal, when the watch
> Made the report at midnight; Lady Domizia
> Spoke of the unfinish'd Duomo, you remember;
> That is his fancy, how a Moorish front
> Might join to, and complete, the body,—a sketch,—
> And again, where the cloak hangs, yonder in the shadow."

This idea of the Moorish front to the Duomo was made the subject of a paper read before the Browning Society by Mr. Ernest Radford, but we do not know what line was taken about it, or whether any illustration in the way of a design was attempted. A very fine passage in the same drama is worth quoting, as filled full of the spirit of the Renaissance. The Moorish warrior is not eager for peace, for with peace his occupation will be gone, and all Florence will turn again to the arts in which he cannot take part,—

> "Florence at peace, and the calm studious heads
> Come out again, the penetrating eyes;
> As if a spell broke, all resumed, each art
> You boast, more vivid that it slept awhile.
> 'Gainst the glad heaven, o'er the white palace front
> The interrupted scaffold climbs anew;
> The walls are peopled by the painter's brush;
> The statue to its niche ascends to dwell."

Here we have no mere antiquarian reference; we are brought face to face with the Renaissance artists at their work; we seem in the very midst of the life and joy of the Renaissance. Or do we want a description of the great Catholic temple? Not a mere description of its details, as in a guide-book, but of the thoughts it stirs in the mind? Byron has treated it before, but this is in a different key, and with more glowing thought. The poet wanders in his vision of "Christmas Eve" from one abode of Christian worship to another, and leaving the Salem Chapel on the heath, he travels far over the earth in dream, till—

> "What is this that rises propp'd
> With pillars of prodigious girth?
> Is it really on the earth,
> This miraculous Dome of God?
> Has the angel's measuring-rod
> Which number'd cubits, gem from gem,
> 'Twixt the gates of the New Jerusalem,
> Meted it out,—and what he meted,
> Have the sons of men completed?
> —Binding, ever as he bade,
> Columns in the Colonnade,
> With arms wide open to embrace
> The entry of the human race
> To the breast of,—what is it, yon building,
> A blaze in front, all paint and gilding,
> With marble for brick, and stones of price
> For garniture of the edifice?
> Now I see, it is no dream;
> It stands there and it does not seem:
> For ever, in pictures, thus it looks,
> And thus have I read of it in books
> Often in England, leagues away,
> And wonder'd how these fountains play,
> Growing up eternally
> Each to a musical water-tree,
> Whose blossoms drop, a glittering boon,
> Before my eyes in the light of the moon,
> To the granite layers underneath."

Or if we want to linger in some smaller church of the Renaissance, we can imagine ourselves musing with the bishop who "Orders his tomb in St. Praxed's Church"; he was vexed that the last bishop had secured the best niche:—

> "Shrewd was that snatch from out the corner south
> He graced his carrion with, God curse the same!
> But still my niche is not so cramp'd but thence
> One sees the pulpit o' the epistle-side,
> And somewhat of the choir, those silent seats,
> And up into the nëry dome, where live
> The angels, and a sunbeam's sure to lurk;
> And I shall fill my slab of basalt there,
> And 'neath my tabernacle take my rest,
> With those nine columns round me, two and two,
> The odd one at my feet where Anselm stands:
> Peach-blossom marble all, the rare, the ripe
> As fresh-pour'd red wine of a mighty pulse."

It is amusing to contrast with these vivid and sympathetic descriptions of ancient architecture, Browning's occasional "girds" at some modern piece of sham, such as the sneer of the modern Catholic bishop in "Blougram's Apology," at the Pugin-and-Rickman plaster Gothic:—

> "It's different preaching in basilicas,
> And doing duty in some masterpiece
> Like this of brother Pugin's, bless his heart!
> I doubt if they're half-baked, those chalk rosettes,
> Ciphers and stucco-twiddlings every where,
> It's just like breathing in a lime-kiln: eh?"

A statement which the bishop volunteered as an argument for another glass of wine; and there have been worse ones. And according to Browning, it is quite the part of a poet to keep a look-out on these practical shams of art, as well as on what is commonly called the poetic side of the subject; for in his sketch of an ideal poet, in "How it Strikes a Contemporary," he suggests that the poet is "the *Corregidor*," and represents him as keeping a general eye on the follies of his generation, and looking, among other things, after the preservation of ancient buildings and the construction of modern ones:—

> "You'd come upon his scrutinising hat,
> Making a peak'd shade blacker than itself
> Against the single window of some house
> Intact yet with its moulded Moorish work,—
> Or else surprise the ferrel of his stick
> Trying the mortar's temper 'tween the chinks
> Of some new shop a-building, French and fine."

One might give the poet a good deal of occupation in London in that way. Does he, we wonder, go and inspect the rubbish upon which the footings of jerry-builders' houses are laid? But that would be more than work enough for one poet.

Let us conclude, however, with a reference to one more of those rare passages in which poets have drawn upon architecture for metaphor and analogy in the higher sense; and none, perhaps, has used the architectural metaphor to such fine purpose as Browning has done in one of his most remarkable poems, "Abt Vogler," the main object of which is to trace the connexion between musical art and spiritual life, but in which he commences, so to speak, on the other side of his subject, and uses architectural ideas in the first instance as an illustration of music. In this eloquent passage, the opening stanzas of "Abt Vogler," the musical composition which the speaker in the poem has just evolved from the organ, becomes in his idea an edifice of sound which he has raised,—

> "The structure brave, the manifold music I build
> Bidding my organ obey, calling its keys to their work"

just as Solomon called upon supernatural beings to build him a palace (this, we presume, is a Talmudic legend); and one would build the foundations, "broad on the roots of things," of the musical palace,—

> "And another would mount and march, like the excellent minion he was,
> Ay, another, and yet another, one crowd but with many a crest,
> Raising my rampired walls of gold as transparent as glass,
> Eager to do and die, yield each his place to the rest:

* *I.e.*, we worked then in a rough garb, "pelt" or skin, suitable to our rough way of building.

* Hardly a fair charge, as it probably was no fault of Giotto that the spire was never added, if, indeed, the design be really Giotto's, which some recent investigators of the evidence have doubted.

† The traditional height to which the spire was to have been carried.

‡ The Medici moved into the Palazzo Vecchio in 1430, as a more ostensible outward assertion of their supremacy. The palace in Via Larga (now "Via Cavour") was sold to the Riccardi, whose name it now bears, in 1659.

For higher still and higher (as a runner tips with fire,
When a great illumination surprises a festal night,—
Outburns round and round Rome's dome from space to
spire)
Up, the pinnacled glory reach'd, and the pride of my
soul was in sight."

Nor was the palace to his fancy uninhabited,

"For there wanted not who walk'd in the glare and glow
Presences plain in the place."

Only to those who combine some knowledge of both the arts, perhaps, can the full beauty of this passage, of which we have only space to quote isolated portions, be fully apparent: it goes beyond the mere forms of expression of architecture and music, to that pure metaphysical expression of form which is common to both.

Thus we see that some at least of our poets have not only fresh and brilliant lights and criticisms to throw out upon architecture, but that they can raise the subject higher than in general it can be raised in its actual conditions of practice, by assimilating architectural images and associations with some of the highest and deepest thoughts of which our minds are capable, and thus giving a new idea of the intellectual dignity and interest of the subject. And it says something for the general advance in the comprehension of subjects of this class that we find the references to architecture taken from the latest poets are, on the whole, by far the fullest, the most complete, and the most forcible and picturesque in character, of all which we have been able to adduce.

ASSYRIAN ANTIQUITIES.

MR. T. G. PINCHES, of the Oriental department of the British Museum, has taken advantage of the annual Spring cleaning at the British Museum to re-arrange some of the cases in the Assyrian galleries, and to exhibit some of the latest additions to the collection. In the first case, in the Nimroud Room, devoted to Babylonian antiquities, we have several new or hitherto unexhibited antiquities, including three bronze figures of ancient Chaldean fire priests, each holding the sacred fire-cone. These antiquities come from the city of Zergul, on the Shat el Hie, the site from which M. De Sarzec obtained the valuable collection of antiquities now in the Louvre. A curious black stone model of a wig with the hair neatly arranged in curls, confined by a band with a square wooden board on the forehead, similar to those worn by the Indians of North America, is also from the same site. These antiquities are all inscribed with the name of "Gudea, Viceroy of Zergul." Several fine examples of the votive cones, some in excellent preservation, are exhibited in this case. There is also the later Babylonian copy, made probably during the time of Nabonidus, of an inscription of Dungi, king of Ur, which was written on a plate of silver, and placed in the Temple of Nergal, at Kutha. The site of this city was explored by Mr. Rassam, at Tel Ibrahim, during his last expedition. These antiquities show the great advance Babylonian civilisation had made at least 4,000 years before the Christian era.

Some fine examples of the early contract tablets, which we have referred to in these columns, are exhibited. The curious tablets written in duplicate, the one copy forming an envelope or case for the other, were found at Tel Sifr in South Babylonia. They relate to sales of land, houses, slaves, deeds of partnership, and law cases. Several of the inscriptions have been published by Dr. Strassmaier in the Transactions of the Berlin Congress of Orientalists, but the inscriptions being written in very ancient characters are extremely difficult to read. The examples exhibited are dated in the reign of the Kassite king Khammuragas, B.C. 2750; and one inscription is written in Semitic Babylonian, showing that the Semites were already traders, as were the Phœnicians and Jews in after-times. Several inscriptions relating to the buildings and public works of Babylon are also exhibited in this case. An inscription on a barrel-cylinder of Nebuchadnezzar gives an account of the restoration of the temples of Babylon, and a small fragmentary tablet gives an inventory of the various kinds of stone, timber, &c., used in the building of the temple of Bit Saggal, or the temple of Belus, in Babylon

The cylinder of Cyrus, recording his capture of Babylon in B.C. 538, and the restoration of the Babylonian temples, is also now exhibited. An interesting fragment, which might be exhibited, is the portion of a cylinder inscription of Alexander the Great, called in the Babylonian, Iskandir Makiouku, "Alexander of Macedon." There is, however, a finely-preserved cylinder of Antiochus Seleucus, 217 B.C., which was found at Borsippa, describing his restoration of the temple of Belus at Babylon, and that of Nebo at Borsippa, showing that these buildings were in existence as near the Christian era as the third century.

There is also exhibited one of the finest examples of Babylonian legal or commercial tablets,—a large tablet, 10 in. long by 6 in. broad, containing an account of the sale of houses, land, fields, plantations, gardens, slaves, and property in Babylon and Borsippa, in the fourteenth year of Darius Hystaspis, B.C. 506. In the Assyrian side-room the fine series of boundary stones found by Mr. Rassam at Abu Hubba, have been exhibited. These are dated in the reigns of Milisipak, B.C. 1400; Nebuchadnezzar I., B.C. 1140; and Nabu-ukena-abal, B.C. 100. The curious demoniacal sculptured figures, and emblems of the gods, may now be inspected, and will be found to illustrate many obscure points in the mythology of Babylon and surrounding nations. There is also here a curious small votive stelæ of Assurbanipal, carrying on his head a large basket of offerings, &c., cut in a most archaic style.

In the central saloon there are many new exhibits. The bronze gates from Ballawat are, of course, the chief feature. But in the lower part of this case are fragments of statues from Abu Hubba, showing that there were works of a similar age and style to those found by M. de Sarzec in Chaldea, in the lower strata of the mound. There are also fragments of alabaster statues of the gods and goddesses of Babylon found by Mr. Rassam in the Birs Nimroud, the site of Borsippa. Some curious bricks from Babylon, bearing inscriptions of Nebuchadnezzar, are also shown here. These bricks bear inscriptions of twenty or thirty lines relating to the building works of the king, written in a small hand, similar to that employed on the tablets. An examination of the various copies, however, shows that they were printed or impressed from a metal stamp, and that in one case the wrong side of the die was used, so that the characters are in relief. In the second case in this saloon are fragments of a brouze altar from the ruins at Toprak Kala, on Lake Van, in Armenia. These bear inscriptions of Rusas, king of Armenia, the contemporary of Assurbanipal. There are also shown the foundation tablets from Ballawat, and encaustic tiles from Nimroud. The Hittite sculptures from Jerablus or Carchemish are now in this saloon, and a recently-discovered fragment furnishes a fine head, with beard and features well carved. Among the antiquities exhibited here is a stone socket of a door-post of black granite, bearing an inscription of Gudea, B.C. 4000; also those from Ballawat, B.C. 885. These show that the same mode of swinging doors was in use both in the earlier and later periods.

In the case of engraved stones are several new examples, and progress is being made towards exhibiting each stone, accompanied by a plaster of Paris impression of its work. It is much to be regretted that the uncertainty of climate has rendered it necessary to glaze the sculptures in the Kouyunjik room, as the light is so badly arranged that frequently it is impossible to see the sculptures on account of the reflection of the glass.

Presentation to an Architect.—At the meeting of the Salford Board of Guardians on the 27th ult., one of the items on the business-paper was the presentation of a testimonial to Mr. Booth, the architect of the new Infirmary for the Poor at Hope, erected for the guardians of the Salford Union. The testimonial took the form of an engrossed excerpt from the Board Minutes, of which the following is a portion:—

"At a meeting of the Guardians of the Poor of the Salford Union, held on Friday, the 27th day of April, 1883. Resolved unanimously, That the guardians desire to express their satisfaction with the statement submitted by the architect, Mr. Laurence Booth, F.R.I.B.A., of the expenditure in the building operations connected with their new infirmary at Hope, showing, as it does, a sum total which is several thousand pounds less than his original estimate of the probable cost, and they accord to him their thanks for the careful, honourable, and successful manner in which he, as their architect, has designed and supervised the carrying out of such an important undertaking."

THE QUESTION OF WAGES FROM A FRENCH POINT OF VIEW.

IN the present day, when each fresh census shows us clearly in every country the tendency of the population to gather more and more thickly into the great centres; when the ever-growing millions of our metropolis and of the capitals of the world generally are yearly spreading over larger and larger areas, there are few subjects worthier the attention of the philanthropist,—which, indeed, more warmly claim his compassion,—than the sad and cruel statistics of the misery which exists in the midst of so much of that prosperity which is the primary cause of the increase in the great centres of population. It is, and should be, with dismay that one learns from the stubborn census tables how in this great beehive of our English metropolis, with its four millions of living bodies,* the population of the northern shore of the Thames, merely in that portion of the city extending some six miles below London Bridge,—a great grovelling *terra incognita* to most Londoners,—is equal to the combined population of such thickly-peopled centres as Manchester, Birmingham, and Salford, while across the narrow stretch of the river, the southern population "below bridge" is equal to that of the whole of Liverpool. Such statistics are suggestive, taken in connexion with the terrible meaning they bear to any one who knows the character of those huge districts, with their thousand tales of so much of the wretched misery that exists in the metropolis.

What more heartrending and unsatisfactory problem is there than that of determining the causes of the misery which haunts our great capitals? What more fruitless task than that of finding its successful remedy? Much, however, undoubtedly can be done to alleviate the suffering which exists, and this much there are, fortunately, many courageous souls endeavouring to carry out. Those chief causes of so much of the misery to be met with in our capitals,—sickness, infirmity, and old age,—State and private benevolence strive yearly to alleviate. With that other serious cause,—misconduct,—the task is harder, as it has been found with the large families which so singularly seem associated more with struggling poverty than with comfortable affluence. Three generations have passed since Malthus aroused the attention of the world by his startling fears as to the growing disproportion between the mouths to feed and the supply of food with which they were to be filled. The errors of the worthy economist, with many other mistaken views wrongly attributed to him, have been explained away. We are told to look upon our growing population with congratulation, but in the face of this, the teeming courts and streets and alleys of our metropolis tell only too truly a sad tale of moral corruption and depravity which must strike every one who allows himself one moment's consideration on the subject. All would be for the best in the best of worlds were those large families of our more thickly-populated districts all models of that propriety, happiness, and harmony which economists seem to take as the basis of their calculations.

There remains, however, another important cause of much of the misery that exists in our centres of population, ill-remunerated labour. Few questions have excited or are likely to excite warmer discussion than this question of the remuneration of labour,—of wages, in a word,—since no question concerns more directly the interests of every member of the community. It is a question of essentially vital importance, very different from many of the social and economic questions so hotly discussed by half-taught reformers.

How far this matter of the inadequate remuneration of labour may be regarded as one of the real causes of the misery noticeable in great centres of population is a question worthy of attention. In so far as regards the French capital, some interesting facts relating to the point have been recently furnished to the pages of our esteemed contemporary, the *Revue des Deux Mondes*, by so competent an authority as M. le Comte d'Haussonville, whose researches into the question, directed by something more than solely an acquaintance with his own country, have already attracted no small share of attention from the thoughtful. M. d'Haussonville arrives at some instructive conclusions, conclusions which, though drawn from foreign

* In 1801 the population of London was 963,863; in 1881, 3,816,483.

data, are of no less interest to English readers as bearing on a question as pressing on this side of the Channel as on the French.

In the first place, we are shown the fallacy of that "brazen law" which has so constantly been laid down that the rate of wages is regulated inevitably by the consideration of what is necessary to give a man the means of existence, —the minimum, certainly, it will be agreed. Death from actual starvation, if it now and then occurs, is happily rare; it is the slow starvation which is the cause of so much crime, vice, and demoralisation generally, which, alas! are only too common in all great cities. It is a difficult question to answer, that of how much is absolutely necessary for existence; the answer would vary so singularly with the circumstances and conditions of the case; the hard fate which many an inhabitant of a city bewails would be accepted with gratitude by thousands of toilers in the country. The cost of life, M. d'Haussonville very sensibly, we think, lays down not at what is the bare necessary, but at what will procure a minimum of comfort and happiness.

Foremost, of course, in the consideration of the wages of the Parisian workman comes the question of house-rent, a subject of hot discussion for years past,—on one side treated by the scientific men and the philanthropists from a hygienic point of view, on the other by the politicians as an admirable party cry. In vain the necessity is suggested of erecting adequate accommodation in the shape of industrial dwellings. M. d'Haussonville exactly hits the mark in stating that this will only meet the difficulty half-way in providing comfortable homes merely for those workmen already in enjoyment of decent incomes. There still remain the really necessitous. How are the claims of these to be satisfied, with the high rate to which rent has of late years risen? Within ten years alone the rise has been from 20 to 25 per cent. M. d'Haussonville shows us that if house-rent has thus risen, the price of food has not been so largely affected. Bread, thanks to free trade, has ceased to vary in price, as in the past, and if less bread is consumed than formerly, more meat is shown by statistics to have entered Paris of late years; for the Parisian workman is far more fastidious than is generally supposed; the fare with which his parents in the country have been from their youth amply content would to the Parisian seem very unpalatable. The chief rise is in the luxuries (poultry and such like) which tend more and more to enter into the cost of life with the Parisian workman. One of his chief expenses, however, consists in the necessity of his taking his meals out of doors, and though private benevolence has here largely aided the dependent classes by the admirable institutions which answer in Paris to our "soup kitchens," yet it can be understood that this is only of partial assistance to the greater number of workmen. Away from home the workman has to make his meals at some one of the apparently innumerable *gargotes* or little eating-houses scattered over Paris in every direction. Here of course the cost of his meals enters as a very large item into the calculations, for there are very few employers of labour like the Orleans Railway Company, which every day gives its 1,300 hands a first-rate meal with wine, at the nominal price of 13 to 14 *sous*, little over sixpence. Summing up this item of food, M. d'Haussonville sets down at from 550 to 750 francs a year (22*l.* to 30*l.*) as a fair average for the workman. The item of clothes has of late years been, of course, largely affected by the action of free trade; on Sunday the national *blouse* is certainly less often seen in the streets of Paris than used to be the case, and if the *ouvrier*, and still more his hard-working wife, dress perhaps more smartly than some worthy moralists would like, we think that most readers will be of M. d'Haussonville's opinion that this is a point scarcely open to blame. "I doubt, in spite of the moralists, if a little extra care of the exterior is not an indispensable condition of a certain interior dignity. There exists in this matter a great difference between the poor of London and the poor of Paris," and, adds M. d'Haussonville, "I hardly think there is ground for much regret."

As a general result of his observations, it is the opinion of the writer that the statement that the cost of life has doubled in Paris of late years is greatly exaggerated; if this be true of the item of rent, it is not the case with the other necessaries; it is much nearer a rise of only a quarter or even a fifth. As an average necessary sum for the Parisian workman, M. d'Haussonville lays down the following figures as the result of his inquiries:—For lodging, 100-150 francs (4*l.* to 6*l.*); food, 550-750 francs (22*l.* to 30*l.*); clothing, 100-150 francs; and divers expenses, 100 to 150 francs: a total varying from 850 to 1,200 francs (34*l.* to 48*l.*) per annum. The Parisian workman can certainly live for less than the former of these two sums, and we are shown how many are forced to do so; but all those who earn more than the higher figure are beyond the claims of sympathy on the score of insufficient wages to procure the means of subsistence; this is at the rate of from 2 francs 75 centimes a day to 4 francs (a little over 2s. 2½d. to about 3s. 2d.). With less than the former daily wage, the Parisian workman must endure many hardships; with anything above the larger sum a relative degree of comfort is ensured to him, always supposing him single; if married, his expense may be reckoned as increased by half, and for each child by a third.

These facts settled, M. d'Haussonville next proceeds to enter into some interesting details as to the actual wages earned by the Parisian workmen; these he roughly divides into three classes, first those who may be termed essentially the skilled hands, whose wages are largely dependent upon their intellectual abilities, combined with manual skill,—such workmen as printers, engravers, &c. In the second class manual skill is more directly necessary, this class including all the workmen connected with the building and kindred trades; the third class embracing merely those who, like porters, carters, and such like, are employed solely for hard work.

Of all the workmen of Paris none enjoy such advantages as those connected with the building trade; the rise in their wages of late years varies between 25 and 60 per cent. The Paris Municipality publish each year, as we have more than once in these pages explained, a "series" of prices by which all their tenders are regulated. This series of prices, which some years ago was laid down as a maximum, has now, however, come to be regularly quoted and demanded by the workmen generally, even from private firms. Such has been the success of the workmen in their claims that the stone-cutter (*tailleur de pierre*) receives his 1 franc 20 centimes (11½d.) an hour, that is in the summer 12 francs a day, hard on 10s.; the *poseur*, or layer, his 9 francs; the *maçon* and bricklayer, 8 francs 50 centimes; the *garçon maçon* and *briqueteur*, 5 francs; the *charpentier*, or house-carpenter, 9 francs; the *couvreur*, or tiler, 8 francs; the *garçon*, 5 francs; the plumber (*plombeur* or *zingueur*), 7 francs 50 centimes,—the apprentice, 5 francs; the gas-fitter (*monteur gazier*), 10 francs 25 centimes,—his assistant, 6 francs 50 centimes; the *parqueteur*, 9 francs; the carpenter and joiner (*menuisier*), 8 francs; the locksmith (*serrurier*), 7 francs 50 centimes; the *fumiste*, who looks after the chimneys, 7 francs 50 centimes; the marble mason (*marbrier*), 8 francs 50 centimes; the polisher, 7 francs 50 centimes; the decorative painter, 12 francs; the ordinary painter, 8 francs; glazier (*vitrier*), 8 francs 50 centimes; the gilder (*doreur*), 10 francs; the paper-hanger (*colleur*), 8 francs; and the mirror-fitter (*miroitier*), 10 francs. Some of these have, of course, a dull season of about two months during the winter. In the furniture trade wages are almost equally high, the carver (*sculpteur sur bois*) getting his 9 to 12 francs 50 centimes a day; the upholsterer (*tapissier*), 8 to 12 francs 50 centimes; the *ébéniste en meubles de luxe*, or cabinet-maker, from 8 to 11 francs, and so on, down through the various other distinctive branches, the ordinary chairmaker getting his 4 francs to 6 francs 50 centimes. Such being the wages of the workmen in the furniture trade, it is scarcely a matter for surprise that Germans and Italians, satisfied with wages very far below these, can successfully compete with the Faubourg Saint Antoine.

In those trades, then, in which professional skill is as much remunerated as manual ability, the minimum may be set down as at about 5 francs (4s.), the maximum at 12 francs (about 9s. 6d.). In those trades in which superior intellect combined with skill is required, the usual wages run from 7 to 10 francs; high wages from 10 to 15 francs, and exceptional wages from 15 to 30 francs a day,—all considerably above what is absolutely necessary for existence; it is among the less important trades that the wages will be found to be so small, averaging terribly near the minimum of the necessary.

The latest statistics available,—those of 1876,—show that there are employed in the factories of Paris about 250,000 hands; as porters and such like, some 75,000; as vagabonds, 15,000; out of these about 74 per cent. gain 4 francs daily, about 22 per cent. 3 to 4 francs, and 4 per cent. less than 3 francs. Approximative as are these figures, they are sufficient to show, as M. d'Haussonville urges, that bad wages cannot be represented as the general cause of the misery which exists in Paris. Paris is, indeed, what it has often been termed,—the workman's paradise; a large number of workmen gain from 2,000 to 3,000 francs (80*l.*-120*l.*) a year, and, as has been remarked of the working-man in every part of the world, his position is very much more enviable from this point of view than that of thousands of *employés* and bank-clerks with incomes very little over half what the workman gains, and who, hampered by the necessity of "keeping up their position" endure miseries unknown to the working-man.

The position of the porter and the carter class in Paris,—as, indeed, in London,—is hard; he is utterly unable to marry, which is his interest and duty, unless, indeed, his wife can also earn her keep. This leads M. d'Haussonville on to the sad question of the remuneration of female labour in Paris. The statistics are lengthy, searching, and indisputable; women in Paris, as in London,—as, indeed, the world over,—are but miserably paid for their work, and sad are the figures which are brought forward. We have seen what may be considered the minimum wage to keep body and soul together; but very few women engaged in honest occupations are able to reach even that low figure. The statistics are saddening indeed. Marriage, of course, is the theoretical alternative, but where is the theoretical husband to be found? Should we be astonished, then, at the alleged immorality, the depravity, and the misery, which form such blots on our boasted civilisation?

The existence of this misery once proved among those who have so truly been termed "the dependent classes," what means are there by which the evil may be alleviated? There exist the two alternatives of violent and pacific means. Among the former must be classed the strikes of late years, but these have been invariably among the workmen who, as we have seen, are already in enjoyment of incomes more than sufficient to obtain a relative degree of comfort. It is, in fact, the well-remunerated who have most clamoured for rise of wages. The poor, indeed, cannot afford to strike. Thus while good wages have risen, the lesser wages have remained stationary, and, under the influence of increased prices, may be said to have decreased.

Among the pacific means, of course, stand foremost the two methods of allowing the workman to be associated directly in the profits of his labour, and that which, while leaving him still dependent on a daily wage, assures him a share in the profits of the master; in a word, the system of co-operation and of participation in profits. Co-operation would not appear so far to have proved highly satisfactory (at least, in France) as a general principle; but the system of participation in profits has, on the contrary, met with some success. It is the opinion of M. d'Haussonville that this system will continue to work well as long as its action is based on the voluntary surrender of a share of his profits by the master to his men; so soon as this becomes obligatory and the men express their unwillingness to share alike in the losses, the system fails.

Some three years ago an excellent work was published by M. Fourgerousse on the subject of the relations between "masters and men." From this it would appear that in Paris there are some twenty-five houses in which the system of participation is followed. The principle in most is based on the *pro rata* of the wages earned by each; "to him who hath, more shall be given" is the maxim carried out.

The sole remedy for much that is thus proved to be unsatisfactory is, in M. d'Haussonville's opinion, the intelligent diffusion of technical education, the advantages of which are apparent alone from the fact that it will be seen how invariably it is the professions directed by the most skill and intelligence which are the best remunerated. But this education must be directed with the utmost skill. What has in no small measure tended to decrease the

already wretched wages of the needlewoman in Paris has been the heedless manner in which thousands of girls who might otherwise have made excellent servants have been taught to use their needle with a view to obtaining a livelihood. Here the spread of instruction has done harm instead of good.

It would seem as if it were impossible to avoid the existence of much of the inequality of remunerated labour which is the cause of such misery in our complicated society; it is the inevitable law that the weak must give place to the strong, alike the intellectually and the physically strong. Science has shown this to be the whole system of nature, the origin of our very condition. Nature, as we see in the animal kingdom, knows no pity; but it is the possession of that divine sentiment which in reality distinguishes us from the beasts; the sentiment on which we may base at least one element of superiority over them. On this pity, therefore, the future care of the unhappy thousands in our midst must rely; charity, well organised and well directed, must exercise its influence to alleviate the sufferings which in our complex society would seem inseparable from the existence of so many. This, the economic justification of charity, appears to be the sole conclusion to be drawn from a consideration of the unsatisfactory question of wages.

ON THE IMPORTANCE OF A DUE PROVISION FOR JUSTICE IN THE DECISION OF ARCHITECTURAL COMPETITIONS.

As architectural competitions, for obvious reasons, are never likely to know desuetude, but, on the contrary, since, having been publicly recognised and in a manner organised by the Royal Institute of British Architects, they are likely to become more than ever the order of the day, the Olympian games of the profession, into which all important architectural practice and enterprise is destined to merge, I wish to say a word or two on the important matter of providing means in each instance for a just selection of the design to be executed; and, conceiving this to be the most important matter of all to the success of competitions, that without which they must be more or less failures, to beg the serious attention of all concerned to my remarks.

A failure, for the greater part, have architectural competitions ever been. The best designs have seldom won. The race has not been to the swift nor the battle to the strong, as, in such matters, we have a right to expect it; and I was glad to see a public admission of this fact, or at least that the best designs did not always win, before one of the metropolitan societies, reported in the *Builder* some months ago, because knowledge of the evil is so much power to remedy it. It is from this cause that so many important competitions which had made great noise have been mountains bringing forth mice. In such instances, I suspect the premiated designs have not only not been the highest, they have been a long way down in the scale of merit. So must the selected designs have been in some great Continental competitions, judging by the published prints of them.

The evil, since professional referees have been in vogue, has arisen, I believe, from the employment in almost every competition of but one referee; which renders it somewhat encouraging to find the published suggestions of the Institute mentioning "one or more," thereby suggesting and sanctioning a plurality. Let me earnestly recommend the invariable appointment of two or more referees,—the necessity for which will appear if we consider what should be his qualifications to whom alone the trust is committed,—who acts as sole referee,—to render him equal to the occasion. To be equal to the task, the sole referee should be equal or superior in ability to the highest that may compete,—the apex, if I may so speak, of the pyramid of talents engaged on the required design; one that has evinced, by pencil or pen, a philosophical grasp of architecture, and insight into its true nature. He should be prepared for all possible variations on the styles of the day,—nay, be looking for the new and original forms which architecture, whose "yesterday must ne'er be like its morrow," is destined to evolve in its progress, and welcoming the least sign of imaginative and creative power for the breathing of new life into it, with something like prophetic instinct to discern at what point of the horizon the new is to appear.

He should know how nature is to be imitated in architecture, and how to distinguish between true and false imitation of masters; and be himself a master of composition and chiaroscuro, familiar with the causes of beauty and sublimity, with a critical eye for harmony of form and refinement and expression in detail. He should be an earnest truth-seeker, capable of the deepest sympathy with the yearnings and strivings of others after it; whose passionate and unsullied love of art and zeal for its promotion have, without aid from the moral sentiment, swallowed up all feelings of professional jealousy, and rendered him proof against the temptation to reject any design that might throw his own works into the shade, or anticipate and forestall him in some cherished ideal of his own.

If no such *rara avis* as this can ever be forthcoming, what safety, I would ask, can there be in any competition where there is but a single referee? What encouragement for the competitor of absolute devotion to principle, who gives forth that which he most feels at the time,—the highest architectural truths he has learned,—the noblest forms and images he has cherished in his memory or his portfolio? Will he not feel himself at least—

> "Cabin'd, cribb'd, confined, bound in
> To saucy doubts and fears,"

though very different from those of *Macbeth*? Assuredly the most felicitous compound of architectural and sculptural forms ever framed may be overlooked or non-appreciated, especially if, as is not improbable, it is mixed up with some eccentricities in minor detail, and not among the most powerful or showy of drawings; for

> "It is the witness still of excellency
> To put a strange face on his own perfection."

What chance has a design, however good, if it lack a feature which the referee considers a *sine quâ non*, or if it go in the teeth of a fashion which he patronises? Will there not be strong temptation upon all competitors to consider the artistic calibre and peculiarity of taste of the referee, so far as his known works or his decisions in former competitions declare them, and throw in some loathed or unnecessary feature, fashioned after his heart, as a sop, like the cake to Cerberus? It cannot, I think, be denied that there will, or that the architect who most yields to it will, if not wanting in other respects, have the best chance. To have any chance, I think the competitor's aim in his design must be, not excellence, but the qualities that will be approved by the referee, whom he must keep constantly before his mind's eye, shooting neither to the right hand nor to the left of him, nor over his head.

If these views be correct, then I think the future hopes of architecture depend on there being generally at least more than one, or even two or three referees, the very highest members of the profession, engaged to decide a contest of architects; and upon their laying it to heart how great is the responsibility of the office they fill, and the immense influence for good or ill to the profession which they exert,—that, for the time at least, they guide the helm and wield the destiny of architecture. Had the British public the æsthetic instinct of the old Greeks,—if it were as accomplished and poetic a public as that of those nurses of art, Athens and Corinth, where every citizen was not only a hero and legislator, but an art-critic, and endowed with that highest degree of education and utmost human refinement, viz., a genuine perception and love of beauty; or if Englishmen and Scotsmen had that predilection for art that spread over Italy in the fourteenth and fifteenth centuries,—then the public would form the best board of referees, and the voice of the people would be the voice of God.

As Fate or Providence denies us such a tribunal, our people and their Parliamentary representatives, whatever their natural acuteness of intellect, having neither the fastidiousness of taste, nor the desire for art and beauty which characterised the Athenians of old, we should secure the next best thing to it, viz., as numerous and varied and competent a bench of judges as possible. I would have on it the critical as well as the practical element,—the man of thought as well as the man of action, who is not always a good judge of the merit of other men's works. But there should be no individual among the referees, whatever his refinement of taste, who is ignorant of architecture; as taste cannot be successfully exercised in comparing things of which its possessor has not a perfect knowledge,—a fact which I fear was overlooked in the selection of the five or six judges in the competition for the Foreign and War Offices some twenty-five years ago.

If no less than ten judges, chosen from among the flower of Grecian intellect and taste, with ten months' training for the task, and sworn to act impartially, were deemed necessary to decide who was victor in a chariot race at the Olympic Festival of the Greeks, how many more should be deemed needful to decide the relative merits of a hundred or more of architectural designs, each expressed by many distinct drawings, which is an infinitely more difficult task, how difficult a task has never been duly considered. It is far more difficult to compare and judge the relative merits of architectural designs than the relative merits of any other fine-art works,—pictures, statues, &c.,—inasmuch as the architectural designs involve important utilities as well as beauties; and have to be expressed by many different drawings. The referee has not only to compare designs one with another, but the different parts of each design to verify its homogeneousness, on which and on its truthfulness of character and expression its merit in a great measure depends. I know no task of its kind so fraught with difficulty,—which increases in proportion to the importance as well as to the merit of the designs.

The folly and danger of trusting to one referee will appear if we consider that in all kinds of art-works the soundest "judgment has its oscillations, and is a long time in settling upon the thin line of justice"; and that great critics are constantly affording new insight into the genius of authors whose rank had been thought fixed for ever. "To pass a right judgment upon compositions," says Longinus, "is generally the effect of a long experience, and the last improvement of study and observation." The revolutions of opinion in relation to architecture, both styles and examples, are too well known to need more than mention.

The improbability of any one man being found equal to the situation in question will appear, if we consider how few among the greatest men have shown themselves fitted, by comprehensiveness of mind, to give impartial judgments on works of art or literature; or who combined the intellectual keenness and profundity of the philosopher with the divine faculty of the poet. The names of those whose works prove the possession of that rare balance of imagination, and of the reasoning powers in which the perfection of the human intellect is supposed to consist; or, in other words, who possessed aught but fragmentary minds, appear but thinly strewn on the stream of history. Homer, Julius Cæsar, Dante, Da Vinci, Michelangelo, Shakspeare, Bacon, Crichton, Milton, Berkeley, and Goethe are all I can just now call to mind. How many of the greatest reputations have proved themselves, by narrowness of mind, weakness of judgment, or vulgar prejudices, unfitted or unable to do justice to their contemporaries or predecessors, and whose judgments on them have been reversed by the verdict of posterity!

Dante's great powers of imagination were not appreciated by the greatest poets for ages after his death; and that he was unable to appreciate himself is shown by his idolatry of Virgil, and admiration of other writers far inferior to himself. Nathaniel Lee, and others of Dryden's poetical contemporaries, supposed he had beaten the "Paradise Lost,"—refined the golden ore of Milton,—by his "State of Innocence, and Fall of Man," when he had ignominiously failed to equal himself. Dr. Johnson, the leviathan of literature, as he was deemed, could see little or no merit in "Tristram Shandy," "Gulliver's Travels," or "Tom Jones." The criticisms in his "Lives of the Poets" it is well known are biassed by political, religious, and even personal antipathies: with him the author of the inimitable "Elegy written in a Country Churchyard," is "a barren rascal," and Churchill a blockhead! Wordsworth and Southey were insensible to the harp of Byron, a true and great lyric poet, who, in his turn, ridiculed both, and expressed contempt for the "Excursion"; while he evidently thought Pope a greater poet than Milton or Shakspeare. Voltaire deemed the latter a sublime barbarian. Emerson, a great poet as well as philosopher, would not allow Shelley or Poe to be poets at all.

On the other hand, innumerable are the works that have not maintained the place at first assigned them by the arbiters of literary merit and genius, and that, in different degrees, have sunk in the universal estimation. It has happened to others, as well as to Macaulay to have seen "minds graceful and majestic as the Titania of Shakspeare, bewitched by the charms of an ass's head, bestowing on it the fondest caresses, and crowning it with the sweetest flowers."

All this will seem to some a far-fetched argument. But it is in reality a very direct and cogent one. If Lord Byron, who was not only a poet of established reputation, but a world-renowned poet, could not see the awful distance in merit between the bard of Twickenham and him of Stratford, and thereby proved himself unfitted to decide a competition of poets; and if Samuel Johnson, who was both poet and critic, and moralist to boot, and the idol of his generation, could not, or would not, do justice to the merit of Milton; if Emerson could see or feel no fire of genius in Shelley's "Revolt of Islam," what hope can we have of a single referee doing justice in an architectural competition, based on his being an architect of established reputation, which is all the referee is required to be in the "Suggestions" published by the Institute?

If Dr. Johnson, who generally ruled his life by the dictates of virtue and piety, was swayed by vulgar prejudices, and even by personal antipathies and jealousies, in his criticisms on the works of his predecessors and contemporaries, have we not cause to fear that any given architect, whatever his reputation, may be similarly biassed?

It appears to me that in view of such facts and the immense importance of having just issues from these most elaborate and truly costly contests,—importance to the honour and welfare of the profession, to the taste and æsthetic culture of the public, to the beauty of cities, and to the glory and joy of the great globe itself,—nothing should be omitted that could possibly be devised to secure them. Prudence, I think, dictates that here we should,—

"Make assurance double sure,"

and, if it were possible,—

"Take a bond of Fate."

I would have an appeal from the referees, however numerous, to some other tribunal.

Unless the competition system be made as true and righteous as it is possible to make it, in time to come woe will betide the architectural profession. That system must not only fail of its object to call forth excellence, but present an impediment to the progress of architecture, and become little better than a lottery or gaming-table. With all its study and practice forced into a channel in which there is no guarantee for justice, no profession could be in a more humiliating or hopeless condition. It is forbidden to advance. It is offered premiums for mediocrity,—effective drawings, and common-place designs; and these are what it has chiefly produced or will produce, under the system, which will operate as a Procrustes' bed, and do more in a stealthy way to discourage truthful architects than anything else.

"Learn to labour and to wait,"

sings Longfellow; but it will be of no use labouring in architecture, and the architectural aspirant may wait long enough. If he wait it will be with something of the hopelessness of the impotent man at the Pool of Bethesda while later comers were stepping down before him. Patience and fortitude will be in vain. Would the competitors in the chariot races and other contests at the Olympic Festival have been inspired with such high emulation had they been uncertain of justice from the judges of the games? Would the knights who contended in the chivalric tournaments which were the grand competitions of the Middle Ages have endangered their lives, though "ladies' eyes rained influence," if the acclamations of the heralds, and the clangour of the trumpets as often hailed the wrong knight as the right one?

Nothing, having relation to art, has appeared to me more absurd than the appointment of a single man to name the victor in a great public competition, except it be respectable architects submitting to it. Those who engage in competitions would not lend money without security: why should they risk that for which money itself would be inadequate security?

Such considerations and facts ought at least to suggest diffidence and humility to those gentlemen that are usually engaged as referees; and discourage any disposition to the framing of tyrannical conditions such as have hitherto disgraced the history of competitions. An architect in one of last year's discussions on the subject spoke, without disapprobation, of the effect on competitions of some referee's "iron rod," which surely must have excited disgust in more breasts than one. What right any gentleman has to wield an iron rod, in any sense of the word, over his professional brethren, I cannot see. The iron enters into the soul, as iron so employed has ever done.

In reference to second competitions, I beg to suggest that they should only occur in cases where the two or three best designs appear equal in merit, and where only clearer delineation of detail on a larger scale could relieve from the dilemma; when it would at the same time afford opportunity to the authors for giving the little, more or less, imperceptible to vulgar eyes, which constitutes grace, and enable them to embody further subtleties of thought, if they have them.

Otherwise repetition of the same design on a larger scale is no more needful than repetition of the same speech or sermon in a louder voice. The original sketch for many a great picture shows the possibility of concentrating the power of a large work on a few square inches.

I deem the public exhibition of the designs very desirable, and agree with a recent correspondent of the *Builder*, "Justicia," that it should take place before the decision. It would be of some educational value to the architectural student, and also to the public.

I think all competitions for public works should be open, and not to Great Britain only, but to all the world. If justly conducted, the highest men need not disdain to engage in them, as they may be fully assured of meeting "foemen worthy of their steel." In the chivalric contests of the Middle Ages, before alluded to, esquires were frequently allowed the honour of laying lance in rest as well as knights.

SAMUEL HUGGINS.

HIGH BUILDINGS.

WE do not expect in our structures to be able to vie with the dimensions of Nature in her works, or to build a city of the proportions of the Alps or the Apennines. The great Architect of the Universe, in his masonry, constructs on a very different scale from ourselves, his humble creatures. The pyramids of old were in degree no doubt counterfeits of a mountain, and the ancient monolith obelisks and the spires of more modern architecture emulate the lofty pinnacles which are so frequent in some rocky regions. These latter imitations, reduced to the symmetrical contours and regular forms which are the characteristic crystallisations of structural science and art, fall, of course, vastly short of the magnitude of their prototypes, but we feel, of course, no humiliation in their being so much less in scale than the edifices of Nature. We could not hope to equal the mineral kingdom in the height of its structures; but it was not formerly, certainly not till this century, contemplated by us that even our tallest buildings might have to contend for pre-eminence of altitude with the kingdom of vegetables. The trees of the old world, at any rate of any part of it with which we were acquainted, did not reach such towering heights as to vie with our loftiest examples of architecture. This is not the case now, for since the exploration of California and Australia, some races of vegetable giants have become known to the world which might look down from their topmost summits on even our loftiest spires, with, perhaps, one or two exceptions. Even these, however, may quite possibly be overcrowed eventually by some not yet discovered individuals of the big trees of California, or of the gum trees of Australia.

The Parthenon of Athens, eminent as is the place it takes in art, was, in comparison with many other remarkable structures, but a dwarf or a fairy in scale, having been but 66 ft. high to the top of the tympanum, and thus was surpassed in elevation by the less-famed temple of the giants at Agrigentum, which reached the height of 116 ft. The Trajan Column in Rome is 134 ft. high. The Obelisk of the Lateran, in the same city, as it stands erected on its lofty base, measures 153 ft. The Albert Memorial in Kensington-gardens reaches the altitude of 186 ft. The Monument of the Great Fire of London, in the City, is 202 ft. high. The Taj Mahal, at Agra, is 220 ft. Norwich Cathedral is 309 ft. The Victoria Tower, Westminster, is 331 ft. The Church of St. Isaac, in St. Petersburg, is 336 ft. The cathedral at Florence is 376 ft., and that of Chartres 403 ft. To the top of the cross on the present St. Paul's Cathedral, in London, is but 360 ft., while the top of the spire of the old St. Paul's, which preceded it in the same situation, is said to have reached the great elevation of 508 ft., in which case it was at that time the loftiest structure in the world, and has only been exceeded since by that of Cologne, which is 510 ft. St. Peter's at Rome, to the top of its cross, is 448 ft., and the apex of the huge mass of the great pyramid was 460 ft. from the plain on which it arose.

The eastern entrance great hall of the South Kensington Museum affords space on its north wall for the display on an ample scale of a large diagram of the comparative heights of these and other remarkable buildings of the world, of which there is a small version of a convenient size, which may be purchased at the guide-book and photograph stall by the side of the south entrance. The above-mentioned great diagram is rarely without spectators, which indicates the natural interest generally taken in these great achievements of raising solid masonry to such great elevations. This affords an opportunity for incidentally suggesting that if the neighbouring Royal Horticultural Society were in like manner to have a diagram produced exhibiting the comparative heights of the tallest specimens of the various trees of the world, it might be of much botanic and general interest, especially when contemplated in relation to our tallest edifices, as set forth in the diagram above mentioned.

The discovery of the so-called "Big trees" of California startled the world, and when their dimensions came to be ascertained the enthusiasm of both English and Americans sought to associate with them the names of two of their most distinguished countrymen, and they received the titles almost simultaneously of "Wellingtonia" and "Washingtonia." They have since been introduced into our own and other countries, and many of their young offspring are at present to be seen in our horticultural gardens and parks and country seats. It appears, however, now that they are even more than equalled in altitude by another class of trees in a region also eclonised by our Anglo-Saxon race, namely by some of the *Eucalyptus* tribe, or gum trees of Australia. Mr. Walter Coote, F.R.G.S., in his interesting narrative of his "Wanderings South and East," published last year, in his account of an excursion he made from Melbourne, to the Black's Spur in the Plenty Range, speaks of it as possessing the loftiest trees in the world. After lauding in high terms the beauty of the bush scenery of these ranges and the gigantic scale of the tree ferns and of all the vegetable life around, he proceeds to mention these comparatively newly discovered and very lofty examples of the *Eucalyptus*. "There are not only," he says, "a few detached groves of big trees as in California, but there are thousands of these giants, the whole hill-sides being covered with them." When alluding to the Californian *Sequoias*, the proprietor of the neighbouring inn triumphantly said to me, "We can give them a hundred feet, and then exceed them." The greatest tree at present discovered was at Mount Baw Baw, and, on being measured by the Government surveyor, was found to be 471 ft. It was a "*Eucalyptus Amygdalina*." The highest tree at present standing in California, a "*Sequoia gigantea*," is only about 325 ft. In a report by Mr. Fergusson, the Inspector of State Forests, one of the fallen gum-trees is mentioned as having been found by actual measurement to be 435 ft. from its roots to where it had been broken by its fall. The broken section was 3 ft. in diameter, from which he estimated the tree, when entire, to have been over 500 ft., thus among all edifices being only equalled or exceeded by the heights of the spires of Cologne Cathedral and old St. Paul's. And quite possibly there may be some still higher examples of these trees yet to be found in Australia, and it may be noted also that in California some of the fallen and prostrate giants indicate greater heights than any of those still erect. We are

not informed to what height the ambitious tower of Babel had attained before those constructing it were scattered abroad over the face of the earth, but of our at present existing structures none, at any rate, seem to exceed in altitude some races of the vegetable kingdom.

In comparison with the size of the individual workman, we know that the structures of the coral insect vastly exceed our own triumphs, and in this respect also that our architecture is far outrivalled by those of the ants and termites, as is familiar in the pages of our various books of natural history; but the great altitude of some examples of the vegetable kingdom has been less discussed because comparatively but lately known. In a competitive point of view, however, we may be consoled by regarding the long period which is requisite for the growth of these *colossi* in attaining their complete stature, which, in the case of the largest of the Californian trees, has been computed to have been not less than 2,000 years. In respect, however, of the Australian trees we are not aware that their time rate of growth has been investigated. If this, however, bear a like proportion to their height, as in those of California, then in either case we may remark, although most of our celebrated cathedrals have taken a long time in rising from their foundations to their topmost pinnacles, that the loftiest denizens of the forest grow still more slowly, and that sap is still more deliberate in building than stone, and bricks and mortar; and thus, although Nature, even in her vegetable kingdom can equal or overtop our most majestic efforts, that she occupies a still longer period in the achievement.

ETCHINGS AT THE BURLINGTON FINE ARTS CLUB.

THE illustration of the Dutch masters of etching, which the Burlington Club has very much at heart, would have been impossible to carry out in a general collection or collections, on account of the way in which the great name of Rembrandt overshadows all the others, and renders it impossible to preserve anything like a balance of power in a general illustration of this school of art. This, as we gather from the preliminary remarks to the catalogue of the present collection, is the reason why no such attempt has hitherto been made. The Club have brought together in a previous year a splendid and representative exhibition of the etchings of Rembrandt; and this having been accomplished, "the way is now cleared" for the illustration of minor Dutch etchers. The two whose works are at present to be seen (by the favour of the Committee or of individual members) are two Amsterdam men, Zeeman and Karl du Jardin; the latter a somewhat familiar name in art, the former less so. Though the two men belonged to the same place and nearly the same time, Zeeman having been born about 1612, and Du Jardin probably some two decades later, their works are in many respects as opposed to one another as they well could be. Du Jardin was essentially an artist, and looked at his subjects, prosaic as they are in one sense, with a view to artistic effect; Zeeman appears to us to have been, considering his technical powers as an etcher, singularly destitute of artistic feeling and perception; and the value of his work in this respect seems much overrated in the catalogue remarks. The real worth of his work is of the same kind as much of Hollar's, viz., topographical and historical. He was the son of an Amsterdam fisherman, whose real name was Nooms, and the artist's nickname of "Sea man" (Zeeman), from his seafaring connexions, stuck to him, as nicknames have stuck to so many artists, and was signed on most of his works. With an inherited love of docks and shipping, he illustrated largely the shipping craft of his country, then at the head of the maritime world, and has left also most interesting and evidently careful and accurate views of different scenes in the port of Amsterdam, introducing a certain proportion of architecture (which he treats with precision and clearness of line), but never, as far as we have observed in this collection, getting out of sight of the masts of the ships. His seas and skies are bad and mannered, but his ships are admirably drawn; he gives us in its completeness the old form of ships of the period, best shown in No. 32, with her great beak under the bowsprit, her built-up stern, and her masses of shrouds,—an object certainly far more taking to the eye of a painter than most of the shipping of the present day; and though the water is bad, the ships lie on it well, especially as in No. 8, where two or three craft, heeling over in a stiff breeze, have a great deal of go and spring in them. His calm-sea effects are the best, as effects, and he has a feeling for distance and aërial perspective. No. 53 is a really fine night effect, rather Rembrandtish in treatment. The views about Amsterdam and its outskirts bring the past before us, probably with complete truth as far as they go. In one corner at the upper end of the room is a most interesting group of drawings. No. 84 shows the back view of part of the town from an inlet of the docks; a long irregular row of houses and a church, and in the foreground one of the double canals, divided into two road-ways by railings fixed in the water, an incident constantly recurring in these illustrations. In No. 87 we have what might be called "windmill suburb," the side of the town where the windmills were congregated; the scene bristles with their sails. In two others we see the bridges for entering the town over the canals, and the primitive arrangement of over-head beams, swinging on centres, for pulling up the drawbridges; these are best shown in No. 85, where they are delineated with the same kind of care and accuracy that Da Vinci, in his drawings, bestows on this kind of practical detail. It is noticeable that some of the wooden bridges shown in these views are almost exactly like a type of bridge still made in Japan: a set of trestles with a curved wooden roadway carried over the top of them. In No. 3 we have the old "block houses," or fortified houses at the entry of the port, picturesque in a plain way, rising out of water which here again is all divided by fences; and in No. 4 is shown the "pest-house," one of the buildings described by Howard in his curious work on the "Lazarettos of Europe." A monochrome shaded drawing, No. 115, gives apparently a design for a title-page to some collection of drawings, and represents the building or repairing of a ship, the stern of which bears the inscription in an original French, innocent of accents or grammar, "Quelque Navieres designes par R. Zeeman, a^{o} 1656."

On the other side of the room, among the Du Jardin drawings and etchings, we are in a different world. Here everything is treated from the point of view of artistic effect. True, most of the drawings are merely representations of animals, but they are all beautifully composed, with the view of giving harmony of line and of exercising and exhibiting the artist's power of drawing and foreshortening. There are some drawings in pencil, Indian Ink, and other media; especially an admirably free and masterly one in red chalk, of cattle and figures crossing a stream towards the spectator; but the best of the works are etchings. Some of these, such as the two pigs (123) and the sheep and lamb (144), have been engraved and are well known. But there are finer things than these in the collection. We may specify the drawing of sheep and goats grouped in a mass in the centre of a landscape (138); that of the sheep and goat, with a human figure in the background (131); the two horses foreshortened, one of them lying on the ground (140), and the two horses by the plough (154). There is one scene which aims at higher interest, "The Battlefield" (136), where a horseman is pausing in his ride over the field to look at the naked corpse of a slain man; the contrast between the stiff body on the ground and the life and animation of the rider and his horse, which he has with difficulty reined in, is very striking. But, apart from this, in the quieter scenes we have mentioned, there is apparent in all something more than mere animal painting (or drawing); there is everywhere to be traced that feeling for the artistic effect and suggestiveness of line and composition which gives the higher interest to work of this kind, and constitutes the real value of Karl du Jardin.

Great Yarmouth.—The plans of Messrs. Bottle & Olley have been accepted, in a competition of local architects, for new Board Schools, Gorleston, under the Great Yarmouth School Board, for 275 boys, 275 girls, and 250 infants. A caretaker's house has been added to the scheme since the acceptance of the design.

VENTILATORS AND VENTILATION.

THE steps which, at the moment when the Metropolitan District Railway Company were supposed to have obtained an unassailable position with reference to their rights to ventilate their line, we pointed out as competent to the public, have been taken, not by the Board of Trade but by private members; and on the last day of May, in consequence, the company stopped their Bill before Parliament. A pause, or indeed something more than a pause, having been thus reached in the strife beneath the underground and the aboveground interests, we are desirous to point out that the mode in which the subject has been treated is not one that does much credit either to our scientific command of the primary function of ventilation, or to our method of scrambling through important public business. Rightly or wrongly, the public and the railway company were opposed. That being the case, many persons were ready to condemn the latter, not on any impartial review of the entire case, but on the ground of what looked like a contempt of public opinion. It is, no doubt, an awkward thing to run against the current of public opinion. It is, however, quite another matter to inquire how far that opinion is or is not altogether well informed and correct.

The ventilation of the Underground Railway is a very serious matter. It affects the comfort and, to some degree, the health of a number of persons which can only be fixed by saying that among them they take more than eighty-three millions of railway journeys in the year. Thus, on sanitary grounds alone, the question of ventilation is most important. On scientific grounds it has no less interest. The passage of two, or at the very utmost three, locomotives through an unventilated tunnel renders the air unfit for human respiration. The passage of an assignable number of trains would render it highly dangerous to life. The passage of a yet larger number would, without ventilation, leave the tunnel in a state as impassable as if it were full of water. In the short portions into which the Underground Railway through London is broken for the sake of access, ventilation, such as it is, effects itself to a certain unsatisfactory extent. In a long tunnel this cannot take place, and when the public are asked to find the money for a very long tunnel it is done in wilful ignorance of the fact that as far as our present appliances go, the question of ventilation must become most formidable from an economical point of view,—first, from the cost of conducting it, and, secondly, from the very small number of trains that could run through, if the air is to be kept respirable, and if the rate of the ventilating current is not more than the practical speed of ten miles an hour.

It is, therefore, in our opinion very highly desirable, from a scientific, as well as from an economical, point of view, that an inquiry should be conducted on this head by competent men. Why should not the directors of the Metropolitan Railways apply to the Board of Trade to appoint one or two men of science to meet their own engineers and to draw up a report that may serve as a basis for future proceedings? For ourselves, we have personally given some little time to watching the mouths of one or two of the present shafts, particularly the one in the Embankment garden between Westminster and Waterloo, and that in the Broad Sanctuary. What was the result of our observation we need not now state; but we may say that it took a very careful watch to be aware of the moment of the passage of a train. We have not seen this remark made before. We confess that the observation was unexpected; but it is one which, we think, points very clearly in the direction that we have indicated. The subject is not one to be decided by mere party feeling. As long as the public felt helpless it was unavoidable that feeling should rise high; but now, on the ground that we have indicated, it seems to us to be highly important that the subject should be considered in a manner at once impartial, scientific, exhaustive, and practical. It is not enough to say what shall not be done. What we want to know is what ought to be done.

Society for the Encouragement of the Fine Arts.—On Saturday evening the chairman of the society, Mr. Deputy Edmeston, was entertained at dinner by the council.

THE DEVELOPMENT OF ECCLESIASTICAL ARCHITECTURE IN RUSSIA.

IN a paper lately read before the Architects' Association at Berlin, Herr Wallé called attention to the little attention paid in Western Europe to the progress of building and engineering works in Russia, and dwelt on the advantages which might reasonably be expected to result from an interchange of opinions on technical matters. The Russian technical press, on the other hand, gives special prominence to what is doing in Germany and other countries.

Attention has from various causes been recently given to the question of ecclesiastical architecture in Russia. In July, 1881, the municipality of St. Petersburg opened an international competition for a church to be erected on the spot where the Emperor Alexander II. had been assassinated. When the three plans selected out of twenty-eight sent in were placed before the Emperor, he declined to confirm any of them, on the ground that although talent and skill had evidently been brought to bear upon their conception, yet none of them had been designed in the Russian style of architecture, of which numerous excellent models might be found in various parts of his dominions. This policy affects other branches of the art besides church-building, inasmuch as public edifices, both in their construction and external ornamentation, must, to a great extent, follow the general idea thus designated. The power of a Russian monarch's will is well known, and it is feared by Herr Wallé that similar consequences may result as to architecture to those which are recorded in history to have befallen Russian painting, when Iwan III. ordered all saints' pictures to be painted in the same style as the works of Andreas Rublew, a monk who lived towards the close of the fourteenth century.

It is not expected, however, that in the present instance there will be such a general following out of the Imperial wishes as that which resulted from the edict of Iwan; for, according to the admission of the leading technical journal in Russia, architects are not now able to build in the exact style of the fifteenth century; besides, there are great difficulties in fixing what is in reality the Russian style of architecture. A law of the year 1841 decided that for the orthodox churches the old Byzantine style should be selected. In the lifetime of the Emperor Nicholas a return to the older style was evinced in the Byzantine style being taken up again, in place of the Classical, or would-be Classical, school. Professor Constantine Ton built a number of churches in this revived style, those of St. Catherine at St. Petersburg and the Redeemer at Moscow being amongst the most important. The former is a three-aisled edifice, to hold 1,200, while the latter is designed to accommodate five times that number of worshippers. Its dome is 77 ft. in diameter and 224 ft. in height inside. The modest style of the openings for light is in harmony with the character of the ancient Byzantine buildings. Some of the details of the work exhibit the partial influence of Oriental art. The remark is made that the St. Catherine's Church and others of the same kind do not afford a reliable basis on which to found a style of church building; for after the old Russian type had been neglected for upwards of a century, it was impossible to reproduce with any degree of accuracy many of its detailed features.

St. Mary Church, Torquay. — The Dominican sisters here are having the choir of their church completed by taking out the floor above the present choir and erecting a mixed barrel and hammer-beam roof under the old roof, the erection of an organ-gallery in which a small choir-organ is to be placed, stalls, and several other alterations. The work is being carried out by Mr. Condy from the designs of Mr. Joseph Stanislaus Hansom.

The Conventual Buildings at Stamford Hill, belonging to the Servite Nuns, are now being extensively enlarged by the erection of chapel, sacristies, chapter-room, dormitories, play-rooms, lavatory, and chaplain's house. Parts of the new buildings are already roofed in, and the remainder, only lately put in hand, are being pushed on rapidly by the contractors, Messrs. R. & E. Evans, of Lisford-street, Peckham, under the architect, Mr. Joseph S. Hansom.

A NEGLECTED ART-EPOCH.

IT must always remain a matter for regret that the dignified and beautiful form which our national architecture assumed in the closing years of the twelfth century should have been so speedily and so completely set aside,—absorbed, as it were, by the "Early English," or First Pointed style of the succeeding century: that the "Transition" was, in short, but too truly what its name suggests, and not, as one would now wish that it had been, a halting-place in the long procession of the styles.

In examining from our present standpoint the mighty march of Mediæval art, we see, clearly enough, that such a halt was in the nature of things impossible. The problem presented to the builder was such that every success but opened the way to further successes in the same direction. Each endeavour carried with its accomplishment the possibility and the promise of further achievements, and at last the dexterity of the architects and their conscious mastery over the mechanical principles involved in their art got the better of their discretion, and blunted their artistic sense, until architecture became a mere plaything in their hands,—a vehicle for the pleasurable exercise of unrestrained power.

During the earlier years of the reign of the second Henry the several races which peopled the kingdom were welded into one distinct nationality, and all thenceforth became Englishmen. The national feeling which accompanied this amalgamation expressed itself in the arts. Architecture was emancipated from foreign influences, and the last quarter of the twelfth century saw us in possession of an architectural system of singular beauty, and one which was, in addition, exclusively our own. It succeeded in combining in equal proportions the essential qualities of all great art, to wit, power and refinement, masculine strength and feminine grace. The *power* of building may perhaps have been more fully felt in the rude Norman work of an earlier date, and the *refinement* of which the art is susceptible may have been carried somewhat further in the "Early English" work at its best; but the two qualities had only once before co-existed, each in its highest perfection, viz., at Athens, in the fifth century before the Christian era, and never again, after the twelfth century closed upon the works of the great Transition architects.

The failures of the Norman builders,—failures more numerous than our indiscriminating worship of the past will sometimes let us admit,—had taught their successors to look to the security of their foundations, to bestow more care upon the hearting of their walls and piers, and on the bedding and bonding of their ashlar. A growing familiarity with the nature of the materials at command and a growing knowledge of the scientific use of them are apparent in the lighter and loftier proportions of the works of the time.

The love of broad surfaces and unbroken lines gave nobility and repose to the general design, while the increasing skill of the sculptors, who now went direct to nature for inspiration, gave meaning and interest to the details. The clumsy vulgarity of the Norman ornamentation wholly disappeared. The wall-diapers and surface decoration are of remarkable variety and excellence, and the profiles of the mouldings, strings, bases, imposts, archivolts, are of a quite Grecian purity, and have never been surpassed for grace and propriety.

Indeed, there are many evidences,—as in the care with which the long vertical lines of piers and pilasters were guarded against having a top-heavy look by narrowing and retiring each successive stage at the levels of the strings,—and the anxiety and skill with which the angles of their buildings were studied, as they cut hard and solid against their luminous background of sky,—that much of the delicate perception of the Greek architects was no stranger to our countrymen of this date.

And everywhere the sculpture and ornament was strictly subservient to the architecture, brightening and accentuating special points in the constructive scheme, and while preserving its dignity and repose, enlivening the whole by an agreeable play of light and shade, and providing in a very real sense "Sermons in stones, and good in everything."

It must be borne in mind that by the end of the twelfth century the true principles of vaulting had been arrived at and put in practice. That the Roman barrel vault, with its unnecessary and overpowering mass of material, had been superseded by the arching ribs with their thin and light spandrel filling. That the pointed arch had given the builders the power of spanning openings of varying widths with arches of a uniform height, thus avoiding the structural failures incident to the semicircular form of arch, and enabling them to dispense with the ungainly stilt which that form of arch drove them to adopt under the older system. The constructive scheme had been developed to the full, and there were no difficulties in the way of carrying into execution the largest works which the necessities of the time demanded,—and the rapid improvement in the sculptor's art, which the abandonment of the conventional models and a recourse to nature had brought about, rendered it possible to adorn the architecture with ornament and imagery of marvellous beauty and propriety. But when all things promised a series of buildings, in which these accomplishments should have full sway, an inordinate passion for mouldings set in, and appeared to engross the whole attention of the builders. Endless successions of rolls and hollows,—their junction emphasised by narrow fillets,—occupied countless masons. Fortunately the carver's skill found room to expatiate, and the foliage which enriched this special phase of architecture is, and will always be, its chief claim to our regard. But it should have been employed on works having the nobler characteristics of the preceding style. The newer manner was deficient in breadth, and architecture for the first time became an affair of lines. Beautiful it no doubt was, but the beauty was of a feminine type. "Hyperion's curls," perhaps, but not the "front of Jove," and the further it departed from the earlier method the greater was the loss of that grandeur of mien which seemed to have an affinity to the sacred idea which inspired it.

It is not a little strange that in all our revivals the revival of the particular type above adverted to has not been seriously or persistently attempted in all its integrity. We have reproduced a version of the Norman, but without success. We could not bring ourselves to make the work deliberately rude and deficient in technical excellence to match the older specimens which were unintentionally so; and the mechanical finish which we gave to our work robbed it of the naïveté which was the principal charm of the old. Our modern Norman has a prim cast-iron look; its essential characterists are unproducible in our day. Mass,—prodigal, uncalculated mass of material,—is its first condition of success, and both space and cost are almost always against its modern use. The revived Early English was not altogether a success, and the style which was in vogue in the middle of the fourteenth century has, on the whole, been the favourite with the revivalists. The later "Perpendicular" has had and has still its votaries, and there are even those nowadays who fasten with satisfaction on the accidents of an effete and moribund style of a still later date, the mere decay and putrefaction of what was once a living art.

But is it too late to "try back"? Perhaps not. At any rate, it will not be without interest if we examine the claims of this "Transition" manner for modern uses.

One necessity of modern building appears to be the lintel or beam. This feature, which is generally thought to differentiate the Classic and the Gothic systems, is really at the bottom of all the controversies as to the respective suitability of each. The various economies which condition modern building, and especially the dominating economy of space, compel us often to use the lintel and to reject the arch. But the "Transition" architects frankly and freely used the lintel whenever they found its use desirable or expedient. Moyse's Hall, at Bury St. Edmunds, is a case in point. The square-headed windows there have quite a modern look, and it is only after a close examination that one is compelled to admit that they are part of the original structure. The many old fireplaces still extant with horizontal heads show how artfully they were constructed of small stones, and how entirely the form which was considered the desirable one was accepted as the ruling condition to which all other considerations gave place. By turning an arch over the lintel (instead of under it, as in the Renaissance work) and enriching the tympanum, both the artistic and constructive re-

quirements are consulted. The lintel is relieved from weight and the sculptnre is protected from the weather. The use of the lintel is therefore no bar to the adoption of the style suggested.

Again, the cry is nowadays for more light. The subdivision of window openings by mullions and tracery has always been a stumbling-block in the way of the revival of Gothic architecture for any but ecclesiastical purposes. The difficulties connected with the subject have not been entirely got over at the new Courts of Justice; and the shutters and blinds, and the rest of the modern appliances which it is useless to attempt to avoid, have tried the skill and ingenuity of its architect; and sometimes have been too much for him. But the ample, undivided, window-openings of the "Transition" are in effect the windows of the Renaissance. Romsey Abbey Church and St. Paul's Cathedral are, in this respect, alike, and ancient and modern art meet here upon common ground.

An incidental advantage which a reversion to the "Transition" manner would possess is the field offered for stained glass. It is an open question whether the mullioned and traceried windows of later styles have not done more harm than good to the art of the glass-painter by breaking up his work into formal strips and cutting across by dark bars of stone. The modern feeling for stained glass is certainly tending towards a compromise between the old archaic work and an easel picture, and the beautiful examples which such artists as Mr. Holliday and others provide will certainly confirm the taste for wide and uninterrupted window openings.

If, moreover, internal polychromatic decoration, in mosaic or otherwise, is to be a feature of the public buildings of the future, it is undeniable that the ample unimpeded surfaces which the early buildings provide leave the artist quite unfettered in the exercise of his art.

Another point in favour of the early work is the readiness with which it adapts itself to the employment of any and every material. There are styles which necessitate the use of freestone and involve an amount of skilled, and therefore costly, labour, which is a serious hindrance to the projects of the architect.

The Transition style is, however, completely suited to the humble and ubiquitous brick. The early builders selected small stones for their work, and the still smaller bricks would give a scale to the work which would enhance its native dignity, and add to its effect. Terra-cotta, which resists the atmosphere of our towns better than any stone, is pre-eminently adapted to the "Transition" ornamentation, and we have recently had conspicuous proofs of its successful use in work not widely dissimilar in style from that now advocated.

There is still another reason why it would be well to fall back upon this twelfth-century type; its "note" is just that self-restraint, that feeling of reserved power which is present in all great art,—the want of which is the bane of most of our modern work. There is just now an unwholesome tendency to run riot in the use of ornamental forms which have no beauty in themselves, and have no relevancy to the architecture which they vulgarise and encumber. The twelfth-century work can appropriate the highest reach of the sculptor's art; or it can content itself with the simplest surface diaper, or it can afford to dispense with both. But whether the adornment it uses be of the one class or of the other, it must be sternly limited to the conditions of the architectural scheme; and a study and reproduction of the spirit of the ancient examples would, if it had no other value, furnish that *discipline* which the works of the present age proclaim aloud to be everywhere sorely wanting.

Borough Surveyorship, Chesterfield.—A special meeting of the Chesterfield Town Council was held on the 31st ult. to consider the applications for the post of borough surveyor. There were sixty-eight applications, and it was eventually decided to select the following three local candidates to appear before the Council when the appointment is made:—Mr. Walter Stanton, architect, Chesterfield; Mr. G. Roper, jun., architect, Chesterfield; and Mr. F. D. Clark, surveyor to the Newbold Local Board, Chesterfield.

RURAL SANITARY AUTHORITIES AND THEIR BY-LAWS.*

THE Board of Guardians, who are appointed to act as the rural sanitary authority for the parishes contained in their union, are empowered by the Public Health Act of 1875, section 157, to make by-laws relating to new streets and buildings,

(*a*) With respect to the level, width, and construction of new streets;

(*b*) With respect to the structure of walls, foundations, roofs, and chimneys of new buildings, for securing stability and the prevention of fire, and for purposes of health;

(*c*) With respect to the sufficiency of the space about buildings to secure a free circulation of air, and with respect to the ventilation of buildings;

(*d*) With respect to the drainage of buildings, to water-closets, earth-closets, privies, ashpits, and cesspools in connexion with buildings, and to the closing of buildings, or parts of buildings unfit for human habitation, and to prohibition of their use for such habitation; and

(*e*) As to the giving of notices as to the deposit of plans and sections by persons intending to lay out streets or to construct buildings; as to the inspection by the sanitary authority; and as to the power of such authority to remove, alter, or pull down any work begun or done in contravention of such by-laws.

In order to assist the sanitary authorities in framing these regulations, the Local Government Board drew up a series of regulations, which are known as the Model By-laws,—not, I take it, on account of their absolute perfection, or that their authors thought them impossible of improvement,—but they were intended as a building code, from which certain sections could be taken and adapted to suit the requirements of particular localities.

In a circular letter addressed to sanitary authorities by the Local Government Board, dated 25th July, 1877, which was sent with a copy of the Model By-laws, several interesting explanations were given, as follow:—

"It will be seen that the model series contain no by-laws specifying provision for the sewerage of new streets, and the reason for this is that the conditions which such by-laws must satisfy are to so great an extent dependent upon the varying circumstances of different localities. The Board do not anticipate that inconvenience will result from the absence of satisfactory by-laws with respect to sewerage, for it may be doubted whether any powers which, under such by-laws, may be lawfully assumed by sanitary authorities will, as regards extent and efficacy, compare with powers which they derive from the express provisions of the Public Health Act.

Frequent applications have been made to the Board for confirmation of a by-law prescribing a minimum height for habitable rooms, and it has been sought to justify such a provision as being a by-law with respect to ventilation, and being authorised by section 157 (3) of the Public Health Act, 1875.

The form of by-law generally proposed has been regarded as open to objection upon several grounds, and the important question as to whether the requirement of a minimum height for habitable rooms can be enforced by means of a by-law with respect to ventilation under the enactment above mentioned suggests so many serious considerations that the Board have decided to submit a case for the opinion of the law officers of the Crown upon the numerous points which have been raised in connexion with the suggested by-law."

The opinion of Sir Henry James and Sir Farrer Herschell, given in the tenth annual report of the Local Government Board, was that an urban sanitary authority has no general power under the 157th section of the Public Health Act, 1875, to make by-laws regulating the height of rooms for the purpose of thereby securing improved ventilation. There may, however, be cases where reasonable regulations made with reference to the mode of ventilation would necessitate the rooms being of a certain height.

Taking the by-laws in the order in which they are given above, I propose to briefly glance at the heads of the various sections, and as I presume most of the gentlemen present are well acquainted with the by-laws, you will be able to follow me. In reference to the interpretation of terms, the definition of party-wall as "a wall forming part of a building, and being used or constructed to be used in any part of the height or length of such wall for separation of adjoining buildings belonging to different owners, or occupied, or constructed, or adapted to be occupied by different persons," has given rise to several discussions, as probably in its strict application it would require several of the internal walls of a house to be treated as party-walls. It would be interesting to know what regulations would govern the alteration of party-walls, as, of course, the rules used in the metropolis have no force in sanitary authority districts. The clear definition of a topmost story makes the thickness of walls greater than under the Metropolitan Act.

The list of exempt buildings includes Government buildings. Railway buildings and canal buildings, when built for the purposes of the business of the companies, are exempt, but their dwelling-houses are, of course, subject to the operations of the by-laws.

With respect to the construction of new streets, it will be seen that the by-laws do not interfere with the construction of *culs-de-sac*, but in other respects the regulations are very carefully drawn to prevent the formation of narrow alleys.

Section 53, which requires a sufficiency of space in front of a building of not less than 24 ft., also assists in keeping the villages from becoming overcrowded. With respect to the structure of walls, &c., it is required, under section 9, that all filth shall be removed from foundations; and under section 10, that the site shall be covered with concrete at least 6 in. thick. There have been a great many objections raised to this section as unnecessary on some soils, but I think that it is now generally agreed that, as all soils are more or less pervious, it is a good section to insist on in all cases.

A very useful section has been added to the above, requiring the site of a building which has been previously excavated as a clay-pit, or for other materials, to be raised with suitable material to form a stable and healthy substratum.

The regulation with regard to the construction of walls would, perhaps, be better if the proportion of lime to sand were given for the mortar. Two sections have been added for hollow walls, which require the upper side of all woodwork which may project into the cavity, to be protected with lead or other suitable material; and a section for half timber walls, which requires the space between the timber to be filled in with brickwork, and a thickness of at least 4½ in. of brickwork shall be placed at the back of every portion of timber.

The party-walls of half timber houses must be constructed in accordance with the requirements of the by-laws, and project at least 1 in. in front of any timber framing in any adjoining external wall. I do not recollect ever having seen this carried out in the charming designs that are exhibited at the *conversazione*, and in several other points I have noticed a lofty disregard for Building Acts and By-laws. As the By-laws are being rapidly adopted all over England,—in a short time I have little doubt that they will be almost universal,—it would be as well, I think, if the various requirements were borne in mind when the designs are being worked out. I may be met by the objection that there were no restrictions with regard to building in the best periods of architecture, and that they hamper design and limit experiments. It is a great drawback, doubtless, that our canon of taste is a reference to work carried out under such different conditions.

The 13th section, requiring walls to be true and plumb, does not, as some have supposed, prevent the construction of projections: it is simply intended to apply to careless workmanship.

With regard to section 17, regulating the position of the damp-course, viz., "6 in. above the surface of the ground adjoining such wall and beneath the level of the lowest timbers," a proviso has been added requiring the walls of basements to be built hollow, with 2½ in. cavity, and carried up 6 in. above the surface of the ground, and two damp-courses, one at the base and one of the top of the hollow wall. In the case of shops, where the floors require to be nearly on a level with the ground, a small dry area, 6 in. below the level of the damp-course, can be formed to meet this section.

Section 18. The height of a story is measured

* From a paper by Mr. H. D. Appleton, read before the Architectural Association on the 1st inst.

from the upper surface of the floor of the story to the upper surface of the floor above; this is a point that is often overlooked, as most people think the height of a story is the height of the room; it will be seen that a room enclosed with 9 in. walls cannot be 10 ft. high; it also affects the construction of the walls, as the sets-off have to be made at the top of the joists, not under the plate, as is usually done.

Sections 19 and 20 regulate the thicknesses of walls, and they all run a little thicker than in the Metropolitan Building Act, owing to the definition of a topmost story, and a regulation that a 9-in. wall does not comprise more than two stories.

Section 22 applies to other building material than brick.

Section 23 regulates openings in external walls in the case of corner shops without a pier at the angle; the distance of the piers must be within 3 ft. of the corner or angle of the street.

Section 24 requires all woodwork to be set in reveals 4½ in. from the face of the wall, except shop-fronts, loophole framing, or, of course, houses built of half timber, in accordance with the by-laws.

Section 25 requires parapets to external walls when the walls are within 15 ft. This is sometimes modified by allowing buildings under 30 ft. to be exempt from this by-law.

Section 26, requiring parapets to all party-walls, is sometimes modified in the case of small dwelling-houses under 30 ft. in height by allowing the party-wall to finish under the tiles or slates of the roof, the tiles or slates being bedded on the wall in mortar or cement, and no lath, timber, or woodwork extending across any part of such wall.

This proviso, no doubt, is a source of great comfort to our artistic friends, who lament most bitterly when they are obliged to cut up their effective roofs with parapet walls, sometimes intersecting gables in a most interesting manner.

Sections 27 to 34 relate to the construction of walls, parapets, recesses, and bond timber in walls, templates, and bearing of girders.

Section 35 requires the open spaces inside partitions or between the joists to be filled up with brickwork. This is to prevent the rapid spread of fire.

Sections 36 to 51 relate to chimneys. Amongst other regulations they require every copper flue to be 4½ in. thick. This is a deadly blow at one of the favourite pieces of construction of our friend the speculating builder.

Section 52 requires all roofs, &c., to be covered with incombustible materials. This prohibits the use of thatch.

Section 52A provides that all eaves shall have gutters and stack-pipes.

The regulations with respect to the sufficiency of the space about buildings to secure a free circulation of air, and with respect to the ventilation of buildings.

I have already alluded to the section requiring a space of not less than 24 ft. in width throughout the whole line of frontage. This space must never be affected by subsequent alterations; the only buildings allowed are porticos or fence walls not exceeding 7 ft. in height.

Section 54 regulates the space in the rear of the house, which is governed by the height of the building, not the number of stories, and this space must extend laterally throughout the entire width of the building. The minimum distance of 10 ft. for this space affects the regulation for the construction of a privy, which, through the section, cannot be more than 6 ft. from the house.

Section 55 provides that a sufficient number of windows shall be made opening on to these air-spaces; and section 57 requires all windows to be at least one-tenth of the floor area of the room, and so made that one-half may be opened, and such opening must extend in every case to the top of the window.

Section 58 requires an air-shaft of an area of 100 square inches in all rooms without chimneys.

These regulations are well worth the careful consideration of the members of the Classes of Design, as it is on these points that I have often noticed their designs could not be carried out under the By-Laws.

Section 59 is as follows:—Every person who shall erect a new public building shall cause such building to be provided with "adequate means of ventilation." This throws a dreadful responsibility on the sanitary authority. Fancy a body of gentlemen not specially trained being suddenly called on to decide the nice question of what constitutes adequate means of ventilation for a public building!

With respect to the drainage of buildings, section 60 requires a subsoil drain to be laid in when necessary, such drain to be provided with a properly-ventilated trap before being connected with the soil drain.

Section 61 regulates the level of basements, requiring them to be at a level above the sewer, so as to allow of their being properly drained. This section is rather difficult to carry out when there is no sewer, as it entails the construction of the cesspool at such a depth that it is very expensive and difficult to empty.

Section 62, regulating the construction of drains, is very important, and it may be noticed that the diameter of the soil drain is to be not less than 4 in., small drains being just now in fashion. The bed of concrete required for the drains is to prevent their sinking when the ground above is rammed in.

Section 63, requiring a trap in the drain within the curtilage of the building and as close to the sewer as possible, has to be slightly modified when the house is built on the edge of the path, as, in order to ventilate the drain on the house side of the trap, the trap must be laid under the path.

Section 64 requires all junctions to be Y-junctions.

Section 65 contains an elaborate description of two methods of ventilating the drains, to which some objections have been taken, the difference between the two methods being whether the inlet-shaft is placed near the sewer or at the other extremity of the drain. The principle of the section is that all drains must have two untrapped openings, at least; one to act as an inlet and the other as an outlet shaft. The outlet shaft is to be not less than 4 in. in diameter, and a continuation of the soil-pipe is allowed. It is very undesirable to allow rain-water pipes to be used as outlet-shafts, as the gas is blown under the slates and into the houses.

In section 66, the construction of the soil-pipe is carefully laid down, also waste-pipes and slop-sinks.

Section 67 regulates the position of water-closets. It is required that one of its sides shall be an external wall. This is necessary in order to comply with the following section, which requires all water-closets to have a window opening in an external wall not less than 2 ft. by 1 ft., and, in addition, an air-brick, to ensure movement in the air.

Section 69 regulates the water supply to closets and the form of the apparatus.

Sections 70 to 79 deal with the construction of earth closets and privies in a most exhaustive way.

Sections 80 to 85 deal with the construction of ash-pits.

Sections 86 to 89 deal with the construction and position of cesspools.

In sanitary authorities' districts these clauses are always very much discussed, as the minimum distance of 50 ft. from a dwelling-house or place in which any person may be employed is very often very difficult to get. It is curious that though the section prohibits the construction of a cesspool within 50 ft. of a dwelling-house, it does not prevent the erection of a dwelling-house within 50 ft. of a cesspool.

The construction of water-tight cesspools is insisted on in section 89.

In respect to the closing of buildings unfit for habitation, which have been erected after a certain date, section 90 gives the sanitary authority power to close them.

With regard to the vexed question of giving notices and depositing plans of proposed new roads and houses, this, I believe, is looked upon by many as a very vexatious requirement; at the same time, there are so many points which are regulated by these by-laws, and which without the plans it would be so difficult to trace, that the trifling expense of providing an extra set of tracings is very little to complain of. The sanitary authority are, by section 158, obliged to signify their approval or otherwise of the intended work within one month after the notice, but they cannot compel the builder to wait until they approve the plans before commencing building; but, of course, in the event of the buildings not being in accordance with the requirements of the by-laws the builder must alter them.

THE ARCHITECTURAL ASSOCIATION.

THE concluding ordinary meeting of this Association for the present session was held on Friday, the 1st inst., Mr. E. G. Hayes, President, in the chair.

Three gentlemen were nominated for election as members, and a vote of thanks was accorded to Mr. Goymour Cuthbert for conducting a party of the members over the new Royal Courts of Justice Chambers, as mentioned in our last.

The Association Travelling Studentship.

The following report of the judges in this competition was read:—

To the Committee of the Architectural Association.

Gentlemen,—In accordance with your instructions, we have carefully examined the five sets of drawings submitted in competition for the Architectural Association Travelling Studentship, and have much pleasure in stating that the whole of the work sent in is highly satisfactory. The care and skill exhibited in the execution of the drawings testify to the great value of the studentship as a means of inducing the members to study old work, and thus qualify themselves for other and more important contests at the Royal Academy and the Institute. As we have no hesitation in saying that any one of the five sets of drawings is worthy of the Studentship, our task of selection was not an easy one. We are, however, unanimously of opinion that the Studentship should be awarded to Mr. J. Gibbons Sankey, whose work is highly meritorious, especially in the freehand drawings, which exhibit a great amount of feeling for old work. We would recommend that the second prize of 5*l.* be given to Mr. G. G. Wallace, and that "Honourable Mention" be awarded to Mr. G. G. Woodward.

R. PHENE SPIERS.
ASTON WEBB.
May 26. RICHARD C. PAGE.

Election of Officers for Session 1883-4.

Messrs. Jones and Whichcord (jun.) were appointed scrutineers of the voting-papers, and on their return later in the evening they reported the result to the chairman, who announced that the following gentlemen had been elected, viz.:—

President.—Mr. Cole A. Adams.
Vice-Presidents.—Messrs. H. H. Staunus and F. E. Eales.
Committee.—Messrs. F. T. Baggallay, A. J. Gale, T. Garratt, J. A. Gotch, F. Hemings, H. G. Turner, E. B. l'Anson, C. R. Pink, H. W. Pratt, and V. Trubshawe.
Treasurer.—Mr. J. Douglass Mathews.
Assistant Treasurer. Mr. A. Conder.
Secretaries.—Messrs. W. H. Atkin Berry and H. D. Appleton.
Librarian.—Mr. R. L. Cox.
Assistant-Librarians.—Messrs. W. Burrell and J. C. Carter.
Solicitor.—Mr. Francis Truefitt.
Auditors.—Messrs. W. F. Huxley and G. A. Pryce Cuxson.
Registrar.—Mr. Thomas H. Watson.

Mr. H. D. Appleton read a paper on "Rural Sanitary Authorities and their By-Laws," the substance of which we print.

In the discussion which followed, the Chairman, and Messrs. Gotch, Farrow, Berry, and other members took part. Reference was made to what were stigmatised as the unfair efforts made by some surveyors to local authorities to get commissions to erect buildings entrusted to them on the plea that "*their* plans were sure to pass the Board," it being insinuated that the plans of private practitioners were not likely to do so without much trouble and delay. It was further alleged that the real reason why some local authorities were so exacting in the matter of requiring complete sets of drawings or tracings was that the surveyors to those bodies desired to appropriate the ideas of the architects, in order that they might the more successfully get all the work of the place in their own hands. The arguments *pro* and *con.* for a system of building by-laws applicable to the whole country were referred to, the balance of opinion apparently being that such a general code would be impracticable, in consequence of local differences as to materials, &c. Some sad instances of ignorance, if not of criminality, on the part of country builders were referred to. In one case mentioned as coming within the experience of the speaker, a cesspool which had been specified to be built of brick and cement and rendered with cement internally, so as to be watertight, was opportunely visited by the architect or the owner, who found that the intended cesspool had been built "dry," *i.e.*,—merely lined with bricks without the use of any cement or mortar whatever. The work was

being rapidly arched over at the time of the visit, and in reply to a question put to him as to whether the surveyor to the Local Board had seen it, the builder replied, with a naïveté which would be amusing were it not suggestive of painful misgivings as to the construction of other cesspools, "*Oh no; we didn't mean him to!*" Mr. Atkin Berry observed that no apology was necessary for bringing the important subject dealt with by the paper before the Association; nay, it was very bad policy for young architects to affect to despise and ignore the subject of sanitation, especially so far as it related to buildings and their details. Those who hoped to succeed as architects could not too soon give their attention to the principles of house sanitation. It would be far better to acquire some knowledge of the subject before entering upon practice than to have to acquire such knowledge by costly and painful failures after they had commenced practice. Mr. Appleton, in replying on the discussion, referred the members for further information on the subject to a useful book called "Annotated Model By-Laws," published by Messrs. Knight.

Mr. Stannus, in moving a vote of thanks to Mr. Hayes, the retiring president, spoke of the business capacity, courtesy, and impartiality he had shown in conducting the business of the Association during the past year. His business capacity was necessarily largely displayed in committee, but his courtesy was known to all; while his impartiality was illustrated during discussions by the even-handed balance which he held between the most rabid Goth on the one hand, and the most licentious Classicists on the other.

The motion was carried by acclamation, and votes of thanks were accorded to Messrs. Eales and Berry, the secretaries, and to Mr. Hampden Pratt, the librarian.

It was announced that the annual dinner of the Association will be held at the Holborn Restaurant on the 22nd inst., and that the fourteenth annual excursion has been fixed to take place from the 13th to the 18th of August, the neighbourhood to be visited being South Somersetshire, with Yeovil as head-quarters.

SALE OF BUILDING SITES FOR ARTISANS' DWELLINGS.

LAST week eight freehold building sites for artisans' dwellings were offered for sale at the Auction Mart, by order of the Metropolitan Board of Works, who had from time to time purchased the several sites under the provisions of the Artisans' and Labourers' Dwellings Improvement Acts. The sites offered contained together an area of upwards of six acres. Two of the sites are in Marylebone, near the Edgware-road railway station of the Metropolitan Company; five sites are in Essex-road, Islington; and the remaining site is in Whitechapel. There was a very numerous attendance at the sale. The first site submitted comprised an area of 38,769 superficial feet, approached from the Edgware-road, and having three frontages, one of the frontages being 284 ft. in length, on the north side of a new street intended to be formed by the Metropolitan Board; whilst the two other frontages were stated to be respectively 131 ft. and 190 ft. in length. Mr. Reid, the auctioneer, in submitting the site, observed that it had cost the Metropolitan Board 20,000*l.*, or nearly 10*s.* a foot. Having adverted to the constantly increasing value of land in the neighbourhood for building purposes, he invited bids, when 3,000*l.* were offered, and 7,200*l.* having been reached, he observed that if there was no further advance the site would have to be withdrawn, and no higher sum having been bidden, the site was withdrawn accordingly. The next site offered, adjoining the last-named, contained 10,915 ft., having two frontages of 179 ft. and 57 ft. in length. The cost to the Metropolitan Board was stated to have been about 6,000*l.* There was an active competition for this site, which was sold for 3,000*l.*, one of the conditions being that the purchaser is to expend not less than 7,000*l.* in the erection of dwelling-houses or lodging-houses. The sites in Essex-road, Islington, were next offered in succession, the first site submitted containing 20,946 ft., having a frontage of 321 ft. on the north side of Dibdin-street, which the Board intend to widen to 30 ft. The site was sold for 1,550*l.*, the sum of 12,000*l.* to be expended in the erection of dwellings. A site in Essex-road, immediately opposite the preceding site, and containing 23,800 ft., having three frontages of 324 ft., 304 ft., and 47 ft., was next offered and sold for 1,800*l.*, 14,000*l.* to be spent on buildings. An adjoining site, containing 43,049 ft., with two frontages of 323 ft. and 174 ft., was withdrawn at 3,200*l.*; as also were the two adjoining sites next offered, one of which containing an area of 49,832 ft., withdrawn at 3,700*l.*; and the other, containing 38,800 ft., withdrawn at 2,850*l.* The last site offered contained an area of 42,417 ft. in Goulston-street, Whitechapel High-street, with two frontages of 486 ft. and 147 ft. The auctioneer announced that this site cost the Metropolitan Board of Works 55,000*l.* The The highest offer being 9,450*l.*, the lot was withdrawn. The aggregate proceeds of the sites sold amounted to 6,350*l.*

COLOGNE CATHEDRAL.

ARRANGEMENTS have lately been carried out for obviating danger from lightning as fully as possible. In addition to the lightning-conductors placed last year upon the summits of the towers, the roof and the ridge-turret have now been provided with three communications. The connexion of the four lightning-conductors has also been arranged.

In order to diminish risk from fire, the temporary wooden galleries used in the middle aisle for purposes of communication have been removed. They are replaced by massive passages which will allow of fire-extinguishing appliances being used in case of a conflagration taking place in the roof.

The Tyrol Stained-glass Works at Innspruck have been occupied in preparing the windows for the lower portion of the western towers. The placing in position of the windows in the southern tower is (according to the *Cologne Gazette*) now being proceeded with, while in the northern tower there only have been executed the two western windows. It is intended to complete the two northern windows within a year from now.

The final removal of the building works, offices, &c., in the neighbourhood of the cathedral is now taking place.

WOOD-STONE.

THE manufacture of this new building material is assuming considerable dimensions in the United States. It differs from brick made of ordinary clay by not being brittle and hard, but porous, and by wearing out the tools employed in cutting or shaping it very little more than wood. It is produced in large blocks, which are cut up according to what is necessary or desired. The method of producing the material is very simple. One part of kaolin clay is mixed with from one to three parts of shavings, and the mixture reduced to a sort of pulp. On becoming solid this is cut into blocks or plates, which, when dry, are put into stoves heated to white heat, by which the shavings are burned up leaving behind a more or less porous material. Wood-stone is fireproof, and is only half the weight of ordinary brick, while it can be worked with the same ease as wood. It is found particularly valuable for party walls, vaults, and so forth.

THE POLYTECHNIC HIGH-SCHOOL, CHARLOTTENBURG.

ON the busy road leading from Berlin to Charlottenburg, near the boundary of the two towns, but within that of the latter, there has been in course of construction during the last four years an immense edifice,—the buildings intended for the Polytechnic High-school. Its size is of such large proportions, exceeding considerably the square of the Berlin castle, that it has been humorously called Technicumpolis. In 1876 the Prussian Government and Parliament finally resolved to develop the old Bauakademie into a technical high-school by enlarging its scope of teaching, and, at the same time, to erect a new building, the former old building academy, a work of Schinkel's, being too small for the purpose. In order to carry out the undertaking in the most suitable manner, Geheimrath Stüve and Professor Lucae made a journey of inspection to the polytechnic high-schools of Germany, Austria, and Switzerland, after the completion of which Professor Lucae was instructed to draw up a plan of reorganisation and a design for a new building. At the same time, a site near the Hippodrome at Charlottenburg was selected as the most suitable. Naturally, the question of site,—as with all public buildings of Berlin,—had caused much disturbance of mind and delayed the work.

Meanwhile, Professor Lucae had died, and Baurath Hitzig had been charged with completing the plans. In his hands, the form of the façade was considerably altered, the axes of the wings and centre portion having been lengthened; but by this change the dimensions could be increased. In the fall of 1879, building operations were commenced, and completed two years later, as far as the walls were concerned. Part of the edifice is now finished, and will receive shortly the Berlin Art Exhibition, for which the provisional building in the Cantianplatz was found to be too dangerous, and in the autumn of this year the edifice will be given over to its intended use as a technical high-school. That academy will consist, under the direction of a rector and a pro-rector, of five sections,—for architecture, civil engineering, mechanical engineering, naval architecture, chemistry, and mining. It was originally intended to unite the Prussian Mining Academy (Bergakademie) with the High School; but this intention has been abandoned, a separate building having been erected for the Academy in the Invalidenstrasse.

The new edifice of the Polytechnicum (of which we give a view in this week's *Builder*) consists of a centre portion and two wings, that to the left being intended for architecture, that to the right for engineering, the middle portion containing the aula, library, and offices. The total length of the building is 948 ft.; its depth, 299 ft.; its height, 85 ft. The façade has been used by the architect, Baurath Hitzig, to show his skill in using Renaissance forms, a treatment improved by a judicious employment of carving and sculpture. The wings contain, in medallions placed in the projectures, the emblems of the sciences to the teaching of which they are devoted, niches being provided over them for receiving the statues of eminent architects and engineers. The centre portion of the building is flanked by two risalites, in which Corinthian columns run through the two upper stories. On the ground-floor are three large portals, and on each side open windows with breastwork, upon which will be placed busts of eminent men. But the principal adornment of the centre building are eighteen figures representing various handicrafts, placed on pedestals over the axis of the columns in the high attic story over the principal moulding. They have been executed by well-known Berlin sculptors.

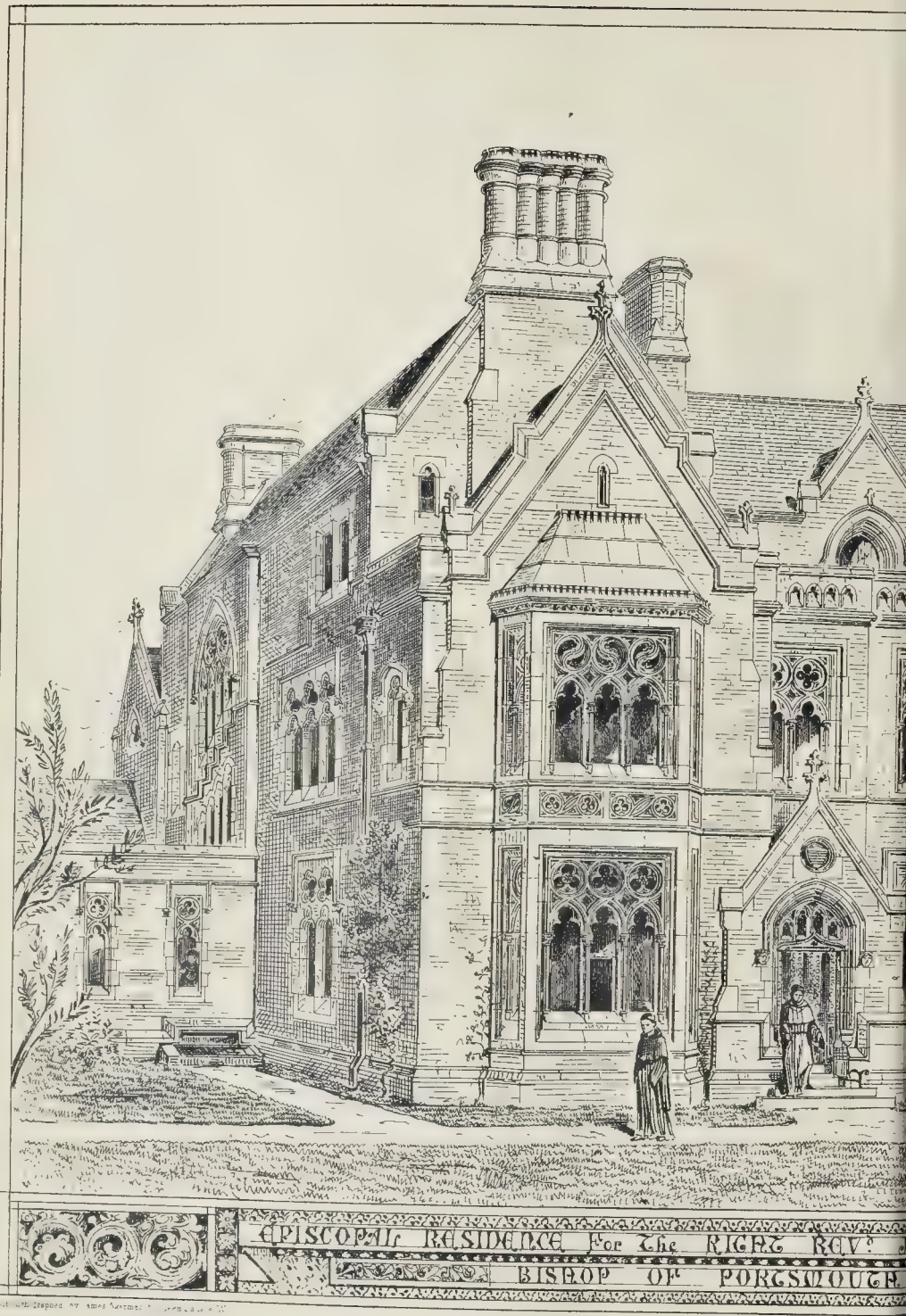
The new Polytechnicum is one of the chief ornaments of Berlin, but suffers from one defect. It is designed on much too large a plan, a mistake made in the case of many other new buildings of the capital. When the project of the edifice was under consideration, the building and trade academy numbered 1,600 students, and it was anticipated that this number would increase rather than decrease. Owing, however, principally to the overcrowding of the technical professions, the latter has actually taken place, and it will thus be some time before the advantages here placed at the disposal of the young architect and engineer will be fully utilised.

No. 193, FLEET-STREET.

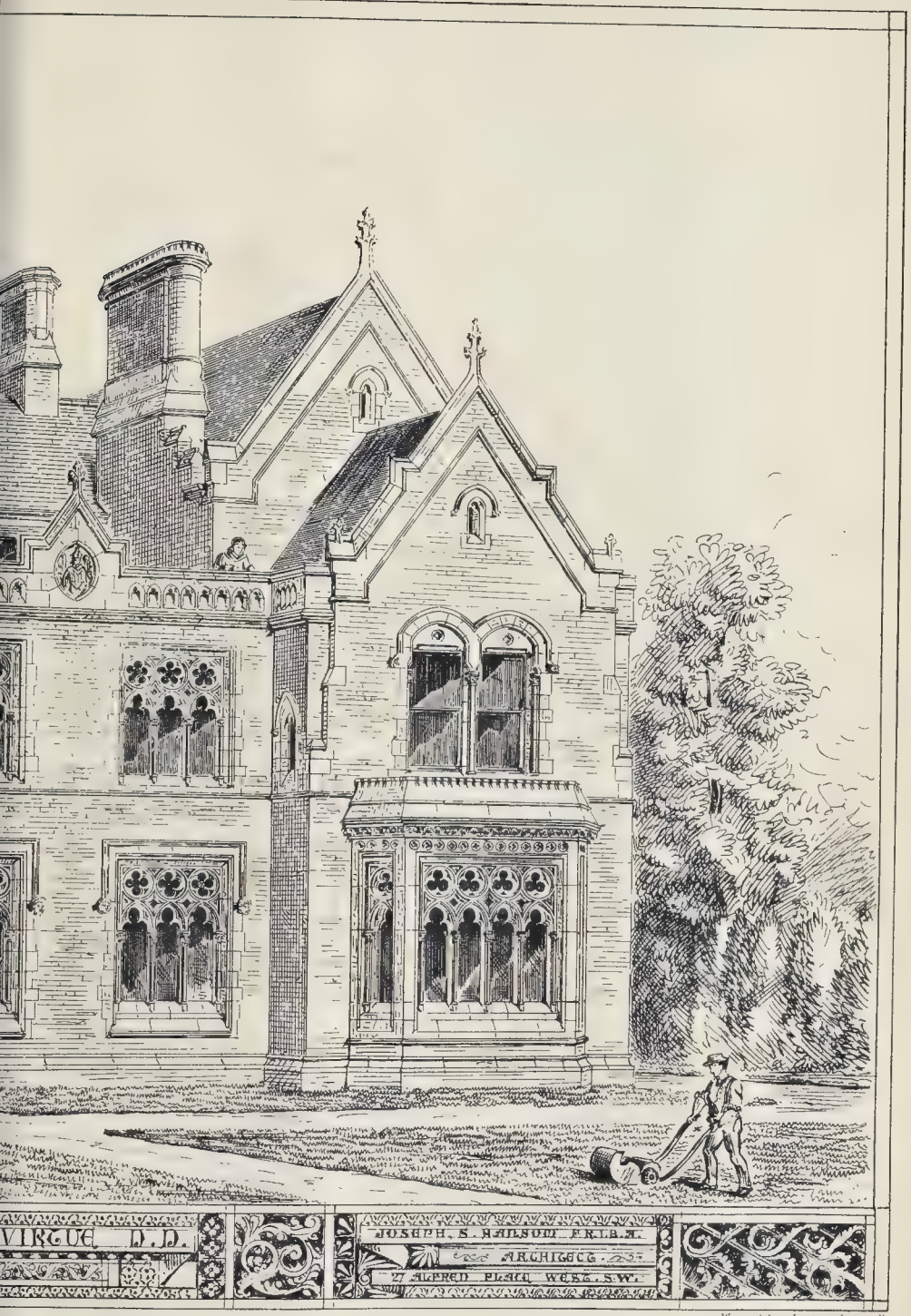
THE new building, which we this week illustrate, will form the south-west angle of Chancery-lane, the site of the old building well known for so many years as the premises of Mr. George Attenborough, jeweller and pawnbroker, having been set back to the present line for the purpose of widening Fleet-street at that point.

The fronts are of red Corsehill stone and red granite, the caps, fillings to tympanum, &c., being of bronze.

The granite work, architectural sculpture, and carving are being executed by Mr. Houghton, of Great Portland-street; the plumbing and sanitary work by Messrs. Beard, Dent, & Hellyer; the gas work and bells by Messrs. Freeman, of Swallow-street, Piccadilly; the pavement and other lights by Messrs. Hyatt; the ornamental iron-work by Messrs. G. B. Cooper, of Drury-lane; and the whole of the building works by Messrs. Bywaters, of King-street, Regent-street, under the superintendence and from the designs of Messrs. Archer & Green, architects, of 19, Buckingham-street, Adelphi.



EPISCOPAL RESIDENCE For the RIGHT REV.
BISHOP OF PORTSMOUTH



VIRGUE D.J.

JOSEPH S. HANSOM F.R.I.B.A.
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POLYTECHNIC HIGH-SCHOOL, CHARLOTTENBURG, NEA



IN.—Professor Lucae and Baurath Hitzig, Architects.





Whiteman & Bass *Photo-Litho* 236 High Holborn

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LONDON STREET ARCHITECTURE: No. 193, FLEET STREET.—Messrs. Archer & Green, Architects.

NEW (R. C.) EPISCOPAL RESIDENCE, PORTSMOUTH.

THE Rev. Dr. Virtue was lately the Senior Roman Catholic Chaplain of the Army, and resigned his rank on being appointed to the new R. C. Bishopric of Portsmouth. Entering on his new duties, Dr. Virtue found himself with five bays of a fine church, from designs by the late Mr. J. Crawley (with two temporary ends) to form his cathedral.*

It would have been a great undertaking to complete the church in character with the part erected, and the Bishop further found himself without a house to live in, or accommodation for the priests who had to labour in the section of the cathedral. Efficient accommodation was therefore to be provided, and it had to be done in a substantial manner and characteristic style, for the Bishop wished to throw away no money on temporary work, but rather to hand down to his successors a building of which the new diocese should be proud. He consequently instructed Mr. Joseph Stanislaus Hansom, architect, of 27, Alfred-place West, South Kensington, who had added the late Mr. Crawley's business to his own, to prepare plans for a proper Episcopal House, with accommodation for six priests, and some spare rooms. An engraving in our present number shows a view of the building.

Besides the Bishop's private chapel, 16 ft. by 12 ft., reception-room, 30 ft. by 18 ft., sitting-room, 16 ft. by 12 ft. exclusive of a spacious bay, and bed-room, 16 ft. by 12 ft., the house contains sitting and bed rooms, communicating, but detached, for four priests, and single rooms for five priests or visitors, where recesses are provided for beds, otherwise cubicles. Beyond this, three bedrooms for servants are provided over the kitchen quarters, and separated from the main buildings.

The general household accommodation comprises library, 29 ft. by 16 ft.; common hall, 26 ft. by 16 ft.; and dining-room, 24 ft. by 16 ft. Beyond these there are two reception-rooms for visitors, business rooms for the vicar-general (16 ft. by 12 ft.) and secretary (18 ft. by 11 ft.), who has also a fireproof room, 11 ft. by 7 ft., adjoining, for the deposit of muniments and archives.

The kitchen quarters are perhaps somewhat small for such an important edifice, but they are conveniently arranged, so that the servants can at the least notice cross the corridor (72 ft. long by 8 ft. wide) to the entrance without interfering with the other inmates of the house.

All the rooms are to be fitted with Sheringham's inlet and Boyle's outlet mica flap ventilators. None of the drains are admitted under the house, but where obliged to pass under future erections well-ventilated subways are provided.

Electric bells are to be fitted throughout, and speaking-tubes arranged from the bishop's apartments to the vicar-general's and secretary's rooms.

The more important rooms are to be fitted with Abbotsford grates, and the others with Barnard, Bishop, & Barnard's slow-combustion grates. The chimneypieces are to be panelled in style with the house, in Corsham Down stone. There are bath-rooms on both the chamber-floors, and a linen-room on the upper one.

The stairs and corridors on all the floors are fireproof in construction. The sashes are to be of teak, and glazed with plate glass. The exposed woodwork generally is of pitch-pine varnished.

Externally, the walls, which are built hollow with a 3-in. cavity bonded with Jennings's bricks, are to be faced with dark Fareham red bricks, and the dressings are of Ham Hill stone, which is being supplied by Messrs. Staple & Hann. The roof is to be covered with brindled Broseley tiles, and the castings are Macfarlane's, treated with Professor Barff's process to prevent rust.

Over the front of the building in the front of our view is an asphalted concrete flat, 30 ft. by 19 ft., which overlooks the People's Park, and provides recreation space, which the present very restricted amount of land does not give opportunity for. Over the entrance-porch are the arms of Bishop Virtue (argent three bars vert), and in the gablet in front of the flat is a bust in alto relievo of St. Edmund, Archbishop of Canterbury, known as of Pontigny, where he was banished and died in the reign of Henry III.

The contractor is Mr. John Crook, of Southampton, the amount of the contract being 7,187*l.* Mr. E. H. Harrison is the clerk of works.

* Exterior and interior views of the church, as designed by Mr. Crawley, will be found in the *Builder* volume for 1879 (xxxvii., pp. 10 2-53).

THE SANITARY EXHIBITION AT KNIGHTSBRIDGE.

UNDER the auspices of the National Health Society an interesting and useful exhibition of hygienic dress and sanitary appliances has been arranged in Humphreys's Hall, Knightsbridge, opposite the cavalry barracks. The exhibition, which was opened on Saturday last by the Right Hon. the Lord Mayor and the Lady Mayoress, is intended, as far as possible within necessary limits of time and space, to illustrate the aims and objects of the National Health Society, which encourages and supports all practical efforts for carrying out the laws of health in daily life; and the collection, while exemplifying the many directions in which such efforts may still be usefully made, affords an instructive epitome of progress achieved. The results thus epitomised are some recompense for the labours of veteran sanitarians, but they will, it is to be hoped, stimulate many visitors to the exhibition to take a real interest in and to acquire a fair knowledge of the laws of health, not only for their own personal advantage, but for the sake of being able to intelligently co-operate with the National Health Society, the Parkes Museum of Hygiene, and other kindred institutions, in spreading a knowledge of hygienic laws amongst the masses of the people. And this, after all, as we have year after year pointed out, is a work the success of which will be to the advantage of every individual member of the community.

The exhibition is divided into seven classes, viz., Class I., Clothing; Class II., Food Products; Class III., The Sanitation of the House and Hygienic Decoration; Class IV., Appliances for the Sick Room, Home Nursing, and Home Education; Class V., Industrial Dwellings and Cottage Hygiene; Class VI., Heating, Lighting, and Cooking Apparatus, Fuel, and Appliances; and Class VII., Inventions by amateurs relating to any of the preceding classes of exhibits.

In *Class I., Clothing*, there is much to interest visitors in the way of "rational dress," including the "divided skirt," "hygienic boneless corsets," and "hygienic boots and shoes." We will not on this occasion attempt to describe these and kindred articles. We may, however, mention that among the articles of this class upon which male visitors to the exhibition are permitted to gaze, there is nothing ridiculous, and nothing very importantly suggestive. The "rational dress" movement, it has been cynically suggested, is likely sooner or later to develop into irrationality, but so long as its promoters refuse to be led by the caprices of fashion they seem to be tolerably safe from this pitfall, judging from the specimens of "rational" dress which are on view in the body of the hall. We make this reservation because we are unaware, by observation, of the contents of the "Ladies' Gallery," in which the greater number of the exhibits in Class I. are placed, and from which male visitors are jealously excluded. Stand No. 18, that of Messrs. Hamilton & Co. (in the body of the hall), contains, besides the "Harberton" dress, a number of useful and serviceable costumes, and some picturesque Albanian, Greek, and Eastern dresses. This stand has been decorated by Messrs. Liberty & Co., of Regent-street. The exhibition does not appear to contain many suggestions for "rational dress" for gentlemen, although there is certainly room for improvement in that branch of the subject.

Class II., Food Products, is well represented in the exhibition, but to describe the exhibits coming under this head, or even to give a detailed list of them, would take us somewhat beyond our province.

Class III., House Sanitation and Hygienic Decoration, contains a great many exhibits which come more immediately within our scope, but most of them are old acquaintances. Not that this is said by way of disparagement, for many of the appliances to which we are referring, and some of which we briefly mention hereafter, have stood their ground with buyers and users and crop up at successive exhibitions largely by virtue of their intrinsic merit. At Stand 34, Mr. Robert Adams, of Great Dover-street, exhibits his patent apparatus for opening fan-lights, &c., as well as his patent "Anti-Accident" reversible and sliding window-sashes. Messrs. C. Hindley & Sons (Stand 48), of Oxford-street, exhibit a room tastefully decorated and furnished by them, and exhibiting the use of non-arsenical paperhangings and Japanese leather-papers; the latter, being washable, constitute a wall-covering which is meritorious on sanitary as well as artistic grounds. At Stand No. 50, Messrs. Robert Boyle & Son, of Holborn-viaduct and Glasgow, exhibit their well-known ventilating appliances, which appear to be in increasing demand. Another ventilating appliance is the "ventilating ridge tile," exhibited by Messrs. Harcourt Thompson & Co., of Manchester, at Stand 54. The inventors propose to ventilate the various rooms in a house by carrying off the foul air through flues going up in the thickness of the walls and discharging through the ridge. At Stand 55, Messrs. Scott, Cuthbertson, & Co., of Chelsea, have an attractive display of paper-hangings, which are stated to be all hand-printed and non-arsenical. They are generally of good design. The Antiseptic Apparatus Manufacturing Company (Stand 44), of Queen Victoria-street, show their antiseptic water-waste preventers and flushing-tanks. At the next stand (45), Mr. O. D. Ward, of Upper Thames-street, shows Bean's improved water-waste-preventer and a useful hopper-closet of improved form. At Stand 56, Mr. G. Jennings, of Stangate, shows some of his well-known specialities in water-closets, lavatories, and urinals. The tip-up and lift-out lavatory basins, the patent "folding" lavatory, some concealed urinals, and a housemaid's slop-sink, are all worth the attention of visitors. At Stand 73, Messrs. Hayward Tyler & Co., of Upper Whitecross-street, exhibit their excellent full-flush valveless-closet, with improved siphon flushing-cistern. They also show a good selection of bath and lavatory fittings, and plumbers' brass-work generally. Mr. D. T. Bostel, of Brighton (Stand 74), shows his Brighton "Excelsior" wash-out closet, both in its original shape and in a modified form; also a night commode. At Stands 75, 76, Mr. Henry Conolly, of Hampstead-road, makes a good display of valve and other water-closets, together with some excellent lavatories and a variety of baths and bath-fittings. At Stand 57, the Sanitas Company, Limited, show their effective and not disagreeable disinfecting powders, fluids, and soaps. Another very good disinfectant is that shown in various forms by Jeyes's Sanitary Compounds Company, at Stand 58. Stand 59 is occupied by Moule's Patent Earth-closet Company, with their excellent appliances,—invaluable in many situations. Messrs. John Bolding & Sons (Stand 60), of South Molton-street, show some of their excellent water-closets, besides McGill's patent urinal, and a variety of baths, lavatories, and fittings. At Stand 63, the National Health Society displays its many useful publications, which every visitor will do well to look at. For a few pence a number of useful leaflets or tracts, containing practical rules and hints on such subjects as "How to keep Fever out of Houses," "How to keep Scarlet Fever from Spreading," &c., may be purchased. Such publications as these cannot be too widely disseminated. At Stand 64, Mr. P. A. Maignen exhibits his "Filtre Rapide." At the next stand (65) the Albissima Paint Company show their excellent products in a variety of forms. These paints are non-poisonous, and possess great covering power. This company's ready-mixed paints, done up in small or large tins, and fit for immediate use without the addition of thinnings or driers, are cheap, and likely to be much appreciated wherever they are used. At Stand 66, the Spongy Iron Filter Company, of New Oxford-street, are exhibitors of their speciality. Messrs. F. Crace Calvert & Co., of Manchester (Stand 67), are exhibitors of carbolic acid in its various applications to medicinal, surgical, disinfecting, and other purposes. Messrs. Houghton & Co., of Chelsea (Stand 68), are exhibitors of their registered "fat interceptor" for scullery sinks. These fat-traps are made in three sizes, in stoneware, and are easily cleansed. The same exhibitors' trap, with interceptor for solids, designed for stables, yards, &c., and their improved gully for sink and bath wastes, possess some good points. At Stand 69, Messrs. C.

Kite & Co., of Chalton-street, Euston-road, exhibit their inlet and outlet ventilators, and a model showing their action. We spoke favourably of them in our notice of the Building Exhibition two months ago. Glass revolving circular and sliding ventilators are shown by Messrs. H. W. Cooper & Co., Limited (Stand 70), of Upper George-street, Edgware-road. Messrs. W. Woollams & Co., of High-street, Marylebone (Stand 71), are exhibitors of some well-designed non-arsenical wall and ceiling papers. They also exhibit a case containing the various non-poisonous colours which they use in the manufacture of their papers, and which are suitable for decorative work in distemper. Messrs. Woollams deserve special recognition. At Stand 72, the Æolus Water-spray Ventilating Company show various forms of the Æolus ventilator. Stand 77 is occupied by Messrs. J. Purnell & Son, of Page-street, Westminster, who exhibit water-waste preventers and water-closets. At Stand 104, the North British Plumbing Company, of Upper Baker-street, show their improved system of house drainage by means of cast-iron pipes and connexions, as devised by Mr. W. D. Scott-Moncrieff, C.E. At this stand are also shown the "Moncrieff" bath-fittings, as introduced by Messrs. Ewart & Son, of Euston-road. Messrs. Jeffrey & Co., of Essex-road (Stand 105), display some very good non-arsenical wall-papers, hand and machine printed, frieze and dado decorations, embossed leather papers, lacquered gold papers, nursery papers, &c. At the next stand (106) Messrs. Howard & Sons, of Berners-street, show washable parquet flooring and wall-decorations. The Patent Victoria Stone Company (Stand 107) exhibit samples of their useful material as used for pavements, sinks, and other purposes. Messrs. Edgar Aldous & Son (Stand 108) exhibit their patent exhaust ventilators and their patent "ventiduct," for bringing in fresh air without dust. At Stand 109, Mr. Thomas P. Cook, of Hatton-garden, shows a combination cinder-bin and sifter. Mr. A. F. Angell (Stand 116), of Fulham-road, exhibits his air-tight covers for air-chambers and inspection pipes, &c., to drains, which have been illustrated in our advertisement columns. At Stand 117, Messrs. Morris & Co., of Oxford-street, have a very attractive display of wall papers printed with colours free from arsenic. One of these papers is of very rich design, the pattern being to a large scale. This paper (which, like everything else shown at this stall, is from the designs of Mr. William Morris) was specially designed for the grand staircase of St. James's Palace, recently decorated by the firm,—not in all respects very successfully, as it seems to us. The "Hammersmith" rugs and carpets, hand-made, are the fruits of an attempt which Mr. Morris set on foot three or four years ago, to make England independent of the East for the supply of hand-made carpets which may claim to be considered works of art. They are made, as we understand, in Mr. Morris's residence at Hammersmith, in order that he may the more effectually superintend the work. There are many other exhibits at this stand to interest the visitor.

Class IV., Appliances for the Sick Room, Home Nursing, Home Education, &c.—This is a very interesting and important section of the exhibition, but we need not stay to notice many of the multifarious appliances which it embraces. At Stand 19A, the North of England School Furnishing Company, of Darlington and Newcastle, exhibit Glendinning's patent adjustable "modern" desk, with Dr. Roth's seat. The desk and seat have much to recommend them, and are specially designed to prevent curvature of the spine and other deformities which too often accrue to young people through the use of badly-arranged desks and seats. Messrs. James Allen & Son, of Marylebone-lane, show at Stand 113 some portable Turkish hot-air and vapour bath apparatus. At Stand No. 2 in the small gallery devoted to the loan and amateur collections, we noticed a model of a bed-pan cage for storing utensils until visit of medical man. This cage is used at University College Hospital, and is fixed in the outer wall of the hospital, with three sides made of perforated metal open to the outer air, a solid door opening on the lobby of a water-closet or some other suitable position. At Stand No. 6 in this gallery the lady-superintendent of that excellent institution the Victoria Hospital for Children, Queen's-road, Chelsea, exhibits a cot with the model of a poor little patient ready to undergo tracheotomy. The screen used here is light and simple, the woven fabric being very quickly removed from the framework for cleansing. At Stand No. 9 (still in the small gallery) a model of the "Mayfair Dust-cellar" is shown by Mrs. Priestly; it contains two pails or receptacles for kitchen refuse, one of which is taken away full and returned empty every day.

Class V.—Industrial Dwellings and Cottage Hygiene.—We did not find many exhibits classed under this head, but, of course, many appliances suitable for industrial dwellings and the promotion of cottage hygiene are included in Classes III., IV., and VI. At Stand 43, Mr. C. Lumley, of Haymerle-road, Old Kent-road, shows a specimen of concrete fireproof floor. The only other exhibits under this head that we noticed were in the small gallery already referred to, where at Stand 1 Mrs. Buckton, of Ladbroke-square, and late of the Leeds School Board, exhibits a model of a back-to-back unsanitary dwelling, which is described as being an exact copy of a working man's house in Leeds (one of a block of twenty-four), built about fourteen years ago. This shows thirteen most glaring sanitary defects, which are mentioned in the catalogue and on a card affixed to the model. So much by way of bane. The antidote is supplied in the shape of a model of a sanitary dwelling,—one of a row of "through" houses, the sanitary arrangements of which are also tersely described in the catalogue and on the model. This dwelling is described as being constructed in accordance with the Leeds Building By-laws. It is noteworthy that the rent of this healthy dwelling is stated to be only 5s. 6d. per week as against 4s. 6d. for the unhealthy one. Among many other interesting items in Mrs. Buckton's loan collection is the syllabus of some simple lessons in the elements of sanitary science, as taught in some of the Leeds Board Schools.

In *Class VI., Heating, Lighting, and Cooking Apparatus* are well represented. Gas cooking and heating stoves are shown by Messrs. Beynon & Cox (Stand 78), of Torquay; Messrs. H. & C. Davis & Co., of Camberwell (Stand 82); the General Gas Heating and Lighting Apparatus Company (Stand 84); Messrs. B. Giles & Co., Blackheath (Stand 86), and some other exhibitors. At Stand 79, Dr. W. H. Stephenson, of Blackburn, exhibits his newly-invented portable gas-heated water-coils. Stand No. 80 is occupied by the Silber Light Company, of Whitecross-street, who show their patent gas-burners and patent oil stoves for cooking and heating purposes. At Stand 81, Messrs. Hayward Bros. & Eckstein, of Union-street, Borough, exhibit their semi-prism reflecting lens lights. These lights are not only admirably adapted for making basements available for many industrial occupations requiring daylight, but, by being used for basements where no work is carried on they may be made to serve an important sanitary purpose, for to throw light on dark corners is to prevent in many cases the accumulation of filth. The same exhibitors show some Sheringham inlet and Boyle's mica-flap outlet ventilators of improved construction. Stands 83 and 97 are occupied by the Coalbrookdale Company (Limited), who show, in conjunction with Mr. William Barton, of Boston, Lincolnshire, specimens of Richards & Barton's patent circular-fronted ranges, which possess many commendable points. A "Kyrle" grate; a patent "Save-all-waste" grate; Barton's patent "Premier" stove; the Milner nursery-grate, with wrought-iron boiler for heating bath-cistern; and Mr. W. Scott Morton's patent "Escoutille" grate, are among the other exhibits here shown. The last-named grate is, perhaps, the greatest novelty; it has coal-boxes or hoppers folding back into the sides of the grate, and is fitted into a patent expanding mantelpiece. At Stand 87 Messrs. Brown & Co., of Piccadilly, show their new lamps, with "Mitrailleuse" burners, for crystal oil. These burners give a very bright and smokeless flame. Stands 89 and 90 are held by Messrs. Brown & Green, of Finsbury-pavement and Luton, who show some smoke-consuming kitcheners and the "Kensington" register-grate. Their "Gem" and other cottage kitcheners are cheap, compact, and well-made. At Stand 91, Messrs. W. & S. Deurds, of Harlow, exhibit the "Wonder" stove, likewise known as the "Princess Louise Coil Grate," for heating one's greenhouse from one's own fireside. Stand 92 is that of the Eagle Range Company, Fleet-street, who exhibit their convertible open-and-close-fire ranges. Stand 93 is occupied by Messrs. Underhill & Co., of Upper Thames-street, who exhibit their "Eureka" slow-combustion tile-grate. At Stand 94, Messrs. Potter & Sons, of Oxford-street, exhibit Mr. Saxon Snell's patent "Thermhydric" ventilating hot-water open fire-grate, which we have noticed on previous occasions. Mr. T. J. Constantine, of Fleet-street, shows his "Treasure" cooking-ranges and warming-stoves.

With regard to Class VII., we need only say that the exhibits by amateurs appear to be chiefly contributed to the Ladies' Gallery, to which we have before referred.

From the foregoing sketch it will be evident that the exhibition is well worthy of a visit. A varied and comprehensive programme of lectures is in course of delivery at the rate of two lectures per day.

THE ORIGIN AND DEVELOPMENT OF THE SCIENCE OF HYGIENE.

THIS was the subject of the inaugural lecture of the Parkes Museum of Hygiene, delivered on the 1st inst. by Dr. de Chaumont, F.R.S., Professor of Hygiene in the Army Medical School, Netley.

The lecturer commenced by observing that to trace the history of the search of the human race after health would be almost tantamount to writing the history of the race itself. An inquiry into early wanderings and gropings after health would be doubtfully useful, even if it were likely to be interesting, for it would bear to the hygiene of the present day something of the same relation that the visions of the astrologer bear to the astronomy of Newton. Perhaps some might object that this is claiming too much for our subject, and that even its title to be treated as a science may be questioned. But much the same objection might be made to Medicine, and perhaps even to other branches of knowledge which are conventionally included in the list of exact sciences. A careful examination, however, of the position which hygiene now holds will justify us in claiming that it has made such advances as may fairly entitle it to take its place among the progressive if not absolutely exact sciences. Its literature has been said with truth to be amongst the oldest in the world, the earliest records being religious ceremonial formulas which ever involved rules directed to maintain the health and efficiency of the people. It has been proposed to place upon these walls the names of the illustrious dead who were the pioneers and founders of our science, and the difficulty will probably lie more in the wealth than in the paucity of material, rendering selection less easy where so many are worthy. We cannot doubt that in order of chronology the first name to be honoured is that of Moses, as the author of the most complete and detailed system of hygiene in ancient times. His rules, given as part of the Divine Law, are, of course, mixed up with religious ceremonial, both as being appropriate to the age and to the nation for whom they were intended, and also as being more likely to be followed when made in that way a part of the religion of the people. But we may be pretty well sure that the code of Moses was the outcome of the wisdom and experience of long past ages. Some of the rules we may smile at nowadays, as being a superfluity of precaution, and it is true that with advance of knowledge we can see that certain of them were unnecessarily sweeping in character; but still it would not be too much to say that a fairly strict adherence to the Mosaic law would have preserved mankind from many of the disastrous plagues which have afflicted it. The history of the Jews themselves illustrates this point. Of old, when a pestilence visited them, it was always represented, and probably with perfect truth, as a punishment consequent upon the breaking of the law, a statement which may be frankly accepted either by those who maintain the special intervention of a Divine Providence, or by those who regard it as a strict consequence following on antecedent cause. In later times, and especially during the Middle Ages, the Jews enjoyed a remarkable immunity from outbreaks of epidemic disease, an immunity which still distinguishes them in our own time.

Let us turn now to the classic records, as they are called,—that is, the writings that remain to us from the Greeks and Romans. Considering how many men must have written in those times, how general knowledge and the art of writing were, we have to lament the

paucity of the literary remains that have survived. How we curse the fanatical zeal of Omar, who burned the library of Alexandria, and still more the senseless stupidity of the monks of later days, who scraped out the writing from priceless manuscripts to write missals and the like in their place! As might be expected, it is to the Father of Medicine, the great Hippocrates, that we owe the most of what we have left of Greek hygienic literature, although we must admit that even in Homer there are traces of hygienic knowledge, and that there the disinfecting powers of cleansing fires of sulphur are fully recognised. It is a remarkable fact that one of the chief books of Hippocrates relating to hygiene,—viz., that on "Air, Waters, and Places,"—is one of the few about the authorship of which no doubt has ever been raised. Like the code of Moses, it was probably a summary of the already existing knowledge of the subject, supplemented and extended by the experience of the great physician himself. Another name that deserves remembrance is that of Xenophon, whose triumphant retreat was no less a hygienic than a military triumph; and there is no doubt also that Alexander the Great was a master of the art of hygiene, to have taken his force so far with so little loss. Nor ought we to omit the name of Herodicus, one of the preceptors of Hippocrates, and the first to introduce gymnastics on scientific principles, not only as a curative, but also as a preventive measure. The works of Asclepiades, who boasted that he would never be sick, and did, indeed, die of a fall, and those of Aretæus, doubtless contained reference to preventive medicine, whilst those of Galen, which extended to 300 volumes, the majority of them now lost, furnished many of the precepts on which later hygiene was based. On the other hand, the myth which makes Health, or Hygeia, the daughter of Asklepios (whom we call Æsculapius) no doubt arose from an instinctive perception of the value of medical science in preserving health as well as in the cure of disease. The general life of the Greeks was eminently hygienic, being mostly out-door and under favourable conditions, persons even of high position taking part not only in active occupations, but in labours that might be even considered menial by the unthinking. The honourable place that athletic games held is a point of resemblance between the Greeks and our own countrymen that ought not to be lost sight of. Nothing is more conducive to health of body and mind than active exercise in the open air, and the splendour of Greek literature, art, and knowledge is a sufficient answer to those who are afraid lest athletics should develop the muscles of our youth to the detriment of their brains.

Among the Romans the care bestowed upon the provision of pure water,—with which is connected the celebrated name of Frontinus, as *Curator Aquarum*,—and their elaborate system of drainage, prove that they had correct ideas on some of the fundamental questions of hygiene. Their fondness for bathing and extensive establishments for that purpose remain monuments of the next-to-godliness which even at this distance of time we, with all our boasted civilisation, have been unable to emulate. The more recent discoveries in the Campagna have still further shown that they were fully aware of the conditions which alone could make that now pestilential region habitable, as a system of subsoil-drainage has been revealed that is a reproach to the ignorance and supineness of modern times. Nor was Rome the only city of antiquity that was efficiently drained, for we have evidence of it at Agrigentum at least; but Rome was certainly among the oldest of which we have actual remains, the beginnings of its great cloaca going back at least twenty-five centuries. Another direction in which the Romans showed great knowledge of the principles of hygiene was in the management of their troops on the march and during war.

In taking a cursory retrospect of the Old World in its medical aspects, the lecturer was inclined to say that on the whole its Medicine was as much preventive as curative. It is probable that such a proposition would be combated; but, in spite of the treatises that have survived in curative medicine and surgery, and the long list of medicaments that we find, for instance, in the works of Galen, there was probably as much, if not more, done in the preventive line as in the simply curative. The motto of the time might have been, *Venienti occurrite morbo*. Two things seem to indicate this:—1. There was a dread and impatience of disease, so much so that men were known to commit suicide to escape it, like the aged Indian who slew himself at the tomb of Achilles for fear he should die of disease, from which he had through life been free. 2. The sentiment of pity for the weak and the oppressed appears to have been absent; there was the same tendency as we find among animals and among savages to hold a sick man of little account, as useless to the state, and the sooner got rid of the better. Hence, perhaps, the curious fact that we have no record whatsoever of public hospitals or infirmaries for the sick poor during the Classical period,—the earliest being as late as the reign of Justinian.

From the time of the decline and fall of the Western Empire the progress of hygiene appears to have been arrested. Some few of the treatises of the Greek and Latin physicians survived; others were known only as translated from the Arabic, &c.; whilst the wholesome traditions of the hygienic life of Greece and Rome appear to have decayed, and we pass into a dark and dirty period when fanaticism usurped the place of religion, and dirt became the odour of sanctity. The Hermits of the Thebaïd became the types of all that was holy, and so framed their lives and manners as to be as much as possible the antithesis of the heathen. The heathen led an active and healthy life, the Christian fanatic led a life of mooning and inaction; the heathen washed himself and his clothing, the Christian foreswore cold water and wore his clothing till it fell off his body from sheer rottenness. The picture of the thousand years which elapsed between the downfall of Rome and the final capture of Constantinople, as drawn by Michelet in his "Sorcière," is one of the most striking as well as disgusting that can be conceived. "Pas de bain," he says, "pendant mille ans!" Can we wonder at the plagues which devastated Europe? Is it astonishing that the "black death" cut off two-thirds of its inhabitants? Although the revival of learning was partly instrumental in arousing up the nations to a sense of their degraded condition, yet the change was by no means great, even down to much later days, and it is humiliating to think, from the accounts of Erasmus and other visitors to our shores, that our own country remained long pre-eminent in Europe for dirt and disease. Hardly a decade passed without visitations of some foul malady until the cleansing fires of the great conflagration of London in 1666 appear to have extinguished the last vestiges of those old and dreaded enemies. It is true that even then we were far from being free from epidemic disease, and that we are still open to its ravages; but the forms of disease which have shown themselves since the Great Plague are of a type, if not entirely different, still of a kind and under circumstances which have been more understood, and the causes traced more certainly to particular conditions. But one can easily imagine how different the case of Europe might have been could the hygienic knowledge collected during and before the Classic period have been carefully put together, formulated, and acted upon by the succeeding generations. As it is, whatever may have been written in the Middle Ages, was either a mere re-echo of the classic writings, a copying of the Arabian physicians, or a farrago of nonsense into which spells and magic largely entered. . . . . .

It is a little difficult in a necessarily restricted lecture to convey any exact idea of the way in which modern hygiene became formulated into so much of a science as it can at present lay claim to; but a brief sketch might be made of its more salient points. In the eighteenth century there were several important questions inquired into, and to a large extent solved, of which the chief were: (1) The influence of air as a factor in the spread of disease; (2) the true cause and prevention of scurvy; and (3) the prophylaxis of small-pox.

The recognition of foul air as a factor in disease was certainly begun in the last century, when the brilliant discoveries in pneumatic chemistry made by Lavoisier, Cavendish, Priestley, Black, and Rutherford threw such a flood of light upon a previously obscure subject, and opened the whole immense vista of the boundless science of modern chemistry. It was only then that the physiology of respiration could be even partially understood, and the changes recognised which take place in the respired air from the lungs of man. The great disaster of the "black hole" of Calcutta, and the terrible effects of the gaol fever, investigated by Howard and others, pointed to foul air as a main factor in the propagation of disease and death; and this was further corroborated by the observations made by military surgeons that outbreaks of typhus (or putrid fever) were most rapidly arrested when troops were encamped and scattered widely over the surface of the ground. It was reserved for the later researches of Neill Arnott and other hygienic observers of the present century to prove the still more important fact that foul air is the main cause of the still more general and fatal class of destructive lung diseases, which in this and in other lands cut off so many of the brightest and the best.

Another important discovery of the last century was the determination of the cause of the well-known lead colic by Sir George Baker. This opened up the large field of metallic poisoning which has received so much elucidation and proved of such importance in reference to the water-supply of large communities.

In the present century we have to point to the establishment of the fact of the water-carriage of disease, with which the name of Snow is so honourably associated; the differentiation of continued fevers by Stewart and Jenner, and their connexion with the poison of infected excreta by the labours of Budd and other eminent men. To these we must add the elaborate investigations into the modes of propagation of cholera, dysentery, and other tropical diseases, and the means by which scarlet fever, diphtheria, &c., are carried from place to place by various channels of communication. It would be unadvisable, even if it were possible, to enter into details on these points; but there is one branch of the subject on which we must dwell for a little. No inquiry can assume a scientific form unless it has a numerical basis to work upon, and therefore it behoves us to note the starting-point of such a basis in hygiene, if we can find it. This we do find in the collection of statistics, a beginning of which was made a long time ago in the bills of mortality kept in this country. We know how imperfect those were, and how even the population of this country was not correctly known until within the lifetime of men still living. But, still, beginnings were made, and the question taken up more and more enthusiastically by enlightened men, until at last the Government Statistical Department was formed, and that remarkable series of reports begun which will immortalise the name of William Farr. From that time the future of hygiene was assured; for there was sound ground to work on, and if we add to that the valuable reports on the health of towns published by the Commission, of which the present Duke of Buccleuch was president, we shall have stated some of the most important foundations of modern sanitary science. Those reports disclosed a state of things little dreamed of, and statistical returns compiled by Dr. Farr showed how much the life and health of the nation were dependent upon the conditions in which its individual members were placed. The establishment of the General Board of Health, under Mr. Chadwick, was one of the valuable outcomes of this remarkable movement. Although the original Board of Health was brought to an end in 1854, yet its work has been continued and expanded under Mr. Simon, his colleagues and successors, in spite of many difficulties and obstacles.

The part which the public services, such as the Army and Navy, played in the progress of hygiene, was very important, as might indeed be expected; for, under no other circumstances could bodies of men be so well observed, and the effects of surroundings and conditions upon health noted. Perhaps the most remarkable contribution the Army has made to sanitation has been by the evidence given to the Royal Commission of 1857, which met after the Crimean war to investigate the causes of the sickness and mortality of our troops. The results of that Commission are well known, and from its publication may be dated the reforms which have been productive of much advantage both to our own and foreign armies, and to the civil population as well. The paramount influence of foul air in the production of lung disease was proved to demonstration, and the art of ventilation was placed upon a secure foundation. The Barrack Hospital Committee, of which Dr. Sutherland and Captain Douglas

Galton were the active members, laid down a series of regulations for the construction of barracks and hospitals, which have been followed with the utmost benefit both at home and abroad. Following this came the Indian Commission, which did for that vast dependency what the Home Commission had done for the rest of the empire. The mortality in India was found to be inordinate, and it was equally clearly traced to insanitary habits and surroundings. To recognise an evil and its cause is half way to curing it, and after a lapse of a quarter of a century we can point, not certainly to perfection, but to such an improvement as might fairly at one time have been looked upon as chimerical. The death-rate of the army at home is only two-fifths of what it was before the Crimean war; the death-rate in India is only one-third, and the death-rate in the West Indies one-tenth. In civil life it has recently been shown that the improvements of later times have resulted in a diminution of 2 per 1,000 in the general death-rate, and with the knowledge we now have of the causes of disease we may be sure that a general death-rate of not more than 15 per 1,000 may be confidently looked for. We have not yet got rid of the fatal endemics in our midst, but they are in some directions diminishing, and we have good hope for the future; whilst it seems probable that neither cholera nor any other introduced pestilence could establish a foothold in our land. The remarkable immunity of soldiers and prisoners in the last epidemic shows what can be done when people can be compelled to lead fairly hygienic lives.

In conclusion, Professor de Chaumont paid the following tribute to the memory of Parkes:—Edmund Alexander Parkes did more than any other man in this or any age to make hygiene a positive fact, a practical science, based upon not only philosophical conceptions, but actual experiment. Starting in life as an army medical officer, he was able to produce during his short service in India and Burmah works upon dysentery and cholera, which will always be of the greatest value. Retiring into civil life, he became eminent as a physician and teacher, and in 1855 he undertook the organisation of the hospital at Renkisi, in the Dardanelles, which was a perfect model of successful hygienic administration. Struggling with distressing and dangerous disease, he continued to lead a life of intellectual activity not often accomplished by the most robust; and when, in 1860, the Army Medical School was established by Lord Herbert of Lea, Sir James Clark had no hesitation in advising that Dr. Parkes should be secured if possible as the Professor of Hygiene. How excellent the foresight of that eminent physician was we all know, for Dr. Parkes was not only the first professor of the science in this country in point of time, but also the first in every sense of the word. The publication of his well-known "Manual of Practical Hygiene" gave us for the first time a work on the subject, which was not merely a string of opinions and surmises, but at every point brought opinion to the test of figure and experiment, where it was possible, and thus laid the foundation for a real science in the future. Similarly with his teaching, he pressed upon the Government to establish practical laboratories for his pupils, where they could do for themselves as much of the experimental work as time and opportunity allowed; and he impressed upon those who studied under him the necessity of testing everything by actual investigation, and bringing all statements to the proof of figures, before accepting them as true. There was never, probably, a man of calmer and more judicial mind, a man more rigidly critical of his own work, or more kindly disposed to allow every credit to the work of others. Having known him personally for many years, during thirteen of which I was his assistant and colleague, I can bear confident testimony to the exceeding beauty of his character, in which "sweetness and light" were ever most truly displayed, and to the scrupulous accuracy and care with which every investigation of his was carried out. The science of hygiene could have no purer and better founder, and its votaries no brighter and more spotless example.

The Hon. Dudley Fortescue moved a vote of thanks to Professor de Chaumont for his interesting lecture.

Mr. Robert Rawlinson, C.B., in seconding the motion, said that this question of hygiene, which had been taken up with increasing earnestness in modern times, was obviously one of the greatest and most important that could concern the human race. Unfortunately it was his sad experience to know that not only in our large and busy towns, but in many of our rural villages, there existed a state of overcrowding which made it absolutely impossible for tens of thousands of the population to grow up in the principles of virtue. What wonder, then, that we had a large population of unruly, improvident, and criminal persons? He had great hopes that the work of which the Parkes Museum was only one phase would bear fruitful results in improving the sanitary condition of the people. Statesmen were now beginning to see that it was their duty to do something to improve the dwellings of the poor. Improvement in the dwellings of the poor was really the foundation of all progress in their sanitary and social condition. Many restrictions now operated to prevent very rapid progress in the work of properly housing the people, and one of those restrictions was found in the present conditions of land tenure, under which land could not be enfranchised so as to afford room for housing our growing population.

The vote of thanks was carried, as was also one to the chairman (Surgeon-General Crawford, Director General of the Army Medical Department), moved by Sir Joseph Fayrer, and seconded by Dr. Steet.

THE BERLIN BOURSE.

THAT a couple of thousand active men of business cannot meet every day in the same hall without bringing into it a considerable quantity of dust is nothing surprising; nor is it wonderful to find that in the German capital, built as it is on a sandy plain, the dustiest building known is the Exchange, where merchants and their clerks are in the regular habit of assembling daily to transact their business. Of the atmosphere of the Berlin Bourse its frequenters have long complained, but it has only recently been known how well justified the murmurs were. Some time ago it was determined to clean the walls and pillars supporting the roof of the great hall, and it has just transpired that the quantity of dust and dirt removed during the cleansing process from the interior surfaces of the building not reckoning the floor, filled no fewer than twenty-eight cement barrels! And, of course, in the operation of cleaning not a little of the dust was scattered again, so that the twenty-eight barrels do not account for all. When it is remembered that all this quantity of dust had risen from the floor in fine particles and had then settled on the surface of the pillars, walls, and ceiling, we can gather some idea of the immense amount which, within a few years, has entered the respiratory organs of the gentlemen habitually resorting to the spot.

FOREIGN NOTES.

Berlin Furniture Competition.—The municipal authorities of Berlin have resolved to offer a series of prizes, the first of 1,000 marks, the second 600, and two third prizes of 300 marks each, for the best sets of furniture costing not more than 500 marks (or 25*l.*), suitable for furnishing a small dwelling for a working-class family. The competing articles are to be ready by the beginning of the coming year, and the whole of them will then be shown in a special exhibition at Berlin. The competitors are to undertake, if required, to supply sets similar to those exhibited, at the stipulated price, any time within twelve months from the date of the opening of the exhibition.

Berlin Hygienic Exhibition.—During the first two weeks since the opening of the Hygienic Exhibition at Berlin, the receipts for admission taken at the doors amounted to upwards of 4,000*l.* The pecuniary success of the enterprise has far surpassed the hopes of its promoters.

A Buddha Statue.—An ancient statue of Buddha, of excellent workmanship, was recently dug up in the course of some excavations at Meywar, in the Punjaub. It is of marble, and stands 6 ft. high. In artistic value it is not inferior to the best works which have been handed down from the Buddhist epoch. The nose is damaged and the legs broken, otherwise it is well preserved. The statue is now on its way to England, and will find a permanent resting-place in the British Museum.

Interesting Relic.—In the second half of the sixth century the then reigning Byzantine Emperor sent to Saint Redegonda, in France, a reputed relic of the Cross of Christ. It was set in a frame of gold work, executed by Byzantine masters, and was adorned with smalt work. For centuries this unique work of art was lost, but on the 1st of May this year it was discovered at Poitiers by M. Mouriquoze Barbier de Montant. It is artistically of great value, as the oldest-known specimen of Byzantine workmanship still extant.

An Electric Railway in Paris.—The well-known electrical engineers, Messrs. Siemens & Halske, have, according to *Les Mondes*, worked out a plan for an electric railway, nearly two miles in length, in Paris. It is proposed to build it on a high viaduct, running from the outer boulevard of La Vilette to the Place Clichy. The number of stations is to be nine, so that the average distance from one to the other would be rather less than a quarter of a mile. The passenger traffic would be carried on not by trains of carriages, but by single carriages running at intervals of two minutes. As the level of the line varies in different parts, it is proposed to divide it into sections according to the gradients, each receiving the current by a separate cable. This will enable the line to be worked much more economically, the highest power only being applied where it is wanted at the steepest sections. The safety of the line will also be increased by always having a clear section between each two carriages and shutting off the current from the interval.

A NEW HOSPITAL FOR BRISTOL.

IN a recent issue we gave a somewhat lengthy description of a vast building undertaking in Bristol,—namely, the erection of a gaol which, when completed, will be the finest in the kingdom, and will entail the expenditure of many thousand pounds; and now we have to record the commencement of another undertaking of nearly equal magnitude,—the building of a new hospital in Bristol for sick children. The building is to cost over 11,500*l.*, exclusive of the sum spent in a site,—2,500*l.*, so our readers will gather from the total that the work in hand is of considerable importance. The ceremony of laying the memorial-stone was performed last Friday, by her Grace the Duchess of Beaufort, and the assembly present was one of the most influential Bristol has seen for some time. At present there is a hospital for sick children, but it stands on ground which is held under an unrenewable lease from the Corporation of Bristol, to whom the property must revert in the course of a few years. It thus became imperative, in order to secure a permanent building, that land should be acquired which was practically freehold, and that a new building should be erected upon it. A most eligible site was obtained, namely, a plot of ground fronting St. Michael's Hill. It is open and airy, has a warm sunny aspect, and commands splendid views.

The hospital is to be built from the designs of Mr. Robert Curwen, architect, 103, Palace-chambers, Westminster, and while the new building will, architecturally considered, be worthy of the city, its internal planning will be in accordance with the most modern ideas of hospital arrangements and with the most approved principles of sanitary science. The style of architecture will be Late Perpendicular, and the hospital will be constructed on the pavilion system, affording light and air on three sides of the wards. The question of ventilation has been carefully studied, and the system known as Captain Norton's patent will be utilised. The drain-pipes are outside the building, and well ventilated, so that no odours can find their way into the hospital. The plans of the building include five wards, with ten beds in each, for children from two to twelve years of age; two rooms for isolating special cases that may require to be kept unusually quiet; one room with steam apparatus for treatment of croup; two wards with four beds in each for women; one ward in which babies requiring surgical operations may be received under care of their mothers; a play-room for convalescents, and suitable accommodation for matron, nurses, &c. In another part of the ground will be erected a small building containing three wards, with three beds in each, for infectious cases and cases of a contagious nature. Altogether there are seventy beds in the hospital. The five main wards will measure 30 ft. by 20 ft., the desire of the committee being to have them sufficiently

large to be thoroughly airy, and to enable the children to be treated under the most favourable conditions, which cannot be the case in small wards. The aim of the committee has been to make the new hospital "a model institution," and when it is completed it will be, for its size, as complete an institution as could be found anywhere. The building of the main corridor, the three blocks of wards on the south side, offices, &c., is being rapidly proceeded with.

THE BRICKLAYERS' NEW CLUB-HOUSE BUILDINGS.

THE Society of Operative Bricklayers have just erected and opened a new hall and offices in Southwark Bridge-road, upon a site purchased by the society as their freehold, at an outlay of 2,204*l*. The building, which covers an area of 2,800 superficial feet, has a frontage to Southwark Bridge-road of 30 ft. in width, and is carried to a depth of about 80 ft. The architects of the building are Messrs. A. & C. Harston, of Leadenhall-street, and the structure has been erected by members of the Bricklayers' Society, under the superintendence of Mr. F. Hammond, one of its officers. The building is carried to a height of between 55 ft. and 60 ft., and contains three lofty floors. The elevation is faced with red gauged brick from the Brackley works, in Berkshire, the base being in blue Staffordshire brick. It has a handsome frontage, and it is claimed for it that as regards material and workmanship there is no finer specimen of brickwork in London. The entrance to the building is surmounted by a deeply-recessed arch, elaborately decorated with brick cut down in pieces of less than an inch in facing. Over the entrance, in moulded brickwork, are the bricklayers' arms. The ground-floor has two arched windows, immediately above which, on the first floor, is a three-light bay-window. Above the main cornice is a recessed pediment.

Internally the building contains, in the basement, an apartment extending the entire depth of the structure, and capable of holding 600 persons. The principal apartment in the building is the hall on the ground-floor, which is 76 ft. long and 30 ft. wide. The walls of the hall are faced with red, white, and yellow gauged brick, and the apartment is tastefully fitted up, the ceiling being of polished pitch pine. On the first floor are large and commodious committee-rooms, together with the general secretary and clerk's offices and strong rooms; and the upper floor contains the residence of the secretary. From this floor a flight of stairs leads up to an open flat roof at the top of the building, from which there is a commanding view of the neighbourhood around. The total cost of the building, in addition to the cost of the land, has been 4,500*l*.

The operative bricklayers have done a good work in thus providing themselves with commodious apartments and meeting-place. We shall hope to find them setting an example to other more wealthy bodies one of these days by introducing a good piece or two of art, even at the cost of "a smoke" or two a week.

THE STATISTICS OF TELEPHONES.

WITHIN the few years that have elapsed since the telephone was invented and rendered available for practical life, 161 towns and cities in Europe have been provided with telephone systems, and the total number of subscribers to them is 30,066. In Asia there are four cities with 420 subscribers; in Africa, four cities, with 240 subscribers; in America, 126 cities, with 47,185 subscribers; and in Australia, five cities with 897 subscribers. The grand total of cities with telephone installations is therefore 303, and the total number of subscribers 78,808. The 161 cities of Europe are divided among the various countries as follow:—75 in Great Britain, with 7,287 subscribers; 13 in Italy, with 5,507 subscribers; 18 in France, with 4,437 subscribers; 21 in Germany, with 3,613 subscribers; 6 in Belgium, with 1,941 subscribers; 5 in Sweden, with 1,554 subscribers; 6 in Russia, with 1,351 subscribers; 4 in the Netherlands, with 1,340 subscribers, and in the other European countries as follow:—in Austria, Hungary, three cities, with 870 subscribers; in Switzerland, two and 825; in Norway, two and 745; in Portugal, two and 80; and in Spain, three cities, subscribers unascertained. The only countries in Asia with telephones are India with five cities and China with two (Hongkong and Shangai).

THE METAL WORKERS' EXHIBITION AT BERLIN.

THIS Exhibition is the fourth of its kind, and affords an opportunity of comparing the present development of the industry in question with its condition four years ago, when the last exhibition was held at Nuremberg. On that occasion, as might have been expected, the metal-workers of South Germany were specially represented, and consequently the selection of Berlin for the present display has given general satisfaction, from the opportunity thus afforded to the artificers of North Germany to show, in a prominent manner, the position they have attained, although in each case the exhibition was a general one for the whole of Germany.

The opening took place on May 10th, and the close has been fixed for June 9th. The following are the sections into which the exhibition has been divided:—

1. Metals in the unwrought state, &c.
2. Metal work for the exterior of buildings.
3. Metal work for the interior of buildings, including pipes, sanitary appliances, &c.
4. Domestic and culinary utensils of metal.
5. Ornamental metal work, &c.
6. Lacquered goods and toys.
7. Illuminating appliances for gas and candle light.
8. Chemical materials used in metal working and technical literature.
9. Machinery and tools used in metal working.
10. Ancient metal work typical of the historical development of the industry.

In groups 2 and 3, which are of special interest to the building trade, there has been, amongst other items, a good display of zinc ornaments. One firm has exhibited a model of a roof, one-third of the natural size, which has been favourably noticed. A metal group, representing two panthers embracing an obelisk, is also commended in the technical press. It stands on a pedestal 39 in. wide, 47 in. high, and 16 ft. 6 in. long. A new system of roofing with metal slabs is exhibited by the inventor, H. Klehe, of Baden-Baden.

RAPID RAILWAY BUILDING.

THE rapidity with which the construction of the Canadian and Pacific line is advancing excites no little astonishment on both sides of the Atlantic. Within five months no less than five hundred miles of permanent way were completed, being at the rate of more than three miles a day. This high rate of speed in the despatch of the work is due to a very practical division of labour, and the unusual familiarity of all sections of the workmen with the best methods of executing their task. The number of men employed was only 159, assisted by fifty-five two-horse carts and drivers. In the month of August last ninety-three miles of line were finished, and on one day alone as much as four and a half miles of rails were laid down. In regard to solidity of execution the railway cannot, of course, compare with English lines, and will not admit of trains travelling at very high rates of velocity, but the line is quite equal to what will be demanded of it in the wild and lonely regions through which it passes.

NEW SYSTEM OF LIGHTNING CONDUCTORS.

MELSEN'S system, as described in the *Zeitung für Blechindustrie*, is designed upon a different system to that hitherto in use. The present method, invented by Gay Lussac, consists of a metal rod at the top of a building from which rods are brought down to the earth. Melsen, on the contrary, proposes to surround buildings with a network of metal wire, which communicates with the earth (preferably with springs or ponds), and has in its upper portion a number of metal points. The old system was founded on the theory that the higher the lightning conductor was placed, the more extensive was the circle it protected, the diameter of which was estimated at four times the height of the rod. There are no scientific facts to prove the correctness of this theory, which experience has shown to be faulty. On the other hand, laboratory experiments have confirmed Melsen's principle that the numerous points divide the electric spark, and thus modify one violent shock into a number of weaker and harmless ones. It is asserted that Melsen's system is more economical than the ordinary one, while its efficiency is said to be beyond doubt. The cost is estimated by the inventor at about 1½d. per square yard. Galvanised iron wire can be used, but nickelled wire is preferable. It is remarked that this system allows of every house being protected against lightning, instead of this precautionary measure being confined to large structures.

A REMARKABLE PICTURE.

AMONGST the art-treasures left by the late Empress of Russia to the Hermitage Art Museum at St. Petersburg, is one to which special interest attaches not only for its history, but on account of the remarkable skill with which it has been restored. It is the so-called "Madonna Conestabile della Staffa" painted on wood in 1502 by Raffaelle for Count Staffa. According to Grimm, this is the only picture of Raffaelle's which has been preserved in the original frame, which it is conjectured was in this instance made according to the great artist's own instructions. It was purchased from the heirs of the Staffa family in 1879 for 12,400*l*., and the Italian Parliament sought to blame the Minister who had given the necessary permission for its leaving the country.

The picture is a round one, and is painted upon a square piece of wood. When in Italy this wood had displayed a slight crack, which in Russia became more developed, and it was decided, in order to preserve the work, to transfer it on to canvas. The process carried out by Herr Sidorow is described by the *Hamburger Nachrichten* as having been effected by the picture being sawn off with a hair-saw, and the crack being then carefully screwed together. A piece of linen and a marble slab were fastened to the front. The wood was then removed by a plane and by glass until the layer of oil-colour alone remained. This displayed the painting in its original form, and showed that the Virgin had at first been represented as holding a pomegranate in her hand, this object having been subsequently altered into a book. Canvas was then fastened to the back, and the temporary arrangements removed from the front.

THE SEWERAGE OF SOUTHPORT.

AT the tenth meeting for the session of the Liverpool Engineering Society, held at the Royal Institution, Colquitt-street, Mr. H. Bramall, M.I.C.E., president, in the chair, a paper entitled "The sewerage system of Southport, and its effects on the sanitary condition of the town," was read by Mr. John B. Fell. Mr. Fell spoke of Southport as a watering-place possessed of remarkable natural advantages, in which a population of three to four millions of people, living within a distance of fifty miles of Southport, were more or less interested. The natural purity of the air, fresh sea breezes, dryness of the climate, and its open, clear, and well-built streets, combined, ought to make Southport one of the most healthy of all health resorts. But with these advantages the sanitary condition of the town was not all that could be desired, and the cause was believed to be the condition of the sewers. The entire area of the town is flat, the sewers have been chiefly laid on gradients so flat as not to be self-cleansing, and they are tide-locked. The gravitation system on which the sewers have been constructed has the recommendation of economy in working and maintenance, and the new outfall sewers have removed the discharge of the sewage from the foreshore to the estuary of the Ribble, whence it is carried by the receding tide right out to sea. But the flatness of the sewers, by allowing deposits to form, and decomposition of sewage matter, and the generation of sewer gas to take place, has been the cause of much annoyance to the inhabitants of certain parts of the town, especially in those parts traversed by the lines of the main sewers. A number of different plans have been proposed for the removal of this evil. One plan is the entire reconstruction of the sewers of the town upon Shone's pneumatic ejector system, by which the nuisance would be put an end to. The expense would,

probably. be not less than 100,000*l.*, but this consideration ought not to weigh against the adoption of a method which, it is believed, would entirely remedy the evils now complained of. The Corporation have proposed a plan for improving the gradients of a number of the lateral sewers, but these, according to the opinion of eminent sanitary engineers, would still be sewers of deposit, and, consequently, this plan would not prevent the generation of noxious sewer gases or provide a remedy for the existing evils. Several plans for an improved ventilation of the sewers were also described. These plans, if adopted in combination with an improved method of flushing, might, the author believed, at a comparatively small cost, effect a diminution of the sewer-gas nuisance to such an extent as to remove the present cause of complaint, and be the means of raising the standard of health to a higher level.

The Corporation have received the sanction of the Local Government Board for the borrowing of 20,000*l.*, and their scheme, we are informed, has been approved by the inspector. Intimation has also been given to this effect to the opponents of the scheme. At a meeting of the committee, held last week, it was decided to commence the works forthwith.

NOTES FROM BIRMINGHAM.

SIR,—It will perhaps interest those of your readers who notice animal life in its various phases and vicissitudes, to be informed that recently, as a bait-gatherer who is employed by one of our local firms of fishing-tackle manufacturers was engaged in his employment near one of our small rivers, he observed a dead trout, of about a pound weight, floating on its surface. On examining the fish, he found that it had been choked to death in an endeavour to gorge a large toad head foremost, only the hind-legs of the toad being protruded from its mouth. A similar instance of voracity in a freshwater fish was seen not long since, when a dace was found dead with the hind-legs of a rat only visible: each had choked the other. A third instance of this voracity was discovered a few days ago in this neighbourhood, when a dead pike was found floating on a river, with a large perch stuck in its throat, and a large portion of its tail gone,—bitten off, presumably, after death by another pike.

Birmingham is not badly supplied with sea-fish, when compared with many other towns, and it will doubtless be improved when the new and larger market is completed. The fish are usually consigned from the ports to some wholesale dealer here, who disposes of them, when in quantity, by auction, and thus they get into the hands of the retailers. Game and poultry are also sold in the season in the same manner, and often in very small lots. Much larger fish are now brought to market than formerly, in consequence of the new and improved appliances for catching them. Recently we had a halibut in the market nearly 6 ft. long, and others of a slightly smaller size are common.

The half-yearly horse-fair was held in Birmingham on the 17th inst., and there was a smaller number of animals on sale than for some years past; but many animals were of good quality in their several classes. The ruling prices were, for wagon horses, 60*l.* to 80*l.*; cart ditto, 40*l.* to 60*l.*; cobs and ponies, 12 guineas to 20 guineas; strong wagon colts, 35*l.* to 45*l.*; cart colts, 14*l.* to 20*l.*; small colts, 12*l.* to 15*l.* The fair is held in the street called the Horse Fair and Bristol-street, and is a great obstruction to the traffic. The Markets Committee might well consider the desirability of holding the fair in the future in their new market at Smithfield, a much more suitable locality. The covering-in of this market with an iron and slate roof and Rendle's patent glazing is now nearly completed, and the new block of buildings intended for the hotel to replace the "Woolpack" is also nearly covered in, and the scaffolding being removed. The elevations are of red brick and terra cotta, and are exceedingly effective.

The Church of St. Philip, in which the Birmingham Musical Festivals were first held, and many of our finest oratorios first produced, after having been rebuilt in 1859 is about to undergo another alteration. The entire chancel end is being taken down, and it is intended to extend it by some 20 ft.

A new Roman Catholic church is about to be built in Alcester-street, at a cost of some 5,000*l.*, from designs by a firm of London architects.

The forthcoming visit of Mr. Bright to Birmingham is to be utilised to unveil a new marble statue of the late Mr. J. S. Wright by Mr. Williamson, sculptor, of Esher. The site adopted is at the vacant end of the refuge in front of the Council-house, the statue of Priestley being at the other end, and the work of the same sculptor.

The Building Trades Exhibition, which has been held in Bingley Hall during the month of May, has been visited by 60,000 people, and is believed to have been fairly satisfactory to both exhibitors and the public. The show has been remarkable for the excellence of quality in the productions displayed, and is in contrast in that way to those we meet with in the course of business. If manufacturers took as much care to have all their productions perfect as they have done with those they exhibit in the show, we should have a more lively satisfaction in the use of them. None of the exhibits in the building trades proper were particularly new, or were shown here for the first time. As might be expected in the metropolis of the metal trades, the strength of the exhibition is in metal work of all kinds, but the sanitary, constructive, decorative, and furnishing branches, as well as that of the architectural draughtsman, is well represented, both by local firms and others from a distance. Of the new productions, a method of turning and polishing perfectly true cylinders and spheres of glass for pumps and other apparatus used in acid and other manufactories, was shown under Chedgey's patents, together with their glass-lined pipes for the conveyance of liquids. The patent albo-carbon light is also a new method of increasing the illuminating power of ordinary coal gas, by the addition in the burner itself of a carbon made from the waste products of coal-gas distillation. This substance is not unlike stick sulphur in appearance, and is placed in a globular receptacle attached to the gas-pendant, and covered with a screw cap. Above the globe there is inserted in the inlet-pipe a hollow disc of considerable diameter, in which is placed a diaphragm, which is of slightly less diameter than the disc. The burners are placed in a circle under this disc, which is made of copper, and in use becomes greatly heated, and as the gas passes through it, heats the gas, which then passing on downwards volatilises the solid carbon, and thus enriched passes on to the burner. The price at which these are at present sold is almost prohibitive to the general public, and I have it on good authority that they bear a profit of from 400 to 500 per cent. The thought that naturally arises is this, that no such arrangement for augmenting the illuminating power of gas ought to be necessary. The gas might be carbonised to the necessary extent in the works when made. A new gas-engine exhibited by a Manchester firm was a good specimen of workmanship, and nearly silent, and is likely to compete successfully with the "Otto," the merits of which are undisputed; but the high price at which the latter is sold has set inventors to work to produce something which shall be less costly. A guard for circular saws is an ingenious arrangement to prevent accidents when in use. Many other exhibits deserve notice, and the promoters have announced another exhibition for 1884.

The statement on page 722 of the *Builder* as to the enormous deposits in the Post Office Savings Banks during the past year provokes the regret that the institution is not self-supporting. A reference to the official returns of the national expenditure for 1881-2, which is the latest available, shows that the national debt is partly made up by 2,144,562*l.* savings-bank deficit, and that the deficiency for the year 1882-3 was 41,836*l.*, and the Friendly Societies' deficiency, to be made up out of the national funds, was 49,326*l.* on the year. This surely ought not to be.

At the annual meeting of the Old Union Flour Mill Company, of Birmingham, reference was made to the keen competition which the millers of this country had now to contend with from the millers in the United States, and the manager stated that, at the present time, there was the enormous quantity of one million sacks of American flour in this country awaiting sale and consumption.

The waifs and strays of our great towns continue to be an important social difficulty. Mr. Samuel Smith, M.P. for Liverpool, tells us, in the *Nineteenth Century*, "that he has little doubt there are from one-half to three-quarters of a million of children so destitute and neglected that, according to the laws existing in America, they would become wards of the State." This statement should be to all of us sufficiently appalling to arouse us to immediate action. Of its truth there can be no doubt, and various agencies are at work to rescue these poor children from poverty and crime. We have one of these in Birmingham, where Mr. Middlemore's emigration house is well known and appreciated. Some ten or eleven years ago, on his return to Birmingham after a residence of five years in America, Mr. John T. Middlemore resolved to set to work to rescue some at least of the little street arabs from their miserable condition, and having taken two houses in St. Luke's-road, he opened them as a home, in which the children were to be received and taught prior to their being sent to more permanent homes in America. During the first year he received and took to Canada twenty-nine boys and girls, whom he succeeded in placing out in the homes of farmers and others requiring help. Having satisfied himself that there was a large field in our North-American Dominion for the successful carrying out of his scheme, he returned to Birmingham and prepared to repeat his operation yearly. The numbers increased. Larger and more commodious homes have been built where the children can be received and kept for several months, and taught; and every year seventy to eighty children are taken out to Canada and provided for, so that in ten years 730 children have been taught how to get an honest living, and placed in a position to reach it. In a few days 125 to 130 more are going to Canada in the steamer *Circassian*. In a printed statement issued by Mr. Middlemore, he says, "For every girl we take to Canada, I have from ten to fifteen anxious applicants. In the course of ten years we have taken upwards of 700 children to Canada, and it has never been a matter of difficulty to find homes for them. The search for homes has involved considerable railway travelling, and also excursions into the backwoods, but nothing more, and it has never been necessary to put a boy or girl into a home which I did not like because there was no other home open to them. There is thus a large field for the immigration of children in Canada, as there *is* also in every British colony." Of the sixteen boys and thirteen girls who formed the first batch in 1872, three boys have now farms of their own, two are partners in farms, two are blacksmiths in business for themselves, two are market gardeners, and the rest work for wages on farms not their own. Of the girls, three are married, one has a farm, several have been adopted into the farmers' families as daughters, and the rest are in domestic service; only one has gone at all wrong. The average cost per child is 16*l.* That Mr. Middlemore has done good service to us and to the children is very palpable, and he deserves our warmest thanks and support, but as an intelligent Englishman I cannot but feel shame and disgrace at a condition of society which makes such action necessary or desirable. "Is our civilisation a failure? Why should it be necessary to expatriate the rising generation, when so many thousands of acres of the land of the United Kingdom remain untilled? Why cannot the soil of England be cultivated as well as the soil of Canada? At present much of it is fast returning to its original wild state for want of human labour. I read of 10,000 acres in Essex wanting cultivators, and the ten farms in this neighbourhood I mentioned in one of my letters to you several years ago, are still unlet, the owner,—a very rich man,—requiring as rent more money than any tenant is willing to pay, and at present there is no power to compel him to cease playing the part of the dog in the manger.

E. G.

A Memorial to Alexander II.—The designs submitted in the first competition for this monument not having satisfied the jury, invitations have been sent out for a second competition. The monument is to be erected in the Place d'Armes, Kremlin, Moscow. The material may be granite, porphyry, marble, or bronze. Foreign artists will be permitted to compete with those of Russia for the work. The cost of the monument is not to exceed one million roubles (150,000*l.*). Four prizes, ranging from 2,000 to 6,000 roubles, will be given for the best designs.

MADAME TUSSAUD AND SONS' WAX-WORKS.

"Nunc magna mei sub terras ibit imago."
VIRGIL.

THIS ever-favourite exhibition will shortly be removed from Baker-street to some new premises which are being erected in the Marylebone-road. The new site is that of the Gothic granary, taken down some years since, lying between Allsop-place (so called from a former farm here) and the western end of Nottingham-terrace, facing the Union. For these premises were purchased some interior fittings, including the grand marble staircase, from Mr. Albert Grant's mansion at Kensington Gore. With the exception of the "Play of the Dead Volks" or "Ragged Regiment," now ranged above Abbot Islip's Chapel at Westminster, this may claim to be the oldest existing exhibition of its kind in Europe, surpassing what the Strand Exchange or Mrs. Salmon's shows could have possibly been, even in their best days; though the latter was subsequently enriched with Montanari's beautiful groups of Mexicans and North American Indians recently shown at the now dissolved Polytechnic Institution.

Thornhill painted the ceiling of the Hall of Kings in the Baker-street rooms, where the royal portraits,—three of them by Hayter, Lawrence, and Reynolds,—are far from contemptible. Some of the heads of the figures, notably those of Voltaire, Alexander of Russia, Louis XVI. and his Queen (modelled in 1790, and first exhibited at La Petite Trianon), Nelson, Buonaparte (1815), and Scott (1828), were executed from the life, whilst many of the not very attractive heads in the Chamber of Horrors are from the hands of Madame Tussaud herself, being a branch of her art in which she particularly excelled. A native of Berne, where she was born in the year 1760, Madame Tussaud often met Voltaire, Rousseau, Mirabeau, La Fayette, and Franklin,—a strange commingling,—at the house of her uncle, Dr. Curtius, and was permitted to take casts of their features. Preceptress of modelling and drawing to the Princess Elizabeth and many members of the French nobility, she but too soon found ample scope for her own peculiar abilities amongst the scenes and chief actors of the Revolution. She modelled Marat, Danton, Robespierre, and it is said several heads immediately after their decapitation. Madame Tussaud then turned her attention to more illustrious and less notorious personages, and brought her collection to England just eighty years ago. The descendant of a family remarkable for longevity, she lived until 1850, leaving some highly entertaining memoirs, besides a curious narrative of the dreadful episodes of which she had been an eye-witness.

THE NEW FISH MARKET IN SOUTH LONDON.

THE new fish-market at Newington, near the Elephant and Castle Station of the London, Chatham, and Dover Railway, of which we have already made mention, and which is promoted by a company at the head of which is Mr. Samuel Plimsoll, will be permanently opened on Tuesday next. The site is immediately to the east of the railway, bounded on the south by New Kent-road, and on the north by Rockingham-street, and when fully completed the market will occupy an area of about an acre, but for the present only a portion of the intended market has been erected. It runs from east to west, parallel with the New Kent-road, from which there are two entrances. It is 200 ft. in length, and upwards of 100 ft. in width, and consists of five bays of about 40 ft. in height, covered in by a roof of corrugated iron supported by wooden columns and principals. At the east end are the manager's and other offices, together with the weighing machines and apparatus in connexion, whilst at the west end an official fish-salesman's rostrum has been erected. The floor of the market has been raised to a height of 3 ft. above the level of a line of rails running alongside and parallel with it, and on to this line of rails the fish-laden trucks will be lowered from the Chatham and Dover Railway above, by an hydraulic lift, in addition to which there will be communication between the market and the railway by a broad flight of stairs. The floor of the market has been laid with asphalte, and conveniently arranged for washing and cleansing. For the accommodation of salesmen and dealers who may make use of the market, there are about 100 stalls, having zinc facings. In addition to the entrances in the New Kent-road, there are also two entrances in Falmouth-road, and another in Rockingham-street.

Mr. Landsdowne is the architect of the building, which has been erected by the company's workmen under the personal superintendence of Mr. Plimsoll.

BRIGHTON.

A Railway to the "Devil's Dyke."—On Saturday last the ceremony of turning the first sod of a railway between Brighton and the Devil's Dyke was performed by the deputy-mayoress of the town. The new railway will start at the West Brighton Station of the London and Brighton Railway Company's system, pass the south-western corner of the new cemetery at Hove, and skirting Hangleton Church and Skeleton Barn, will cross the high road to the Dyke, and then curve round by Seddlescombe, finishing a little to the south of the Dyke Hotel. Owing to the steepness of the ascent, the line will be somewhat serpentine, so as to take the easiest gradients, and there will be no tunnels. Though the Dyke is calculated to be between five and six miles from Brighton, the actual length of the new line will be somewhat less, as the West Brighton Station is well on the way; and it is thought probable that the line will be completed by the end of the present year.

Closing of Hove Burial Ground.—An Order in Council has been issued which prohibits any new burial-ground being opened in the parish of Hove without the sanction of the Home Secretary; and it sets forth that all burials in the parish churchyard shall be discontinued. Exceptions, however, are made in favour of vaults and steined graves, on condition that every coffin buried therein is enclosed by masonry; also, in favour of such earthen graves as may be opened to a depth of 5 ft. without exposing the coffins already deposited therein or disturbing human remains.

NEW CLUB PREMISES, BELFAST.

THE Committee of the Ulster Reform Club have secured a site for their proposed new building in Royal Avenue, and plans have been prepared for the building. The new club is to occupy a vacant space next to the Provincial Bank, and the frontage of the building will be in the line of the new buildings on the west of the street, so that the south corner of the new club will project between seven and eight yards beyond the line of the bank front, affording a good opportunity for architectural effect, and enabling the members of the club to overlook a large portion of Donegall-place, Castle-place, and Royal Avenue. The entrance to the club is to be at this corner, and will take the form of an open stone porch or lounge, with granite pillars, and a stone balustrade facing east and south. The front door will open into a spacious vestibule, which will communicate with the hall and staircase, 33 ft. by 20 ft. On the principal floor will be provided a dining-room, 46 ft. by 43 ft., with a small minstrels' gallery or balcony at one end. This room will be 21 ft. high, and well lighted, having, besides other windows, two large bay-windows, commanding a view of the whole of Royal Avenue. The ceiling will be panelled in wood. The fireplace will be deeply embayed in the wall of an alcove, separated from the main body of the room by enriched pillars. The morning-room will also be approached directly from the main landing, and will be 34 ft. by 27 ft., well lighted with tall windows to the south, a bay-window to the avenue, and a large bay-window over the porch. A door of communication will enable this room to be used in conjunction with the dining-room on special occasions. In addition to these rooms, there will be on this floor a strangers' room and two large and well-lighted rooms for private dining or drawing rooms. As the dining and morning rooms are lofty, it has been found possible to interpose a mezzanine floor between a portion of the first and second floors, and the rooms thus gained are a committee-room, a library, 26 ft. by 19 ft. 6 in., and a smoke-room, 38 ft. by 19 ft. The only club, rooms in the second floor are the billiard-room 70 ft. by 30 ft., and a card-room. The former occupies the whole of the front of the building, and, besides the light obtained from continuous windows in the roof, has a series of windows facing the Royal Avenue and the south. The service arrangements are very ample and complete. The kitchens occupy the whole of the third floor, and are entirely isolated from the rest of the building, excepting by the service-stairs and the various hoists. The chief kitchen is 38 ft. by 19 ft., and besides this there are a spacious scullery and a vegetable kitchen, and ample larder and pantry accommodation. The whole of the ground-floor, with the exception of the hall, staircase, &c., already enumerated, will be available for letting. The material for the fronts is to be red Dumfries stone, with a little granite about the principal doorways. The internal fittings will be chiefly of pitch pine; the ceiling in nearly all the club-rooms will be framed in this material, and relieved with white Onega wood, and varnished. The cost of the building is estimated at 12,000*l.* The chief contract has been taken by Mr. James Henry, of Belfast, who will carry it out under the superintendence of the architects, Messrs. Maxwell & Tuke, of Manchester.

THE HEADQUARTERS OF THE METROPOLITAN FIRE BRIGADE.

THE chief station and offices of the Metropolitan Fire Brigade, in Southwark Bridge-road, are undergoing an extensive enlargement by the erection of a new block of buildings immediately adjoining the present premises. The site of the new buildings is the ground in front of Winchester House, which in former years was the town residence of the bishops of Winchester. The new buildings have a frontage to Southwark Bridge-road of 212 ft. in length, and contain four floors in addition to a basement, the height of the main building from the ground line to the ridge of the roof being 60 ft. The elevation is faced with red brick, with Portland stone freely introduced for dressings and ornamentation. It has a lofty central entrance in Portland stone, 12 ft. in width, and 25 ft. in height, carried up to the top of the first-floor windows. The entrance is flanked on each side with piers and pinnacles, also in Portland stone, the extreme width of the piers and entrance being 36 ft. The general face of the elevation is surmounted by a range of ornamental pediment dormers, mainly in Portland stone. The central portion of the frontage is surmounted by a handsome gable, with pinnacles at each angle, above which is a turret, 98 ft. in height from the street level.

The building internally, on the several floors, contains a large number of additional apartments for the members of the brigade, thirty-five of these apartments serving as the residences of married members, and twenty-five for unmarried firemen. Another spacious apartment consists of the instruction-room, and there are also apartments for the superior officers of the force, whilst at the rear of the building are the Superintendent's offices and those of the Engineer.

The architect of the buildings is one of the members of the staff acting under the supervision of the Superintending Architect of the Metropolitan Board of Works, and Messrs. Stimpson & Co., of Brompton-road, are the contractors. The cost of the buildings will be upwards of 25,000*l.*

TERRA-COTTA STATUARY.

MESSRS. STIFF have been exhibiting a fine group of statuary, representing "Agriculture," which they have just executed for the Government of India. It is one of four groups, in buff terra-cotta, intended for the adornment of some important new buildings in Calcutta. The designs for the whole have been approved by the Government of India. Each group will consist of a central ideal figure, flanked by a European and a native. The group "Agriculture," consists of a central figure of Ceres, with sickle in right hand, and some ears of corn in left hand. On her right hand stands a European indigo-planter, and on her left an Indian agriculturist is resting by his plough. The total length of the group is 10 ft. 3 in., and the height of the central figure including plinth, is 8 ft. 4 in. The group has been fired to such a degree of hardness, it is claimed, as to render the work imperishable. Each figure is in one piece. The sculptor is Mr. W. F. Woodington, and the manufacturers are Messrs. Stiff & Sons, of London Pottery, Lambeth. We may find an opportunity to give a view of the group.

BUILDING PATENT RECORD.*

APPLICATIONS FOR LETTERS PATENT.

2,613. F. Newman, Ryde. Appliance for flushing and inspecting drains. May 25, 1883.

2,693. J. A. Meginn, Liverpool. Graining of painted or coloured surfaces. May 30, 1883.

2,698. J. Waple, London. Chimney-tops and ventilators. May 30, 1883.

NOTICE TO PROCEED

has been given by the following applicants on the date named:—

June 1, 1883.

309. S. Hart, Hull. Construction of factory chimney-shafts. Jan. 18, 1883.

481. R. Stone, New York, U.S.A. Apparatus for hoisting stone, &c. Jan. 29, 1883.

489. J. A. B. Bennett, King's Heath; J. Herd and P. B. Walker, Edgbaston. Heating and cooking stoves. Jan. 30, 1883.

511. L. W. Leeds, London. Radiators for heating purposes. Jan. 30, 1883.

842. A. M. Clark, London. Extensible fire-escape ladders. (Com. by D. D. Hayes, San Francisco.) Feb. 14, 1883.

ABRIDGMENTS OF SPECIFICATIONS.

Published during the Week ending June 2, 1883.

4,700. S. Sturn, Cologne. Stoves, fireplaces, and kitchen ranges. Oct. 3, 1882. Price 2d.

One or more fixed or movable gratings are placed between the fire and the entrance to the chimney, instead of the usual damper. (*Pro. Pro.*)

4,074. B. J. La Mothe, New York, U.S.A. Metallic frames for furniture, &c. Oct. 3, 1882. Price 6d.

These frames are made of tubes and bars of metal hinged together at the places where they fold or turn.

4,715. J. Bateman, London. Stoves and fireplaces. Oct. 4, 1882. Price 6d.

Various-shaped tubes are heated by gasburners. These tubes are made partially of wire or wire-gauze, and covered with asbestos, and the air to be heated passes through them.

4,726. W. A. Barlow, London. Door-lock or latch-checks. (Com. by F. W. Boldt and P. C. A. Vogel, Hamburg.) Oct. 4, 1882. Price 6d.

The locking plate has a hinged check bar, with a pear-shaped slot, with an incline formed on one edge. The latch has a sprung bolt, with a conical bevelled head, and when the door is closed the bolt automatically engages the check bar.

4,727. W. A. Barlow, London. Trapping sewers and drains. (Com. by L. Henry, Brussels.) Oct. 4, 1882. Price 6d.

This apparatus consists of an oblong box open at both ends, and the end towards the sewer has a lever door hung in trunnions and balanced by a weight so that the slightest pressure from the inside opens it.

4,739. A. Gendebien, Brussels. Ventilators. Oct 5, 1882. Price 2d.

The outlets are tangential to the air inlets, and twin ventilators are arranged suppressing the arms, the axis, and the inside pallets. (*Pro. Pro.*)

THE QUEEN'S THEATRE IN LONG ACRE.

SALE AT THE AUCTION MART.

It will be remembered that some two or three years ago the Queen's Theatre in Long Acre was purchased by the Universities Co-operative Association, and at an outlay of upwards of 25,000*l.* was internally completely re-constructed for co-operative trading purposes Like several other similar associations, however, which came into existence during what may be termed the co-operative mania, the Universities Association resulted in failure, and for some time past the building has been closed. On Tuesday the property was submitted for sale at the Auction Mart, under an order of the Court of Chancery in the case of "Carr *v.* The Universities Co-operative Association, Limited, and Others," Mr. Edward Tewson, of the firm of of Debenham, Tewson, Farmer, & Bridgewater, conducting the sale. The property was described as leasehold, held from the Mercers' Company for a term of which 33¼ years are now unexpired, at a ground-rent of 100*l.* per annum. The particulars stated that the property occupies an area of about 10,000 square feet, possessing frontages to Long Acre, Wilson-street, and Charles-street. Formerly the Queen's Theatre, it had been converted at a great expense for the purposes of the Universities Co-operative Association, and could be readily divided into several warehouses or premises suitable for carriage-builders, printing works, or other trades. The first bid made for the property was 4,000*l.*, and it was ultimately sold for 9,200*l.*, being about one-third of the sum which was recently expended in the re-construction of the building. Following upon the sale of the former theatre, some adjoining leasehold property was next offered. It consisted of premises in Long Acre, covering an area of 850 square feet, forming buildings which had been occupied by the Association along with the theatre, and held from the Mercers' Company, for an unexpired term of 33 years, at a ground-rent of 50*l.* per annum. It was sold for 1,300*l.*, the two properties thus realising 10,500*l.*

* Compiled by Hart & Co., Patent Agents, 186, Fleet-street.

DISTRICT SURVEYORS AND TIMBER STAGES.

MR. F. WALLEN, DISTRICT SURVEYOR OF ST. PANCRAS WEST, AND MR. G. T. B. COBBETT.

It will be remembered that this was a summons taken out by Mr. Wallen, Marylebone Police Court, against Mr. G. T. B. Cobbett, for erecting a timber stage, such stage being, in the district surveyor's opinion, a structure contrary to the Building Act, 1855. The case was reported in last week's *Builder*, p. 759.

In the absence of Mr. De Rutzen, Mr. Cooke, magistrate, delivered judgment on his behalf in this case. His Worship, after stating that the question was simply whether a stage erected for drying and stacking timber was a building within the Act or not, said, that without going into reasons he could come to no other conclusion than that it was not within the Act. He must, therefore, dismiss the summons which had been taken out by the district surveyor against Mr. Cobbett.

ARBITRATION CASE.

LONGCROFT HALL MANSION, NEAR BURTON-ON-TRENT.

The new owner of this property, Mr. A. H. Arden, having decided to restore and renovate the same, called in, in October, 1880, the services of the firm of builders, Messrs. T. Lowe & Sons, of Burton-on-Trent, to prepare details, and proceed with the works, and shortly after the same had been put in hand various additional works were found necessary to be done in order to properly complete the building.

After the conclusion of the works, various questions arose between the parties as to whether an approximate estimate, which had first been given for a portion of the works, formed the basis of the contract; whether the builders were liable for damage to the works by frost, and for the repairs to the glass broken by the workmen; and further, as to the method employed in cleaning and renovating the old oak work, together with certain counter claims by the proprietor; and several other issues, including the valuation of the works.

It was, therefore, decided in December last to refer, by mutual consent, the whole matter to the arbitration and decision of Mr. G. Gard Pye, architect, of Bucklersbury, and Mr. Robert E. Carpenter, architect, of Stapenhill, Burton-on-Trent; or, in case of their disagreement, to the umpire appointed by them, Mr. Chas. Barry, F.S.A., architect

After a searching inquiry, extending over twenty-two days' sittings, and the examination of upwards of twenty witnesses, at the Hall and in London, the arbitrators have now agreed upon and published their award without going to their umpire The arbitrators were assisted throughout by Mr. Hugman, of the firm of Messrs. Fowler & Hugman, surveyors, of 20, Spring-gardens, and Mr. Henry Riley, surveyor, of Burton-on-Trent.

The solicitors engaged in the case were Mr. H. Goodger, of Burton-on-Trent, for Messrs. Lowe. Messrs. Booty & Bayliffe, of Gray's-inn, for Mr. Arden; and Messrs. Gadsden & Treherne, of Bedford-row, for the arbitrators.

The case involved many complicated points, and a sum of upwards of 3,000*l.*

WORK AT WEST HAM.

At West Ham, Thomas Casey, a builder, of 88, Boleyn-road, Kingsland, was summoned for unlawfully constructing the walls of certain houses now in course of erection by him in Garfield road, Plaistow, without having properly bonded and solidly put the same together with mortar or cement, contrary to the by-laws of the West Ham Local Board.

Lockyer Sandilands, one of the building inspectors of the Local Board, said that the defendant had deposited plans of four houses he intended to erect in Garfield-road, Plaistow. He began the work on the 4th of May, and on the 8th, when witness went to the building to examine it, he found that the walls were not properly bonded, and that bad mortar was being used. Witness complained to the defendant of the bad work, and on the 19th of May sent him a letter requesting him to discontinue the work, and another one on the 21st. On May the 28th, a sample of the mortar (produced in court) was taken and found to consist mostly of mould and lime, with little, if any, grit.

Defendant said he had only received two of the letters referred to, and that he stopped all his men as soon as he was spoken to by the inspector. He was willing now, he said, to make whatever alterations were necessary. Mr Sandilands said nothing but the pulling down of the work would suffice, and defendant then said he would do the work if it was required.

Mr. Philips said this being so, he should simply impose a fine of 1*l.* and the costs. The penalty was 5*l.*, with a continuing fine of 40*s.* per day after notice had been given by the Local Board. In default of paying the fine a distress would follow, and in default of distress fourteen days' imprisonment

Defendant said he would pull down the walls, and as the next week's work would be a dead loss to him, he asked for time to enable him to pay the money. He was allowed a fortnight.

ART PROBLEMS.

SIR,—Everything goes halting in art, because in all questions relating to it common sense, as a rule, is disregarded. As compared with other subjects, there is a want of directness and clearness in the treatment of æsthetics. The man who sets himself to vanquish art problems,— problems which offer the stoutest resistance to the investigating and the combative intellect,—deems it only necessary to pose himself in a fighting attitude, shut the eyes of his intellect, and, with a liberal use of jargon and tall talk, to beat the air. But, of course, this method of proceeding leaves the question which should have been mastered quite untouched. This kind of thing has been going on through the years, and is still the fashion of the time,—in an age, too, which professes to be intensely scientific! No, sir, this kind of thing must be put a stop to. If progress and useful knowledge be desired in art, as in other sections of inquiry, we must, as in other subjects which formerly thwarted analysis, learn where to grip art, that we may wrestle with it effectually.

I was led to these reflections by a passage in a letter in the *Builder* of the 26th ult., p. 725, entitled "Looking Back":—"We love beauty and truth, and hate ugliness and lies wherever we find them." Now, to *hate ugliness* wherever we should find it would be as diabolical as to love lying, for ugliness inheres in nature, in reference to human eyes. Who made the ape, the hippopotamus, "the toad, ugly and venomous," as well as the human form, the gazelle, the lily, &c.? To require everything to be beautiful is one of the insanities and demoralising influences of the day. "Who is to love the ugly, aunt?" asked a little niece of her relative, who was trying to imbue the child with what, in the canting phraseology of the time, is termed *the ineffable sense of the beautiful*. "I thought," continued the child, "it was easy enough to love the beautiful. We all are ready to like and love the beautiful, you know; but I thought it had been commanded that we were not to love the beautiful too much, because it is sinful!" The child intuitively detected the shallow and absurd heresy that would insist on the hating of any ugliness but moral deformity. To do so would, indeed, exhibit an ill-constituted mind, a mind on a par with such as may now and then be heard giving expression to this low sentiment,—"Look at that ugly brute!" as if God's creatures, high or low, had made themselves.

The exhortations to "design with beauty," and "to build in truth," if not misleading, are quite too vague to be of the slightest practical utility. In all design, adaptation to purpose should be the main aim, whether that course result either in beauty or in ugliness. The realisation of the beautiful for the gratification of taste is a special purpose, whereas, from want of analytical power in those who discourse upon art, the realisation of the beautiful is erroneously held up to be the whole duty of art.

W. C. T.

RED SEA AND MEDITERRANEAN JUNCTION AND VALLEY OF THE JORDAN.

SIR,—The late Admiral Sir George Cockburn (no mean authority) thought the junction of the Red Sea and the Mediterranean, through the Ghor and the valley of the Jordan, practicable; and, as a visitor at his house at High Beech, I, with him, looked into the matter. Captain Allen, from surveying in the Red Sea, brought Sir George levels and particulars, and afterwards a report; part of this will be found in the British Museum, in "Philosophical Transactions," about forty years ago, I believe; and I am sorry to find you dismiss the matter without further inquiry,* as I firmly believe it is practicable with money and little engineering skill (notwithstanding all your figures are true), and if done it would be incomparably the best means of uniting the two seas, and the cheapest, as it would require no dredging and very little maintenance. And, further, I almost believe no power on earth can prevent its being done. Most certainly, after reading Ezekiel xlvii., which describes the mighty flood you show would be the result, it should be still further considered.

I believe the northern arm of the Red Sea once ran into the Ghor, probably up to the Sea of Galilee,

* See p. 600, *ante*.

heading back the upland waters, and forming a large freshwater sea. I believe by the upheaval of a coral bank at Akaba the Red Sea was cut off from the Ghor, and the salt water evaporated, until it and the supply from the Jordan became *in equilibrio*, which left an intensely bitter lake at the bottom, called the Dead Sea. The Mediterranean is about 12 ft. below the Red Sea, and 1,250 ft. above the Dead Sea. The Ghor is a deep valley, a tremendous ditch (dry from Red Sea to the Dead Sea). If the coral bank at Akaba were blown away the water would run into the Ghor towards the Dead Sea, and lengthen the northern horn of the Red Sea. Between the Ghor and the Mediterranean, the hills on the banks of the Ghor rise up over 1,500 ft. of tremendously hard rock, while above the Dead Sea in the valley of the Jordan they sink down to 200 ft. Now, if the water were simply let in from the Red Sea to the Dead Sea and from the Mediterranean to the valley of the Jordan an uninterrupted waterway with a gentle scour would exist between the two seas, the canal part on the plain being through a soil which would never silt up. This communication would be perfect, but it would cover much lowland (other land would be gained, however), but if worth while, it would be very easy to regulate the depth of the water flowing in above the Dead Sea, and make a hydraulic lift into the canal and into the Red Sea. In the deeper cutting, stone would be recovered worth quarrying, and, being through stone for the short distance where the cutting is deepest, the banks could be very perpendicular. I have not the levels here, but I know the whole subject well, and, I hope from what is shown, you will allow that the matter should be further considered.

G. PEARCE POCOCK.

Surrey, Kent.

TENSILE AND CROSS STRAINS.

SIR,—All manufacturers of artificial building materials and all dealers in natural materials subjected to cross and tensile strains belong to the pre-scientific age, and are totally ignorant of these qualities of the materials they deal in. In small works the cost of having the materials made up or cut to the required shape and size, and tested, is more than the work will bear, and, consequently, the architect is driven to use iron when he would prefer stone or concrete.

This is no fanciful objection, for I have often been compelled to use iron instead of stone in lintels or corbels. Now that accurate tests may be obtained at a comparatively moderate cost, it may appear incredible, but it is nevertheless true, that the strength of stone to resist tensile and cross strain is impossible to be got. Yet stone is constantly being used in cross strain, and occasionally in tension for pendents.

G. AITCHISON.

THE JOURNEYMAN.

SIR,—Under the heading, "The Future of the Journeyman," your correspondent, Mr. Spence, has dwelt upon the hard fate of the old mechanic. There is no doubt that what he states is quite true. The grey hairs are scouted almost everywhere. If two men apply for one vacancy, the younger one is sure to be selected. It is but natural that such should be the case. The mad competition the London builder of our time has to contend with makes it of vital importance to employ none but the quickest workmen. The establishment of a fund vested in the hands of a committee of our leading employers would, I am sure, be a profitable investment for both master and man, and would lead to the best results, as, of course, none but those who could prove themselves to have been what a mechanic ought to be could be allowed to receive its benefits. It would act as a powerful incentive (sorely needed) to uprightness of conduct and excellence of work.

A WORKING PLUMBER.

DECORATION OF ST. PAUL'S.

SIR,—Although a long way off, with a clinging towards my native city, I feel a deep interest in its grand cathedral, for I have often attended its services in my early life.

I have just read a letter upon the above subject, published in January last. If not too late, I urge the authorities to reconsider the scheme of decoration, so that the work may speak throughout ages to come of our national character, which, in my mind, will be best exemplified in completing this interesting work with that purity of spirit which actuated the great architect in its commencement.

I left England eighteen years ago, and I went to the cathedral before starting to hear the last service in my native land. I saw the first trial of illumination to the ceiling of the choir, which I contrasted with the delicate foliage and frescos of the dome, regretting that Sir Christopher Wren had not the liberty of completing his own work.

Since I have moved about, I perceive that the sunny climate of Australia may, like other warm skies, encourage severe colours, hard outlines, and deep shadows; but I scarce can credit that the chaste lines of the Corinthian Order lay claim to extreme colour.

Wren sought to teach nobility and purity as the type of our national religion. Let us, in this age of restoration, take care we do not bring about an age of demolition. Let us make God's house the best in the land, purity and sacredness governing every detail, as an expression of the great Architect to whom we owe the praise.—"The earth is the Lord's and the fulness thereof."

W. F. HAMMOND, A.R.I.B.A.

Auckland, New Zealand.

A JOINER'S SHOP AND ITS MANAGEMENT.

SIR,—As a journeyman, I would crave the favour of a reply to "M. A. F." and "Harry Dunkley" on this subject

It is an undoubted fact that "tipping the foreman" in some shops, and, in a large number, "treating him," has a good effect for one who wants to keep his job; but I would be very sorry indeed to think either of these practices (especially the former) so extensively resorted to as to make them subjects of general interest.

As to favouritism, when I get a job I am seldom troubled with it. Where I encounter it most is in seeking work. In some shops there is a notice, "No Joiners Wanted," which remains up at all times. One needs to find out the name of the foreman there, and ask for him. The difficulty, in a great many cases, is to get past the timekeeper's box. For one who keeps up no acquaintance, and who is not a member of the trade union, this makes seeking work in London a doubly dreary and thankless job. But there is a reason for it. Whenever a foreman wants men and cannot get them, he will discard all favouritism. He will then take on all comers, and pay off those unable to earn their money. The moral of this state of matters is easier seen than a ted upon,—*i.e.*, there are too many of us.

T. P. H.

PROVINCIAL NEWS.

Berwick-upon-Tweed.—Mr. Walker, manager to the North British Railway Company, and Mr. Carstairs, engineer to the company, have visited Berwick, and met the Committee of Management for the proposed fishery harbour at the Greenhaven, as well as Mr. J. Watt Sandemann, Newcastle, the engineer of the proposed work. They proceeded to the site of this and examined it, as well as the ground required for the proposed branch railway. They also heard the particulars of the scheme, the advantages of which were pointed out to them. Mr. Walker promised to bring the subject before the directors of the North British Railway Company.

Gloucester.—It is stated that the Ecclesiastical Commissioners have consented to relinquish all prospective or reversionary interest which they may have under lease of some of the houses in College-street, for the purpose of improving the approach to the Cathedral.——Messrs. Robertson & Co., are about to erect new brewery premises in Quay-street, from plans prepared by Mr. W. Bradford, architect and brewers' engineer, London. The contract for the works has been taken by Mr. Alfred King, builder, Gloucester.

Swansea.—The new drill-hall in Singleton-street, which has been erected by Mr. W. Pike for the 3rd Glamorgan Rifle Corps, and which is also intended to be used as a public hall, will be opened this Saturday, the 9th inst. The building is the site of the old malthouse of the Swansea Brewery premises, a site at once central and convenient, and will be one of the largest public halls in the kingdom. It is described by the *Cambrian* as being of the Tuscan style of architecture. The main entrance is 9 ft. wide. Inside the entrance is a lobby of similar proportions, from which there is a staircase leading to a gallery capable of holding 250 persons. The ground-floor of the hall measures 80 ft. by 70 ft. The roof spans the whole of the building with iron principals. There will be accommodation to seat 1,000 guests. Abreast of the corridor is a suite of retiring-rooms, armoury, two large kitchens, and scullery, above which is a minor hall, 60 ft. by 27 ft. At the north end of the large hall is a stage, 45 ft. by 20 ft., which is entered from the minor hall on the one side, other officers' rooms on the other side, making the stage convenient for all kinds of public entertainments. The new buildings has been erected at a cost of 4,000*l.*, the contractor being Mr. Thomas White, and the architect Mr. T. P. Martin.

Scarborough.—On the 1st inst. the report of Sir John Coode, as to the practicability and cost of the proposed road round the Scarborough Castle Cliff, was presented to a committee of the Scarborough Corporation. Sir John says the work presents no engineering difficulties, but is more a matter of finance. In reference to the proposed work at the extreme northern portion of the Castle Cliff, he says that the strength of the sea is greater than in the case of any other undertaking of the kind with which he is acquainted. He divides the project into two parts, one being the whole scheme from Peasholm Beck to the East Pier, and the other from Peasholm Beck to a point known as Coffee-pot Rock. The estimate for the former is 124,680*l.* gross, and for the latter, 48,500*l.*, also gross.

CHURCH-BUILDING NEWS.

Coventry.—At a recent meeting of the Coventry City Council, the Mayor (Mr. A. S. Tomson) in the chair, the Town Clerk, at the opening of the meeting, said he had received a letter from Mr. Seymour, vestry clerk of St. Michael's, relating to the condition of the nave, aisles, chancel, and chapels of St. Michael's Church, and requesting an interview on the subject of the liability of the Corporation of the city, as the lay impropriators, to repair the chancel, with a view of endeavouring to arrange a final settlement of the question. The Town Clerk said he saw the Mayor upon that letter, and with his concurrence replied stating he had consulted the Mayor, who was of opinion that if the question of the liability of the Corporation to repair the chancel of St. Michael's Church was to be raised it would be best for the Council to deal with it from the beginning. At a subsequent meeting of the Council the Town Clerk said he was not able to advise that the Corporation was liable to repair the chancel of St. Michael's Church. The general law no doubt was that lay impropriators were liable to repair the chancels, but that law was not without exceptions. Suits against lay impropriators were extremely rare, but there was a suit in the year 1823, now just half a century ago, by the churchwardens of the parish of Clare against the Bishop of Ely as lay impropriator of the tithes of the parish of Clare to compel the Bishop to repair the chancel of the Parish Church, and that suit failed on the ground that there was from time immemorial an ancient and laudable custom for the parishioners of the parish of Clare to repair their own chancel. As far as he had been able to acquaint himself with the facts, it seemed to him that there was a like ancient and laudable custom in the parish of St. Michael's. He had caused the minute-books of the Council to be searched from the year 1565, the year in which the Corporation became lay impropriators by the purchase in that year of the tithes of Queen Elizabeth, and that search continued down to the year 1700, and there was no minute of repairs having been done to the chancel of St. Michael's Church by the Corporation. Mr. John Oldrid Scott has been consulted as to the contemplated works.

Alsop-en-le-Dale.—Five or six miles from Ashbourn, is the Hamlet of Alsop-en-le-Dale, lying at the feet of two of the great limestone hills which abound in the Peak. Elleshope, or Alsop, was for many hundreds of years the home of the Allsopp family, the present head of which has recently acquired by purchase the property so long held by his ancestors. Sir Henry Allsopp at once gave his assistance to a movement for the restoration of the ancient and dilapidated church which he found in the village. The task of directing the restoration of the church was entrusted to Mr. F. J. Robinson, architect, of Derby. The walls, both inside and out, had been cleansed from rough casting and plaster, and been neatly pointed in accordance with the original construction. The side walls of the church were raised about 300 years ago, and a flat roof placed over it. The latter had become partly ruinous, and has been removed, and both the external and internal appearance of the sacred edifice has been greatly improved by the lowering of the walls to their original height and the substitution of a high open timber roof. The floors have been entirely replaced, the passages and chancel being laid with Minton tiles, and the remainder with wooden blocks laid transversely. A new stone font, of circular design, has replaced the old one, which was in a very decayed condition; and the carved oak pulpit, now stained and varnished, which was removed from Ashbourn Church four years ago, has been given to the restored

edifice by a friend. The church has been seated with open deal benches, stained and varnished, providing accommodation for eighty persons, and furnished with a warming apparatus. Every care has been taken to preserve the old features of the church; the doorway and chancel arch, with the round-headed window on the south of the nave, and the small piscina in the chancel, which probably was also part of the original structure, have been retained, together with a slab in memory of a centenarian, Anthony Beresford, of Alstonfield (son of Francis and Anne Beresford, of Castern), who died on March 3, 1874, at the age of 102. At the west end a bold tower, in character with the church, has been erected, and in this the old bell has been re-hung, room being left for two others, which it is hoped shortly to place there. The total cost of the work, including the placing of new gates to the churchyard, has been 750*l.*

Chorley.—A new baptistery has just been formed near one of the principal doors of Chorley Parish Church, and into which the font has been removed. The floor of the baptistery has been paved with encaustic tiles, and is surrounded with a brass railing, supported on seven standards of wrought-iron, with brass ornamental crosses in each scroll, the crosses being enriched with ruby jewels. Entrance to the baptistery is obtained through a telescopic slide in the hand-rail, the standards being appropriately painted in various colours. Messrs. Thomas Thomason & Co., of Manchester and Birmingham, have supplied the metallic work, and the whole of the cost is being defrayed by Miss Caroline Master, daughter of the late Rev. Canon Master, who was rector of Chorley for thirty-two years. The church is remarkable for the fact that it contains within its precincts the reputed remains of St. Laurence, its dedicatory saint, whose bones are placed in a recess in the chancel, and are visible through a small glass window. Over the recess is a brass plate bearing the explanatory inscription:—"Within this niche are deposited the relics of St. Laurence, to whom this church is dedicated, which were brought from Normandy by Sir Rowland Standish, Knt., A.D., 1442, and deposited by him in this church. *Vide* Harleian MSS., Cod. 2042, Fo. 239, in the British Museum."

Burton-on-Trent.—A new mission-church, in connexion with St. John's Church, Horninglow, has just been opened. The church, which has been built from designs by Messrs. Giles & Crookhouse, of Derby, is intended to accommodate about 450 persons. It is a plain but substantial Gothic building, having external walls of red brick and stone dressings, while internally the walls are of white bricks with red brick ornamentation. Excluding the chancel, which is separated from the body of the church by curtains, it is 70 ft. long by 30 ft., and the chancel is 16 ft. by 18 ft. The roof is of timber, covered with tiles, and the floor is of wooden blocks. The principal approach, from Hunter-street, is by a spacious porch, and there is another entrance adjoining the chancel for admission to the vestry. In the chancel are permanent choir-stalls, which, like the lectern, are of pitch pine, but the seats in the body of the church are movable, and consist of benches and chairs. Mrs. and Miss Loverock have worked and presented to the church a handsome altar cloth, and the curtains separating the chancel are the work and gift of Mrs. Wright. Messrs. Lowe & Sons were the contractors, the woodwork was done by Messrs. Stevenson & Sons, and the plumbing, &c., by Mr. T. Turner.

DISSENTING CHURCH-BUILDING NEWS.

Oxford.—The large growth of population in the northern suburbs of Oxford induced the Wesleyan Methodist congregation worshipping in Cranham-street to transplant themselves to that suburban quarter, and having secured a site for a new place of worship in Walton-street on ground belonging to St. John's College, they entrusted Mr. Mullett Ellis, architect, of Old Jewry, London, with the commission to prepare plans for the new edifice. The building, which is now in course of erection, is Early English in style. It is faced externally with red brick, and coped with white sandstone. The building is to be seated to accommodate 150 worshippers. In the rear of the church there is a spacious schoolroom, with four vestries and class-room beneath. The total cost of the building is 3,000*l.* The contractors for the work anticipate to have the building ready by the 1st of September. On the 17th ult. the four memorial stones were laid at different points at the foot of the building near to the front.

Bermondsey.—A new Baptist mission-hall or chapel is being erected for the Green-walk Mission, and the memorial stone of the building was laid on the 21st ult. The hall will contain accommodation for 700 persons. There will be school and class-rooms attached, and there will be provided a room supplied with newspapers and books for working men. The total cost of the building is estimated at 4,600*l.*, and a contract for that sum has been taken by Mr. W. Johnson, of Wandsworth Common. It is estimated that 400*l.* will be required for fittings.

Darlaston.—On the 28th ult. the memorial-stones of a residence for the pastor of the Wesleyan Chapel, Pinfold-street, Darlaston, were laid. The new residence will be on the site of the old one adjoining the chapel, and the contract has been entrusted to Mr. G. P. Butler, of Darlaston, whose estimate is 690*l.*, the total cost being estimated at 600*l.*

STAINED GLASS.

The Bunyan Memorial Window, Elstow.—On Sunday, the 29th ult., services were held in Elstow Church, Bedfordshire, by way of dedication of a new stained-glass window in commemoration of "the immortal dreamer," Bunyan, who was born in the parish of Elstow, A.D. 1628. The window has been inserted in the east wall of the south aisle, and contains three lights, with tracery above, representing a series of subjects from "The Pilgrim's Progress," in the following order:—1. The pilgrim, having discovered his burden of sin, is resolved to get rid of it, escapes from the City of Destruction, and starts on his journey crying "Life, Life," amidst the jeers of his neighbours and the entreaties of his wife and children. 2. Evangelist meets him and directs him to Mercy's Gate. 3. He has arrived at the Wicket-gate and knocks for admittance. 4. Pilgrim has arrived at the Cross, and loses his burden, which falls into the tomb, while the three shining ones are ready to give him the new token, the roll of acceptance, and the seal. 5. Christian is in the Valley of Humiliation in conflict with the enemy Apollyon. 6. Christian and Faithful are crossing the River of Death, and welcomed by the shining ones on the heavenly shore. The subjects are divided by bands setting forth the texts in relation thereto. The window was designed by Mr. Thomas W. Camm, of the firm of R. W. Winfield & Company, successors to Camm Brothers, Smethwick and Birmingham, and executed by them.

Arundel.—A further instalment of stained glass is about to be fixed in the R.C. Church of St. Philip at Arundel. The work consists of thirty-two lancet lights, depicting lay saints in different conditions of life, the old and new priesthood being elsewhere given, and one window, showing the founders of religious orders, being in hand, all the work being done under Mr. Joseph Hansom's direction by Messrs. Hardman, of Birmingham, who have supplied all the stained glass for this great work of the Duke of Norfolk.

Miscellanea.

North Wales Quarrymen's Union.—The ninth annual conference of the North Wales Quarrymen's Union was held at Bethesda last week. The annual report described the past year as one of great depression and suffering to men employed in the slate quarries. Many of the younger hands had emigrated, and as others were desirous of following their example, the executive council had under consideration a scheme for acquiring a large tract of land in the United States, and the establishment of a colony, the colonists having the option of purchasing their lots upon easy terms. Trade in North Wales was progressing slowly, and the prospects of the slate trade were improving. There had been a solitary dispute during the year, adjustment of which had cost the union 5*l.* The funds of the organisation had increased during the year by upwards of 1,000*l.*, the total assets being 10,891*l.* 3s. 11d. The president and other officers were re-elected, and papers bearing upon the objects of the union were read by members.

Edinburgh Architectural Association.—A supplementary meeting of this association was held in the Professional Hall to hear the continuation of the president's (Mr. MacGibbon's) lecture on "Scotch Castles and Houses." The lecturer pointed out that on the last occasion he had described and illustrated the great buildings of the thirteenth century, which formed a well-marked period in Scotch domestic architecture. Owing to the exhaustion of the country during the war of independence, the castles of the succeeding century were of a much smaller and simpler description. The Norman keep was now the model adopted, and buildings on this plan continued to be erected for several centuries afterwards. These towers were illustrated by plans and drawings of Lochleven Castle, and the towers at Alloa, Clackmannan, Liberton, Preston, Niedpath, Borthwick Castle, &c. In the fifteenth century the condition of the country had improved, and larger and more commodious dwellings were required. In many cases the old towers were preserved and added to by extending buildings round the courtyard till these gradually came to assume the form of a mansion surrounding a quadrangle, as seen in the castles of Craigmillar, Castle Campbell, Crichton, Kilchurn, Balvaird, &c. Some of these castles, however, were enlarged with buildings adjoining, but disconnected from the keep,—such as Huntingtower, in Perthshire, and the Dean, near Kilmarnock. During this period (fifteenth century) new castles were also erected, designed on the plan of a quadrangle, such as Caerlaverock, Doune, Tantallon, &c., which were illustrated and minutely explained. At the conclusion of the lecture a very cordial vote of thanks was accorded.

Proposed New Masonic Temple.—On Wednesday evening, under the presidency of the Earl of Carnarvon, Pro-Grand Master, the quarterly communication of the English Grand Lodge was held. An important report was brought up by the Board of General Purposes, of which Sir John Monckton is president, in relation to the fire which destroyed the temple, where, since 1776, the meetings have been held. It stated that the fine pictures of Grand Masters, and many things of interest, had been destroyed. In regard to the erection of a new temple, the Board did not support a proposal to remove the meeting-place to the Thames Embankment, the great cost of a site there being one objection. The Grand Superintendent of Works, Mr. Horace Jones, had been requested to report as to the best means of carrying out such works as would give the Craft a hall which would seat at least 1,500 brethren, and his proposal was to take in the Great Hall, and to find a site for the hall on land adjacent. He was of opinion that the total expense of this scheme would not exceed 30,000*l.* or 35,000*l.* beyond the sum which would be received from the insurance companies. The report was referred back to the Board of General Purposes for execution.

Malaria in Italy.—The Italian Minister of War, we are told, has had prepared for the use of the military authorities a statistical map showing the extension and relative intensity of malaria throughout the peninsula. This map has been compiled from an exhaustive series of sanitary observations that have been carried on for years in all the provinces of the kingdom. Italy is divided into sixty-nine provinces, of which only six are completely free from this scourge, while it is felt with great severity in twenty-one. It is estimated that 40,000 men, or more than 10 per cent. of the army, are annually victims, many fatally, to malaria, and the annual cost of special hospital arrangements to meet this amounts to over ten million francs. It is noteworthy that malaria seems to have increased both in extent and intensity with the development of railways. This is attributed to the large excavations which are allowed to remain unfilled, becoming in time the seats of stagnant pools or marshes. There are some of the Italian lines which have acquired the reputation of being permanent homes of malarial fever.

Vienna City Railways.—In Mr. Fogerty's letter in our last number (p. 756), there is a typographical error which needs correction, viz., in the twenty-seventh line from the top, where, instead of "Mr. Brunlees," the name should read "Mr. Bunten."

Exhibition of Cutlery in London.—Earl Cairns, on behalf of the Cutlers' Company, opened an exhibition of cutlery in Salters' Hall, on Monday afternoon.

The Hotel Metropole.—In the House of Commons on Monday evening, Mr. Story-Maskelyne asked the Chairman of the Metropolitan Board of Works whether, in reply to a communication from a committee of the Board to the Institute of British Architects regarding the design for the elevation of the Hôtel Métropole, the Council of the Institute stated that, "in the opinion of the Council, the design of that building, more especially as regards the portion above the ground-story, is unworthy of its intended position, and that the said design should be considerably modified before approval be given to it by the Metropolitan Board of Works;" and whether his answer relating to this subject on the 10th of May, to the effect that the Board had sanctioned the erection of the said building without having submitted any altered elevation to the Council of the Institute, still represented the attitude of the Board of Works in regard to this question; and, if it did so, whether he would explain to the House how the Board deemed itself justified in evading the conditions embodied in an Act of Parliament (of 1873).——Sir J. M'Garel Hogg, in replying, said,—I beg to inform the hon. member that his quotation from the letter of the Council of the Institute is perfectly correct, and that my answer of the 10th of May still represents the attitude of the Board in this matter. I cannot however, for one moment admit that the Board has evaded conditions imposed by Parliament. The wording of the Act was intended to convey no more than the suggestion of friendly consultation between the Board and the Council of the Institute, without binding the Board to carry out the suggestions of the Council.——Mr. Story-Maskelyne further asked whether one of the architects concerned in the erection of these new buildings in Northumberland-avenue was not a member of the Metropolitan Board of Works. ——Sir J. M'Garel Hogg said that one of the members of the Board had a share in the undertaking.

Society for the Protection of Ancient Buildings.—On Wednesday afternoon the sixth annual meeting of this Society was held in the hall of the Society of Arts, John-street, Adelphi, Sir John Lubbock in the chair. The report, which was read by Mr. William Morris, gave a list of about 120 ancient buildings in this country, besides nine abroad, in reference to which the Society had taken steps during the past year, either to induce those in charge of them to perform some necessary repairs, or to protest against such falsifications of old work as were often called "restorations." Among the instances treated more at large in the report some stood out very prominently. Such were the continued "restorations" at the Tower of London; that going on in depravation of the largest parish church in England, St. Nicholas's, Great Yarmouth; at Peterborough Cathedral; at Croydon Palace; at St. George's Chapel, Windsor; and at Hampton Court Palace. In foreign countries a considerable portion of the Society's work in the past year had been devoted to the monuments of Arabart, in Egypt, and to various Italian buildings, such as the Monastery of Ara Cœli at Rome, the Mercato Vecchio and the Ponte Vecchio, in Florence, with other buildings. Mr. Vernon Lushington moved the adoption of the report. The motion was seconded by Lord Houghton, who remarked on the two things wanted—the prevention of our old buildings from perishing by decay, and their repair without defacement. To solve the problem artistic taste and historical knowledge were alike indispensable. Instances of complete success were rare. The report was adopted, and on the motion of Mr. R. S. Poole, a resolution in favour of the measure now before the House of Commons for extending the principle of Sir John Lubbock's Act so as to embrace monuments of a later date, was passed.

The Somersetshire Archæological and Natural History Society.—The thirty-sixth annual meeting of this society has been fixed to take place at Wiveliscombe on the 21st August, under the presidency of Mr. W. E. Surtees, D.C.L. The meeting will extend over three days. On the first day the society will explore the archæological treasures of Wiveliscombe, and in the afternoon a drive will be taken by Clayhanger and Huish Champflower. On the second day Castle Roch Gaulden, Lydeard St. Lawrence, and Raleigh's Cross on the Brendon Hills will be visited. The members on the third day will proceed to Dulverton, and drive to Brushford, Tall Steps, Combe House, Batlynch, and Burston.

Bethnal Green Free Library.—The committee of the above institution have published a statement to the effect that after seven years' incessant labour they have secured a valuable collection of books, magazines, &c., numbering about 17,000 publications, all of which have been presented by generous donors, including the Prince of Wales, the Duke of Edinburgh, the Duke of Albany, the Princess Beatrice, and other members of the royal family; authors and editors, firms and publishers, societies and institutions, including the University of Oxford, and several departments of State. The books, &c., are deposited in suitable premises, which include the library, newspaper and magazine room, ladies' reading-room and lecture-hall, and which have been erected at a cost of 5,000*l*. The library was opened to the public on the 22nd of December, 1881. The expense for shelves, cases, &c., for these works, which has been considerable, has been met by the contributions of liberal donors, but additional funds are needed to accommodate the large number of volumes, reviews, journals, and magazines that have been recently donated.

Water-Supply at Gloucester. — It is announced that until further notice the city water-supply will be shut off from eleven o'clock at night until six o'clock in the morning. In reviving this system of intermittent supply the authorities have taken a retrograde step. It is now well recognised that the intermittent system of supply is fraught with danger, owing to the fact that the water remaining in the pipes after the communication with the reservoirs is stopped becomes charged with foul matter by the leakage inwards of mud, polluted water, sewer gas, &c. The authorities of the city plead that the intermittent system is necessary to be carried out owing to the supply at Whitcomb being insufficient to meet the average daily consumption of 30 gallons per head. It is contended that 30 gallons per head per day for Gloucester is an excessive allowance, and that by means of the waste-prevention meter invented by Mr. Deacon, the Liverpool Water Engineer, and by inspection of these meters, the quantity per head could be reduced to 20 gallons per head per day.

The Metropolitan Board and the Theatres.—At the meeting of the Metropolitan Board of Works on the 1st inst., the report of the Building Act Committee recommended that the application of Messrs. Spiers & Pond (Limited) for approval by the Board of the drawings of the proposed alterations at the Criterion Theatre be granted, on condition that a certain apartment were converted into a crush-room in connexion with the proposed new staircase leading into Piccadilly. The recommendation was approved by twenty-nine votes to six. The committee also reported that, having regard to the many and serious structural defects of the Cirque in Argyll-street, Regent-street, they were of opinion that it was not a fit place for public entertainment. The report was adopted.

The Liverpool Cathedral Movement.—The next meeting of the sub-committee appointed to report as to the selection of a site for the proposed cathedral for Liverpool will be held on Tuesday, the 19th inst., when a large amount of tabulated information respecting the quantity of land the cathedral should actually occupy, embracing all the necessary surroundings, will be submitted and discussed. The sites committee will meet on the following day, to consider the report of the other committee. It is stated to be the opinion of the committee that before any site is finally decided upon the architect who is to be entrusted with the construction of the building shall have some voice in the matter.

An Alpine Village.—A bazaar of this character will be held on Thursday and Friday next, from 2 to 10 p.m. in the Chelsea Vestry Hall, King's-road, in aid of the extension of St. John's Hospital for Diseases of the Skin. The Countess of Cadogan will officiate, supported by H.S.H. the Duke of Teck (president of the Hospital), Sir Spencer Wells (president of the College of Surgeons), Lady Brassey, Sir Charles Dilke, Sir Charles and Lady Freake, &c.

Wrought Ironwork.—Messrs. Jones & Willis have just completed a series of six wrought-iron grilles for spandrel-spaces in the upper part of the carriage-porch of a large mansion now in course of erection near Dundee. Between each pair of spandrel pieces there is a large rose or boss. The design and workmanship are such as to reflect credit on the firm.

TENDERS.

For reservoir, cooling-pond, &c., at Goldstone Bottom, for the Brighton Waterworks. Mr. E. Easton, engineer:—

Nowell, Shepherd's-bush	£16,600	0	0
J. Anscombe, Brighton	14,783	14	4
J. Jackson, Westminster	14,408	0	0
Dickinson, Bermondsey	14,320	0	0
G. Lockyear, Brighton	14,285	0	0
J. Marshall, Brighton	14,094	0	0
G. Cheesman, Brighton	13,990	0	0
R. Peters, Horsham	13,900	0	0
Hill Bros., High Wycombe	13,316	3	0
Harrison, Brighton	13,296	0	0
Longley, Crawley	12,809	0	0
Beadell Bros., Erith	12,276	0	0
Oliver, Brighton	12,220	15	0
G. H. Denne, Deal	11,678	0	0
Hayter, Portsmouth	11,282	0	0
J. Chappell, Pimlico	10,996	0	0

For farm buildings at Mote Farm, Ash-next-Sandwich, for Mr. W. Hammond Solley. Messrs. Fry & Broad, architects:—

Smith & Son, Ramsgate	£1,465	0	0
Lewes, Dover	880	10	0
F. Fetherstone, Littlebourne	790	15	0
J. Bourne, Dover	776	0	0
H. Stiff, Dover	767	0	0
Jackson, Dover	765	0	0
J. Wise, Deal	750	0	0
J. Petts & Son, Walmer	749	0	0
Richardson, Dover	749	0	0
A. Brisley, Ash	743	0	0
Hayward	720	0	0
Halton	720	0	0
W. J. Wiles, Dover	709	0	0
J. Welsh, Dover	698	0	0
G. H. Denne, Deal	678	0	0

For the new Lenton Boulevard, for the Corporation of Nottingham. Mr. A. Brown, Borough Engineer:—

Scott, Wigan	£34,400	0	0
Hampshire, Lincoln	33,600	0	0
Kirk & Parry, Sleaford	29,214	0	0
P. Smith, Manchester	28,088	0	0
T. Smart, Nottingham	23,968	0	0
J. Dixon, St. Albans	22,984	0	0
Tomlinson Bros., Derby	22,519	0	0
Forster & Barry, Nottingham	22,073	0	0
J. Knight, Loughborough	22,067	0	0
G. Smith, Newcastle-on-Tyne	21,074	0	0
Kellett & Bentley, London	19,985	0	0
Meat Bros., Nottingham	19,580	0	0
S. Thumbs, Nottingham	19,461	0	0
W. Cordon, Nottingham *	18,613	0	0

* Accepted.

For alterations and additions to house at Orlingbury, near Wellingborough, for Mr. J. Nunneley. Mr. Edward Sharman, architect:—

G. Henson	£750	0	0
Lewis & Simpson	738	16	6
Underwood	689	19	0
Ward & Saxby	685	0	0
S. Abbott	666	15	0
G. Mundy	658	5	0
Geo. H. Green (accepted)	655	10	0

For boys' day rooms and school-mistress's cottage, and other works, for the Managers of the Central London District Schools at Hanwell. Mr. George Judge, architect. Quantities supplied by Mr. W. H. Brayshaw:—

E. Grover, Ealing	£9,080	0	0
H. Muller, London Fields	8,800	0	0
W. T. Niblett, Highbury	7,730	0	0
Eyears & Sampson, Westminster	7,690	0	0
J. W. Sawyer, Clapham	7,553	0	0
McCormick & Son, Canonbury	7,389	0	0
G. Parker, Peckham	7,334	0	0
H. R. Swain, Barnsbury	7,279	0	0
G. Gibson, Southall	7,265	0	0
W. Oldrey, Westbourne Park	7,000	0	0
T. Boyce, Hackney	6,843	0	0
W. Brown, Southall	6,738	0	0
Lucas & Son, Kensington	6,405	0	0
H. Haynes, Harrow	6,100	0	0
Priestley & Gurney, Camden Town *	5,840	0	0

* Accepted.

For the erection of a villa residence at Clacton-on-Sea, for Mr. Robert Blackie, exclusive of fittings, bricks, sand, and gravel found on the estate. Mr. T. A. Cressy, architect:—

Wood	£1,299	0	0
Salmon	1,190	0	0
Demand	1,093	0	0
Saunders & Son (accepted)	1,070	0	0

For the erection of a house for Mr. T. R. Marshall, Manor-road, Bournemouth. Messrs. Kemp-Welch & Pinder, architects. Quantities by the architects:—

Hoare Bros. & Walden	£2,930	0	0
Stroud	2,894	0	0
G. James	2,880	0	0
J. McWilliam	2,851	0	0
H. Ware	2,650	0	0
Jenkins & Son (accepted)	2,643	0	0

For new roads for the British Land Company, Limited, on their estate at Barking, Essex. Mr. Henry B. Michell, surveyor:—

W. Harris, Camberwell	£700	0	0
H. W. Keeble, Regent's Park	567	0	0
Jas. Pizzey, Horusey	499	0	0
J. Jackson, Leyton	488	0	0
J. Bloomfield, Tottenham	460	0	0
E. Wilson, Walthamstow	445	0	0
Peill & Sons, Bromley, Kent (accepted)	399	0	0

For the erection of stables, Orford-road, New North-road, for Mr. E. Dex. Mr. H. B. Riddle, architect:—
Johnson & Co. (accepted) £316 0 0

For dwelling-house and business premises for Mr. J. W. Smith, draper, High-road, Streatham. Mr. Frederick Wheeler, 119, Cheapside, architect:—
Hill Bros., Streatham (accepted).

For the erection of farm buildings, stables, bailiff's cottage, lodges, and alterations and additions, to the house on the Flimwell Estate, Flimwell, near Hawkhurst, Kent, for Mr. Thomas Doubble, St. Peter's, Isle of Thanet. Mr. E. L. Elgar, architect, Ramsgate, Kent. Quantities by Mr. J. Rookwood:—

Elwig, Tunbridge Wells	£8,210	0	0
Austen, Tonbridge	7,597	0	0
Punnet & Son, Tonbridge	7,443	0	0
Balcombe, Ticehurst	6,820	0	0
Martin, Ramsgate	6,800	0	0
Port, Ramsgate	5,989	0	0

For alterations, additions, and reparations to premises, Nos. 126 and 127, High-street, Guildford, for Mr. J. Cable. Messrs. Peak, Lunn, & Peak, architects:—

Edwin Elliott, Guildford	£498	0	0
G. & R. Smith, Guildford	490	0	0
George Strudwick, Guildford	440	0	0
Thos. E. Downes, Guildford	388	0	0
Billimore & Smith, Guildford *	354	19	10

* Accepted.

For alterations and additions to cottage residence, Gosden, Bramley, near Guildford, for Mr. F. R. Eastwood, J.P. Messrs. Peak, Lunn, & Peak, architects, Guildford:—

Mitchell Bros, Shalford (accepted)	£382	18	0

For rebuilding premises, No. 94, Drury-lane, for Mr. J. Williamson. Mr. James M. Cable, architect:—

Cox, Beckenham	£1,375	0	0
Williams, Pimlico	1,320	0	0
Holloway Bros., Battersea	1,276	0	0
Richardson Bros., London Wall	1,248	0	0

For a village church near Warrington, Cheshire. Mr. George Truefitt, architect:—

Patteson	£2,799	0	0
Neill & Sons	2,545	0	0
Southern & Sons (accepted)	2,485	0	0

For alterations in Monnow-street, for the Mayor and Corporation of the borough of Monmouth. Messrs. Muggeridge & Powell, architects. Quantities supplied:—

Davis, Cardiff	£1,402	0	0
Simmonds, Monmouth	1,243	19	0
Welsh, Hereford	1,194	0	0
Charles, Monmouth (accepted)	1,057	0	0
Bamfield, Monmouth	1,000	0	0
Morgan, jun., Monmouth	997	0	0

For the erection of pair of villas at Fellowes-road, South Hampstead, for Mr. A. W. Bayes. Mr. E. W. Hudson, architect. Quantities by Mr. G. J. Poole:—

Gregory & Bence	£3,396	0	0
Thomas & Butland	3,364	0	0
Gould & Brand	2,830	0	0

For additions to Mr. H. Clarke's house, Tavistock-street, Bedford. Mr. John Day, architect:—
Corby & Son, Bedford (accepted).

For a pair of wrought-iron gates and palisaded fence, York stone coping to wall, and steps to churchyard, Doulting stone caps, hanging stones, quoins, &c., to gate-piers for the western boundary fence, St. Peter's Churchyard, Bedford. Mr. John Day, architect:—

Masons' Work.

Garlick, Bedford	£85	0	0
Jarvis & Son, Bedford	63	16	0
Osborne, St. Neot's	61	15	0
Steers, Bedford	59	0	0

Smiths' Work.

Kilpin & Billson, Bedford	£52	10	0
W. B. Baker, Bedford	50	0	0
E. L. Moulton, Bedford	45	0	0
Page & Co., Bedford	37	15	0
W. Day & Sons, Bedford	33	0	0

For new Wesleyan Chapel at Everton Heath, exclusive of bricks, lime, and sand for the brickwork, for Captain Dennis. Mr. John Day, architect:—

S. Osborne, Eaton Ford (too late)	685	10	0
Foster, Kempston	£650	0	0
Wade & Edey, St. Neot's	590	0	0
Page Bros., Buckden	540	0	0
Woodman, Potton	517	0	0
Bartle, Potton (accepted)	501	11	9

For the alteration to stabling and decoration to residence of Mr. F. H. Birley, Lingfield, East Grinstead. Mr. C. J. C. Pawley, architect, 26, Moorgate-street:—

Smith & Sons, South Norwood	£405	0	0
Hollidge & Stuart, South Norwood	337	0	0
Purtle & Appleton, Wandsworth	323	0	0
H. Ridley, Lingfield (accepted)	283	0	0

For turret, new south transept, chancel aisle, and octagon vestry to the Church of St. John, Great Yarmouth. Messrs. Bottle & Olley, architects:—

James Leggett (accepted)	£1,365	0	0

For building Ifield Police Station:—

H. Terry, Storrington	£813	0	0
G. Bidgood, London	795	0	0
Etheridge Bros., Horsham	776	0	0
Redford & Potter, Horsham	741	0	0
R. & F. Parsons, Brighton	730	0	0
John Woolgar & Sons, Horsham	720	0	0
R. & C. Gates, Crawley	694	0	0
John Morris, East Grinstead	670	0	0
P. Peters & Co., Horsham	658	0	0
James Longley, Crawley	630	0	0
Richard Cook, Crawley (accepted)	615	0	0
Pannell Bros., Horsham	599	0	0
Priestley & Gurney, 42, High-street, Camden Town	594	0	0

For additions, &c., to Independent Wesleyan Chapel, Wellingborough. Mr. Edward Sharman, architect:—

J. Hull	£692	0	0
G. Henson	570	0	0
Marriott	540	0	0
Hacksley	534	7	0
Underwood	500	0	0
G. H. Green (accepted)	457	5	0

For additions and alterations to Board Schools, Wellingborough. Mr Edward Sharman, architect:—

J. Underwood	£1,910	0	0
E. Brown	1,896	5	0
G. Henson	1,850	0	0
T. Harrison	1,769	0	0
R. Marriott	1,741	0	0
Geo. H. Green	1,710	0	0

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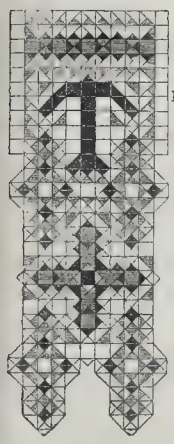
VOL. XLIV. No. 2106. SATURDAY, JUNE 16, 1883.

ILLUSTRATIONS.

Queen's School, Chester.—Mr. E. A. Ould, Architect 812
The New Alhambra Theatre, Leicester-square: the Foyer in the Second Tier (Double-page Engraving).—Messrs. Perry & Reed, Architects 814
Proposed Southern Hospital, Glasgow.—Design submitted by Mr. H. McLachlan, Architect 821
The New Alhambra Theatre, Leicester-square: showing Part of the Roof of Auditorium (Double-page Engraving) 816, 817

CONTENTS.

A Dublin Presentation of Doric Architecture 799
Sculpture and Fine Arts of Assyria in the Kouyunjik Gallery of the British Museum 800
Education or Stupefaction 801
The "Twelve French Artists" 802
Trials with Assessors 802
Our Gas Bill 803
The New Theatre at Fountain-court, Strand 804
Passages in an Unsuccessful Career: My First Commission 804
The New German Theatre at Prague 805
The Employment of Artistic Materials in the Architecture of Houses and Hospitals 805
Royal Institute of British Architects: Medals and Prizes 807
Architecture in India: Royal Institute of British Architects 808
Truro Cathedral 809
The Castle at Heidelberg 810
An Ancient Bridge 810
Queen's School, Chester 810
The New Alhambra Theatre 810
Design for Proposed Southern Hospital, Glasgow 810
The Domestic Architecture of India 811
Prevention of Fires in Theatres 811
Exhibitions 812
The Swiss National Exhibition at Zurich 813
Foreign Competitions 813
The Arlberg Tunnel 813
Amsterdam Exhibition 813
The Humboldt Monuments 813
From the United States 814
The Birmingham School Board and their Architects 814
The Proposed Town-Hall for Birkenhead: Duplicate Tenders 814
Addlestone Church 814
New Cemetery, Stoke, Surrey 814
Eton College 814
The Dawson Economic Gas at the New County Asylum, Gloucester 814
The Glasgow Institute of Architects and the Police Bill 814
Proposed Association of Inspectors of Nuisances 814
The London School Board and its Contracts 814
Sanitary Assurance Association 814
Society for the Encouragement of Fine Arts 814
Surveyors' Fees 814
Masters and Men 814
Building Patent Record 814
Artisans' Dwellings 814
Greek Church, London Wall 814
Timber Stages and the Building Act.—Mr. Cubbett's Timber Stage, Drummond-street 814
Flues 814
Chimneys 814
Church-building News 814
Dissenting Church building News 814
Novelty in the Tyres of Carriage-wheels 814
Books: Illustrated Handbooks of Practical Art: Art-work in Gold and Silver, and Art-work in Porcelain (Low & Co.) 814
Tewkesbury Abbey and the Abbey House 814
Miscellanea 814



A Dublin Presentation of Doric Architecture.

THE Rev. Mr. Mahaffy has recently delivered a series of lectures in Dublin on Greece and Greek art, and among them one on Doric architecture. A summary of this is in circulation among the public at large, and in consequence it becomes imperative that it should not pass without notice and correction. It abounds, indeed, from beginning to end with the most extraordinary errors; these may have crept in by the fault of the summarist, though to ascribe them to him out of tenderness to the lecturer, might be only to indulge courtesy in one direction at the cost of committing an injustice in another. But in any case the important business in hand is the indication of misconception and error rather than the conviction of authorship. The reverend lecturer, it is well known, has the enviable familiarity with ancient monuments which is to be gained by actual inspection of their remains during visits to Greece, and this cannot but enhance the authority which is justly his due as the writer of several works as popular as learned on the literature and social life of the ancients. There is the more reason that the weight of this authority should not be allowed to tell against accuracy in archæology and the history of art, any more than against the fairest fame of Homer or of Pindar.

What architect will not open the wide eyes of amazement as he reads that the builders of the Renaissance period were not aware that "the Doric pillar instead of being of the same diameter along its entire height tapered gradually and very slightly towards the summit"; that it was then "at one time imagined that the shaft swelled slightly about the middle," and that it did appear to do so by an optical illusion which was only detected and demonstrated to be nothing more, by the test of actual measurement. "It was reserved for the genius and industry of future ages (of the ages, that is, that have elapsed since the Renaissance), to find the explanation." "If a pillar, it is said, were formed of perfectly straight lines with the same dimensions along the entire height of the shaft, it would to the eye, by a curious optical effect, actually seem broader at the top. Hence to obviate this illusion the Doric architects tapered the shafts of their columns."

Allowing in charity that we ought to read here diameters for dimensions, it must be noticed that the profiles of the several drums that compose a Greek Doric column of the best period are perfectly straight lines; but again it is possible that by straight we are to understand vertical. We have then the enunciation that the Greeks reduced the diameters of their heavy columns from below upward, without any reference to the expression of stability, and in essaying to counteract an illusion that made them lose the appearance of being simple cylinders, managed matters so that to the unprejudiced eyes of the men of the Renaissance, they appeared to bulge in the middle. This certainly is a remarkable account of the entasis, and of its origin and *rationale*. No less confused is the account of the splendid service which Mr. Penrose contributed to art and archæology by the labours which produced "The Principles of Athenian Architecture." "With true modesty, we read, Mr. Penrose disclaimed originality and affirmed that he had only rediscovered the facts which his book contained, pointing especially to a passage in Vitruvius in which the principle was obscurely hinted at; but unquestionably the credit was due to Mr. Penrose of having made the discovery that the lines on which the Grecian Temple was constructed were not straight, but curved." The fact is that the application of curvature, and indeed the motive of it with the ancient architects had been already distinctly recognised by others when Mr. Penrose undertook the task which he so ably executed, of verifying this refinement by scrupulously accurate and delicate measurements. In the pursuit of this purpose he not only confirmed and gave definition to previous observations, but discovered that the refinement had been carried much further, and applied much more extensively than had been noticed by modern observers or hinted at in ancient literature. If there was any modesty true or false in the matter it must have been in not giving obtrusive expression to the self-complacency which one who cannot but know the value of his own good work, is bound to feel;—save us all from complacency as a compliment to our modesty in disclaiming merits that we happen not to be entitled to lay claim to, whether others are aware of the fact or not!

There is much interest in the contrast which the lecturer adverts to between the fully decorated and luxuriant ornament of the pre-historic architecture of Greece, and the calm, severe, and sparingly ornamented Doric order. The pre-historic examples, we presume, would be the fragments of columns discovered at Mycenæ. But the contrast is insisted on too absolutely. We do not possess all the evidence we should desire of the treatment of the earlier Doric forms, yet enough is known of the colour decoration of a temple so late as that of Ægina to prove that colour was applied to both the architecture and the sculpture with a degree of lavishness that only admirable skill and taste could preserve from tawdriness. We willingly believe that such skill and taste were forthcoming, but the employment of these qualities would leave and would enhance the ornamental character of the general effect. The archaic architectural terra cottas discovered in the Olympian excavations, and alluded to by the lecturer, tell in the same direction. It is a mistake to suppose that the "learned men" who have identified an Egyptian influence in Doric architecture have connected it with this assumed revulsion from a decorative to an unornamental style. The Greek, who had seen Egyptian monuments, might well have derived from them a sense of the calmness and dignity that were within the scope of architectural expression; but he must also have come away impressed with the compatibility of severity with elaborate enrichment, if not with their natural mutual dependence. It is true that the historic style of architecture of the Greeks cannot be directly affiliated on the pre-historic by obviously direct evolution; so far as the pre-historic architecture is represented sufficiently, —which, however, is scarcely the case,—by the "Treasuries" of Mycenæ, we must certainly look elsewhere for the rudimentary Doric temple, its constructive and schematic elements. We must inevitably look in the first place as students of the subject, ancient and modern, always have looked to the suggestiveness of those forms which are common to all nations whatever in their early attempts to house themselves. When we look further for the selecting and deciding influences which finally mould a characteristic style, it is assuredly not to be admitted as "a difficulty that up to a date much later than the origin of the historic temples Egypt was closed to the Greeks." The origin of the type of Greek historic temples lies far back in pre-historic times; that is, in times when he must be a bold man indeed who would declare how much or how little the Greeks of a series of remote and unrecorded centuries may or may not have known of Egypt and Egyptian monuments. Egyptian influence may be identified even in the period of the "Treasuries," when Egypt may have been at least as open to men from Greece as to shepherds from Palestine. The recent excavation by Dr. Schliemann of the treasury at Orchomenos, brought to light a vast stone which had formed the flat ceiling of the inner chamber. This has been engraved in the "Journal of Hellenic Antiquities," and the intricate pattern with which it is covered, a combination of spirals with palmettes, is an unequivocal adaptation, or rather copy, of a pattern that recurs in Egypt on a variety of monuments, and bears its own proof that it is of Egyptian invention.

We have here a stray hint of a synchrony which parallels the allusion in a single speech of Achilles by Homer, to the inexhaustible

resources and wealth of Thebes in Egypt and of Orchomenos in Bœotia.

> "Not all the golden tides of wealth that crown
> The many-peopled Orchomenian town,
> Not all proud Thebes' unrivall'd walls contain
> The world's great empress on the Egyptian plain,
> That spreads her conquests o'er a thousand states,
> And pours her heroes through a hundred gates."

We seem bound to gather from the words ascribed to Professor Mahaffy that he believes himself to have originated the theory of the primitive hut. "The theory which he [Professor Mahaffy] propounded some years ago, and which was very much criticised at the time in Germany, was that the Greek temple had its origin in a wooden building." But the whole question had been thoroughly thrashed out in times which may be considered, it seems, relatively to periods, of which the lecturer takes account, as virtually prehistoric. That the Greeks built themselves wooden as well as stone houses, and wooden temples as well as, and certainly before, elaborat and artistic stone temples, will be assumed by most people without argument; that the details of Doric temples of stone are far more direct intimations of precedents in wood than the irregular columns of a structure of no merit at Olympia, is equally clear to most; but when all these analogies have been pressed to the uttermost, we have still but the crude materials of a style, and it remains to look out for the possibility that the true breath of an artistic life was communicated from without. In this there is no implied imputation on the resources of Greek genius. The nature of genius is to respond to the stimulus of contact with genius. All the greatest movements in the arts have resulted from the confluence of distinct streams of energetic development, from the subjection of sensitive faculties to novel excitement. The Renaissance to which we owe the art of Raffaelle and his contemporaries was the product of such a confluence. The arts of the Middle Ages developed in response to the stimulant intercourse of East and West in the period of the Crusades. The students of philosophy know well how much progress was due to the confluence of Hellenic, Hebrew, and Egyptian literature at Alexandria. Greek legends preserve intimations of prehistoric reactions between Phœnicia and Northern Greece, Asia and Corinth, Egypt and Argos, and imperishable ceramic evidence bears out presumptions from direct comparison that the final, the truly artistic model of Doric architecture was decided by men to whom Egypt was well known.

SCULPTURE AND FINE ARTS OF ASSYRIA IN THE KOUYUNJIK GALLERY OF THE BRITISH MUSEUM.

Now that the whole of the collections of Natural History have been successfully removed from Bloomsbury to South Kensington, where they will be exhibited in a more instructive and attractive manner than hitherto, the future characteristics of the display at the British Museum will be of an archæological and literary nature. To this end, the extensive additions, now in course of erection on the site of the garden attached to the residence of the Principal Librarian, and the equally great area of floor and wall space for the present void of objects will be devoted, and it will not be long before the exhibition of manuscripts, prints, drawings, books, Greek sculpture, and ethnographical antiquities is substituted for that of Natural History. A large room devoted to the reception of the shattered fragments of the Mausoleum of Halicarnassus and other invaluable pieces of fine Greek art has been built, at a somewhat low level, partly on the spot formerly occupied by the Entomological Room. This is not yet opened to the public, but the arrangement of the contents by Mr. C. T. Newton, C.B., is in a forward state, and no doubt it will be accessible to visitors before long. In the meantime, while all these alterations and improvements are being carried out, the galleries and rooms containing exhibitions of especial classes at present undisturbed, amply suffice to interest the visitor and student, and a well-timed opportunity has been taken advantage of to issue a Guide to the Assyrian Antiquities in the Kouyunjik Gallery, under charge of Dr. Birch, F.S.A., keeper of the Egyptian and Oriental Antiquities, and president of the Society of Biblical Archæology. In point of critical importance, the objects which are deposited in this gallery transcend the Assyrian history recorded in the Old Testament itself, for while in the Biblical narratives we read the history of the nations of Assyria, Babylonia, Elam, and Chaldea,—written long after the events themselves took place,—in the presence of the relics recovered by Sir Austin Henry Layard from the mound of Kouyunjik opposite Mosoul, on the east bank of the Tigris, the supposed site of the ancient Nineveh, we are brought face to face for the first time with contemporary antiquities belonging to and illustrative of these identical facts. If to read the history of Nebuchadnezzar and Sennacherib, Hezekiah and Merodach-Baladan, translated from a Hebrew manuscript a thousand years old, be, as it unquestionably is, an essentially important and attractive duty, how much is the knowledge thus acquired enhanced when we know that in this gallery we stand in the presence of a large collection of objects contemporaneous with the very events described in those histories, and although contemporaneous, and therefore of a date of two thousand five hundred years, these relics are by no means so fragmentary and illegible as many would have been led to imagine on account of their far-reaching antiquity. Large slabs of gypsum, alabaster, and limestone, elaborately carved in a low-relief with spirited and intelligible tableaux, record historical events that happened during the reign of Sennacherib, B.C. 705 to 681, and of his grandson, Assurbanipal, B.C. 668 to 626, pictorially and faithfully (if not correct in drawing and perspective when judged by the canons of our Western art, at any rate graphically of great merit), and are, from the immense amount of detail they exhibit, worthy of the closest attention of the ethnographist and student of manners and customs. A country wanting, as Assyria seems to have been, in the means of producing papyrus and parchment, would have been without any means of preserving an account of its transactions, whether public or private, had not the happy idea suggested itself in very distant days to the inhabitants to employ slabs or cakes of carefully-prepared clay on which to impress with a sharp triangularly-pointed stylus the intricate and peculiarly glyptic characters into which their language very soon passed after a preliminary ideographic period still represented by a few very rare tablets. The enormous number of inscribed tablets (a number which would be even still greater had not those which were merely sun-dried relapsed, after becoming wetted, into the primary mud or clay of which they were formed), which, being kiln-baked, have been recovered, in a fresh and uninjured state, from the rubbish mounds that mark the sites of many a populous city on the Mesopotamian plains, will, no doubt, eventually be largely augmented by the more scientific exploration of enlightened countries that are now fully aware of the treasures lying buried there, and also by the accidental discoveries which occasionally attend the native digger, who is keenly alive to the fact that they possess a high market value, and who rarely lets pass an opportunity of grubbing about and turning over the surface of the mounds. The bronze antiquities demonstrate, if, indeed, demonstration were wanting to us after inspecting such marvels of art as the sculptured slabs, the high excellence to which the worker in this perennial metal had brought his work; and the lapidary and stone-engraver has carved upon little cylinders of precious stones innumerable myths and favourite religious devices, as rich in material, if we could only read them aright, for reconstructing the poetical legends of Assyrian and Babylonian polytheism as the subjects with which the Greek and Roman gem-cutter has endowed the engraved stones of classic times.

It is to Mr. (now Sir Henry) Layard that the authorities of the British Museum are principally indebted for the acquisition of the sculptures of Kouyunjik, in 1849 and 1850, from a site believed to be within the limits of the ancient Nineveh. Other objects have been found in various parts of Assyria from time to time, and their addition to and incorporation with the Kouyunjik remains has resulted in the collection in its present state. The illustrious discoverer published illustrations of many of his discoveries in his "Monuments of Nineveh," and other works, and of late years the "Transactions of the Society of Biblical Archæology" have contained occasional notices of important objects in the collection. The sculptured slabs of Kouyunjik are taken from the palaces of Sennacherib, B.C. 705, and represent the construction of his palace; other slabs represent battle-scenes which occurred during the rule of Assurbanipal or Assurbaniapli, who flourished about B.C. 665. Apart from the most important features which these slabs exhibit, namely, the contemporaneous confirmation of events recorded after a long lapse of years in the historical books of the Old Testament, let us glance at the interesting points connected with architecture and artistic work which these sculptured slabs afford. The most important slabs owe their origin to a desire to embellish the palace-walls with representations of incidents in the invasion of Elam by Assurbanipal. Urtaki, king of that country, disregarding benefits conferred upon his people by the Assyrians during a famine, invaded Babylonia, but fled at the approach of an Assyrian army. Pursued and defeated, in his mortification he commits suicide, and, later on, another Urtaki calls upon an Assyrian to cut off his head and carry it as a good omen to the king; the slab on which this incident is vividly carved is of great interest. The unfortunate king Urtaki is succeeded by Teumman, a man who was "the likeness of a devil," as the contemporary biographer has recorded probably with a pardonable bias. This prince endeavoured in the usual Oriental spirit to destroy the family of Urtaki, who, however, fled to Assurbanipal, and were sheltered from their enemy after repeated endeavours to get them into his hands. Assurbanipal's policy resulted in a conflict with Teumman, near the city of Shushan; Teumman was defeated, his head cut off and carried away in a chariot, over the figure of which in the carved slab is an inscription setting out that it is "the head of Teumman which was cut off in the midst of the fierce battle in the sight of the army; they are hastening away gladly with the good tidings to Assyria." From this series of carvings we are able to observe that the royal palaces and temples were generally erected upon an artificial mound in order to raise the building clear of the floods to which the country was occasionally exposed. These edifices not unfrequently covered a large superficial area. They were furnished with towers or turrets crenellated or embattled like an English castle of the thirteenth century. Arched doors and entrances are represented, but as the Assyrians were rather timid in the use of the arch for vaulting, their rooms were in plan very long and rather narrow. Steps and inclined planes were in use. Of the former, a remarkable doorstep of solid bronze, of great thickness, and cast in a mould with a raised pattern is preserved in the British Museum, inscribed with the name of Nebuchadnezzar, king of Babylon; in illustration of the latter, there is built into the northern end of the gallery the slab series from a descending and from an ascending ramp or inclined plane of Sennacherib's palace. Although no traces of upper floors have been yet found among the ruins of Nineveh or other sites, it seems likely that they existed. The walls of the rooms on the ground-floor were, in the cases of which we have remains, covered with sculptures in low relief, and very often the bricks were covered with properly-coloured representations of incidents of war and the chase. The Babylonian architects appear to have used brick rather than stone in the building of their palaces. These were often enamelled and highly coloured, fragments of inscriptions enamelled in white upon a blue ground have been found. Of mechanical appliances the knowledge was, as might be expected, very rudimentary, but the rope, bucket, and basket, the sledge upon rollers, the lever or pinch-bar, bevelled at one edge, and used with stones as a fulcrum to augment its power, and the construction of artificial mounds or inclines may be observed on some of the slabs in this gallery. For the rest, sheer manual labour was employed, forced gangs of labourers, presided over by an official armed with a truncheon, hauled at long ropes and transported heavy weights in a manner shown not only here but in Egyptian art, and the task-master, with a formidable cudgel, rains down unceasing blows upon the unhappy workmen, probably prisoners of war, or natives subject to enforced work by reason of their class position in the State, who are thus stimulated to put out their whole strength on their exacted work. Of the pulley nothing seems to be represented, but the balancing-weight is frequently employed chiefly in connexion with the raising of water by means of the shadoof or balanced lever, a

method employed to this day in Egypt and other countries in primitive methods of irrigation.

Of the tools with which the Assyrian artificer worked, under the direction of his architect, not much remains, but the table cases contain several bronze and iron objects which were undoubtedly employed in the constructive arts,—such as iron nails, bronze piping, long bronze nails from Kouyunjik, measuring 10¼ in. in length; nails, and heads or studs of nails, in bronze, from Nimroud and Kouyunjik; bronze nails with the points bent over and twisted, conjectured by the writer of the Guide to be an ornamental style of clinching; fragments of bronze rods and wire ornaments; the pivot of a door or gate still showing part of the iron rails by which it was fastened; long instruments of bronze, supposed to be chisels, from Tel-Sifr; a ring of bronze with the clamp for fixing it into a wall, evidently to receive the upper pivot of a gate; axe-heads, hatches, adzes, knives, staples, rods, and pins of bronze. This category of builders' implements and fittings probably exhausts all the classes that we are likely to recover from Assyrian diggings.

The Assyrian city, as depicted in the slabs, appears to consist of towers with curtain wall between them, crenellated, and having in the centre a pair of folding doors with rounded top (pp. 114, 115). The houses, although not so elaborately drawn, were evidently constructed after the same principle. Among other objects of interest may be observed the representation of a bireme or galley with two banks of oars, with very high bulwarks, a kind of cabin with large open ports, and conical pointed ram (p. 49); the details of the caparisons of a war-horse ridden by a warrior, attacked by a soldier, attired in chain-armour, and armed with shield, having a central boss; the curious chariots, with ornamental poles and crenellated wheels, some having a square body, raised to a point behind and rounded in front; the raft (p. 103), constructed of four tree-trunks tied together, having a pot and inflated skin upon it; and the ox-cart, with wheel of four spokes, drawn by humped oxen. Abundant details of costume, armour, and domestic objects are presented in the carved slabs, and the artist has taken care to represent a variety of fishes, eels, and crabs in the wavy lines of his seas, marshes, and rivers, and trees of many species, such as fig-trees, poplars, and oaks, upon the hills and plains upon which he locates the battle-scenes and other incidents which he has been commissioned to reproduce. The rows of curling hair, the tunic and trowsers, belts, collars, bows, quivers and arrows, the fringed and embroidered dresses, the women's diadems and bracelets, the elaborate harness of the horses, the pointed helmets with cheek-plates, even the ornamental patterns on the dresses are not without great interest, for by an examination of these and similar subjects we may, as it were, reconstruct, in a great measure, the life and times of ancient Assyria, their fine arts, and their culture. The torture of captives and emissaries, and various modes of punishment and death, many of revolting cruelty, are here depicted in all their stern reality; while some of the episodes, such as the entreaty of Urtaki to be beheaded; the vainly-asked supplication of submissive captives for quarter at the hands of an elated and relentless enemy; the little children fleeing with their parents before the advance of a victorious invader, and the women or eunuchs seeking to escape in fragile rafts, are pathetic in the extreme. Among the relics of the gem-engravers' art there are many very fine specimens in the table-cases placed in the Kouyunjik Gallery. The small cylinders and cylindroid beads formed of hard stone are probably, we are told, the earliest objects that have come down to our day, some belonging to a period of about fifteen centuries before the Christian era. With these an impression was rolled upon the front or the edge of documents relating to sales and exchanges. The cylinder was worn on its owner's wrist attached to a cord or thread to secure it from loss. Various kinds of stone were in use. In early times there appears to have been a predilection for green jasper, crystal, amethyst, ironstone or hæmatite, grey and blue chalcedony, and carnelian. Of these the first named was most in use for the mystical figure of Gistubar or Nimrod, the originator and divine protector of the Assyrian nation, and of Heabani, an equally potent divinity, whose conventional attitude is that of slaying lions and bulls. Crystal, amethyst, and transparent stones of other kinds, as well as the more metallic kind of ironstone, were more generally in use for the name of the owner of the seal with a figure of the god whom he particularly venerated, and under whose protection he was placed,—much in the same manner, in fact, as a Mediæval saint exercised a tutelary care over those dedicated to his charge. Seals of this nature, we are told, could be easily engraved, and were probably kept in stock by the engravers who added the name of the purchaser. The use of hæmatite, which is, by the way, a favourite vehicle for the Egyptian scarab or amulet, is found among Assyrian seals with representations apparently to be referred to the legend of the encounter between the gods and the water-chaos, a female deity to whose legend we owe the remarkable discovery by the late eminent Assyriologist, Mr. George Smith, of the Creation and Deluge Tablets;—historical records which produced a very remarkable impression upon the public mind when they were announced a few years ago. The workmanship of the earlier period is rough, but by degrees the engraver acquired more command over the drill with which the work appears to have been executed; still, in some of the best early style the art is of a very delicate nature. The figures on them are thin, but well proportioned, and the inscriptions very carefully engraved. One of the most interesting of this class of Assyrian art relics is the seal of Darius, a jasper cylinder, 1⅝ in. long, ⅝ in. diameter, inscribed in three languages, Persian, Median, and Assyrian, with the words:—"I am Darius, the great king." The monarch is in a two-horsed chariot, driven by a charioteer, shooting with a bow and arrows at a lion, which is reared upright in front of him. Beneath the horses a second lion lies dead. Of the transcendant importance of the inscribed tablets, speaking philologically and historically, it would be difficult to say too much, but we have endeavoured in this notice to confine ourselves to the artistic points worthy of notice in the ancient objects displayed by the British Museum authorities in the Kouyunjik Gallery. The photographs with which the guide is illustrated assist the reader and student who cannot make a personal inspection of the gallery to acquire a more vivid idea of the antiquities which it contains, than he could do by text reading alone. Guides of this character, combining detailed description in a small compass, will do much to enhance the popularity of our national Museum.

EDUCATION OR STUPEFACTION.

WE sometimes wonder whether the persons who are now impressing on the education of this country some very questionable features, have ever put distinctly to themselves the question of what is the true end and object of education in general. Without going more profoundly into the philosophy of the subject, at the present moment, than to refer to the masterly statement, by Comte, of the nature of the true educational problem, we shall, we trust, carry the assent of our readers with us in saying that the proper aim to be proposed in the education of any individual is to aid and prepare him to fit himself for the best mode of discharging the duties which naturally lie before him, having regard to his position in life, and to the course which will be most in accordance with his birth and surroundings. It is true that there is an opposite view, which regards every child as an indistinguishable unit, as like any other child of his or her age as one atom of carbon or hydrogen is like to another atom. On this view, the unorganised aggregate of little human beings is to be poured into the common receiver of a school, where all are to receive the same treatment, by means of which each will arrive, at the same moment, at the same degree of excellence! One fatal objection to this theory is that no such result follows, and that however hard and unsparing be the drill, individual characteristics survive it. The idle will be idle, the industrious industrious, the clever clever, and the stupid stupid, so long as a hard-and-fast system is adopted which only tends to cover all with the same coat of varnish.

Not only is this the case, but there are certain proportions above, on the level of, and under the average of, childish ability, which are well known to those familiar with teaching. It is the experience, we are told, of the Oxford and Cambridge Public Schools' Board examiners, that "fifty per cent. of the well-fed, well-clothed public school boys are dunces, and are treated accordingly. This proportion, very likely, is excessive, but it is set down by the gentleman who made the estimate as the result of bad,—that is to say, inappropriate,—teaching. But, at the highest, the experience points out that not more than 80 per cent. of a given set of boys can be expected to pass an examination creditably.

On the contrary, with reference to a set of schools in which 600 children of the working class are taught, a manager and correspondent comes forward to say "the infants' department, year after year, has passed 100 per cent.; the boys' department, 97 per cent.; the girls', about 85 per cent. Excellent! says the enthusiastic novice. Is it so? How is the result attained? Only in one of two ways, viz., by making the examination a mere sham, or by subjecting the children to an injurious and crushing drill. Which of the two is the explanation in the case cited may be inferred from the statement that the master keeps the lads at work for 7¼ hours per day all round, and sends them home with a slateful of lessons to be prepared before the following morning.

Now that this state of things, which is a very natural result of the competition which the present system fosters between masters and teachers, is one involving danger and mischief, no one practically familiar,—we will not say with education,—but with the rudiments of physiology, can doubt. Apart from the grave question of the quality of the teaching, that is to say, its appropriateness to the probable future of the scholars, the question of the quantity has to be considered. To expect the children of the labouring classes to give an amount of time to imposed tasks which is quite enough for a University student to devote to steady work is, we hardly like to use the proper word.

A clergyman writing on the subject to one of the daily papers is less reserved. "One boy," he says, "became delirious in the school, one or two died from brain fever. No one moves. The children are being injured for life, and killed outright." Now this may be an excessive case. But it is neither an impossible nor an unlikely outcome of the present system of grants to schools.

We have long been painfully conscious of the evil results, in the higher walks of society and of education, of the system of cram. We are not speaking with the experience of disappointment or of failure. Quite the reverse. But we have witnessed the winning of honours in examinations, as to which we can only say, *C'est magnifique, mais ce n'est pas l'éducation.* To a public institution, which we will not further particularise than by saying that it gives, in our opinion, the best education that is given in England,—an education which is marked by the development of the physique and activity of the pupils, as well as by their intellectual progress,—it befel us once to pay a visit on a Sunday, at the close of an examination. The scene was almost like a hospital after a battle. Worn out, not only with the length and severity of an examination extending over successive days, but with the nightly toil for preparing for each succeeding day, the youths lay on chairs or in corners of the rooms, overwhelmed by fatigue. And in this case they were lads of from sixteen to twenty; and the education, however severe the crisis of the examination, was thoroughly sound,—good,—and carefully suited for the special career to which the students were destined. How is it with the mere pass competitions? In these, cram appears in its worst form. It not only tends exclusively to the mechanical acquisition of certain points, we might almost say dodges,—which the experience of the examiner teaches him will pay,—but, on the one hand, it injures the natural robustness of the power of learning, and, on the other hand, gives the student a profound, and very likely a life-long, disgust for any subject on which he has had to pass examination.

As to these things in the higher walks of education, we can speak from personal experience, as acquired in the case of men who are now serving their country not without distinction in the Army and in the Church. In the race for life some degree of pressure and of hardship is unavoidable. And when a high standard of culture is requisite, and, above all, when it is attained, we may, perhaps, take the rough and the smooth together. But in all these cases there is at least an aim at the appropriate. Is that so with the Board schools, of which the writers that we have cited complain? We fail

to see it. For that education which should be of real use in after-life to the majority of those who have to serve their country by their daily toil, we do not see how this kind of examination is possible. Any technical education must be tested in its results by the practical technical ability of the student,—not by his reply to a string of questions. That this great object of cultivating those powers which are to be called into daily exercise in after-life, and in giving them the bent that will be of most service to the owners, is in any way set forth as an aim by the great body of teachers,—we fear is far from being the case. And the question will force itself to the surface. Is much of the education which we have made compulsory now doing most harm or most good?

In those inquiries as to the educational condition of other countries which immediately preceded our own legislation on the subject, two European States were distinguished by the greatest amount of the grossest ignorance. These were, first, the Papal States, in which education was simply non-existent; and, secondly, Austria, which was called the *pays à l'examen*, the country of competitive examination; and, according to the reporter, — if memory serves aright, it was Mr. Matthew Arnold,—the results of the two systems were not very widely different. In our anxiety to avoid the one we have, perhaps, stepped into the other. The ill effect on the physique of the children is, in many cases, undeniable. Not only so; the ill effect on them as fitted to become useful members of society is, we fear, not too often manifest. What are all these children to become? Does it fit a lad to be a groom, gardener, farm labourer, carpenter, blacksmith, mason, or bricklayer, to give him an education that will fit him for nothing but a retail tradesman or a merchant's desk? We think not. And yet for which of these careers, —if for any,—is a certain standard of education the preparation? Unless the general scheme of education not only recognises the fact of the wide difference in ability between child and child, but further provides for the requirements of the different walks of life with a degree of well-considered elasticity, we are doing our best to turn English children into, —not men and women, but—useless automata. We do not, of course, say that such is always the case; but we are not alone in thinking that there is a great and, moreover, an increasing danger that it should become so.

Shortly after these lines were written, a physician of large and special experience introduced the subject in conversation in the presence of the writer. He gave his opinion, based on physiological grounds, for the belief that the stamina of the working classes was being rapidly deteriorated by the severity of the Board School education. He was, he said, continually applied to by the country people in his neighbourhood as to their children, and he spoke without hesitation as to the mischief being inflicted on them. As to the utility of the sort of instruction thus forced into the immature and unprepared brain, there may possibly be two opinions, although the weight of medical testimony is against any permanent intellectual gain being thus effected. But as to the irreparable deterioration of the physique, and the falling off in the quantity of labour now obtainable in country places, there is, from our friend's point of view, no doubt whatever.

THE "TWELVE FRENCH ARTISTS."

REPRESENTATIVE works of certain French artists have been sent over for exhibition at the Dudley Gallery. We know not whether the precise number of twelve was selected by way of intimating that these are the apostles of the new aspirations of French art, come over to preach to the spirits in prison in Philistine-land, or whether the number is a mere accident of selection. Either way, the intention seems to be to suggest that there are artists of importance in France who are not sufficiently known here, and that they have something of a new nature to suggest to us.

We are not much disposed to quarrel with either position; at all events, not with the first one, except in the case of one or two of the artists represented. To make an end of the disagreeable side of it at once, we may say that almost all the works exhibited under the name of M. Ary Renan appear to us to be simply detestable, nor can we conceive under what possible conditions of public opinion or art criticism such work can have attained so much repute as to be sent over for special exhibition in this manner. We should not give much more favourable opinion of the large work by M. H. Lerolle, "A Misty Morning" (54),* a very large painting of labourers at work in the fields, which looks somewhat like what Jules Breton might paint if he unfortunately went mad. It is, in fact, a huge unfinished sketch, as coarse and crude in colour and execution as it can be, though on a small scale it would be recognised as a good composition. This specimen just illustrates the manner in which some of the French painters of the day are aiming at notoriety (rather than fame), by exhibiting works which are merely sketches seen through a magnifying-glass. M. Lerolle's smaller works, —landscapes,—have a good deal of beauty, especially "Evening" (57), where there is a deep twilight effect very beautifully rendered; and "Waiting," another evening scene on a river, with a single figure seated in a punt in the foreground, is also very poetic in effect.

The most forcible painter of the set is M. Roll, whose two life-size pictures of French workmen, half-lengths, are certainly remarkable in their way, though by no means very attractive in an ordinary sense. They represent respectively "an old French workman" (bricklayer's labourer, apparently), and "an old quarryman"; the latter has a fine type of face, the former is one of the most ugly, guarled specimens of mankind which it is possible to see, and yet there is an interest in it, for it is a type of a large class of humanity, painted with great force and insight. The remarkable point about these pictures, and what separates French art of this class from most of the English work which is at all parallel to it, is that in purely realistic representation of this type there will be found to be, with a French painter, a *je ne sais quoi* which redeems it from being commonplace or vulgar. It is almost impossible to say in what this quality consists, but it is impossible not to feel it. There is more intensity of characterisation about it than an English painter would put into such a subject. A French painter, in treating a realistic subject, may be somewhat coarse, but he is never tame. In the sketchy picture of a horse, called "The Meal," by the same artist, there is a very clever depiction of equine attitude and character, and admirable drawing. M. Roll, who seems to fly at every subject, certainly oversteps the line in the sea-piece entitled "Rough Weather": as we described another work as "Jules Breton run mad," so we might best describe this as "H. Moore run mad." Other landscapes and coast scenes in the room, principally by M. Damoye, have great merit, especially the "View of Étaples," painted in the broad and full style which belongs to the modern French landscape school, but escaping the mere "smeariness" into which some of them have been betrayed by carrying too far the desire for "breadth." M. Besnard appears to be a painter in search of a style, as he exhibits two or three. His portrait of Major-General Rodes Green is painted, as far as the face is concerned, in what seems an exaggeration of Mr. Millais's most loaded style of handling; "At Church," on the other hand, is a large painting with two life-size figures rather flat in style, and with the background very little made out, but there is fine contrast of character between the young and old woman. "The Birth," by the same painter, is a very clever representation of a scene which an English artist would hardly venture to paint. Mdme. Cazin, whose landscapes are well known in London, does not appear to the same advantage as a figure-painter; landscape is her real gift.

There are some powerful bits of sculpture, especially a life-size nude "St. John Baptist," a plaster figure, by M. Rodin, very forcible and expressive in attitude. A small marble bust by the same sculptor, "Alsace's Orphan," is interesting as an attempt, apparently, to give to treatment in marble the same kind of broad, sketchy, soft effect, which many of the French painters endeavour to give to the treatment of the figure in painting; it is like the style of some of the works of Lefebvre and his followers translated into marble. In spite of some crudeness and eccentricity, the small collection is worth a visit for the originality of a good deal of the work in it, and the glimpse it gives of the tendencies of a clever but rebellious group of French artists.

* We suspect this and No. 56 should change numbers: but the catalogue generally is made out in that vague accidental way which seems peculiar to French exhibition catalogues.

TRIALS WITH ASSESSORS.

ONE of the provisions of the new legal procedure which was introduced by the Judicature Acts of 1873 and 1875, and which was most hopefully welcomed, was that by which judges were enabled to call in the aid of skilled assessors. The words of the Act of 1873 were:—"The High Court or the Court of Appeal may also in any cause or matter as aforesaid, in which it may think it expedient so to do, call in the aid of one or more assessors specially qualified to try and hear such cause or matter wholly or partially with the assistance of such assessors. The remuneration, if any, to be paid to such assessors shall be determined by the Court." It is enough to say that this provision has certainly been a dead letter. Sittings after sittings go by, and one legal holiday succeeds another, but no Court is assisted by skilled assessors. In fact, we can recall but one case in which the judge has been assisted by persons skilled in a particular business, where he has been engaged in trying a case involving very technical questions. To a large extent the deathblow was given to this part of the new enactment soon after it came into operation by the case of Sugg *v.* Silber, an action for the infringement of a gas patent, which it was decided that there was no compulsory power in the Court to compel the parties to have the action tried by a judge and assessors if one of them preferred another mode of trial. But it is worthy of note that the late Lord Chief Justice Cockburn distinctly expressed an opinion that it would be well if the Court possessed this compulsory power, and he expressed his regret that the new Acts and rules did not give it. There can, we think, be little difference of opinion on the point; for there can be no question that a jury is not well fitted to deal with technical questions relating to such matters as patents, light and air disputes, and litigation as to the construction of buildings. Nor, again, is it less obvious that a judge, if assisted by skilled assessors in such cases, must give a decision after a much less protracted trial, and consequently at less expense to the suitors as well as one which must carry with it greater weight; and that this was the intention and opinion of the Legislature when the Act of 1873 was passed we can have no doubt.

Perhaps no more telling example of the satisfactory character of a tribunal, which consists of a judge who is assisted by skilled advisers, can be found than the trials in the Admiralty Court. Here, in cases of collisions and salvage, the Court is almost always assisted by two of the Elder Brethren of the Trinity House. Nominally they have merely to advise the judge when he requires them to do so; but practically their opinions on the case as a whole cannot fail to have a considerable effect on the views of the judge. There are, therefore, three points in favour of skilled assessors being employed in certain cases; it is a practice which has for years been most successfully employed not only in the Admiralty Court, but in the County Courts which have Admiralty jurisdiction. It works very well in the Wreck Commissioners' Court not only in the case of inquiries into casualties caused by collisions, but into those which may have occurred through some technical point connected with ship-building or with marine engineering. It was clearly the intention of the Legislature that it should become a general practice, though unfortunately the statute does not effectually carry out these views. Lastly, we have judicial opinion in favour of the practice, and its advantages are obvious to all parties. Just now the Committee of Judges, who are entrusted with the alteration of the practice of the Courts, are busily engaged in considering new rules of procedure. The Institute of Architects and that of engineers would do well to express their views to them on this point. We have always stated our opinion that special tribunals for particular classes of cases, such as those connected with light, air, and patents, are impossible; but, on the other hand, we have a strong opinion that the present tribunals can be improved by the adoption of the practice of having skilled assessors. It appears to us, therefore, that in certain classes

of cases either party should have a right to ask that it be tried by a judge and assessors; and that if the other party objects, then that an application should be made to the Court to decide if assessors shall or shall not be employed.

If the party who objects to this mode of trial is found to be in the wrong, then he should bear the costs of the application; but the judge, it must be clearly understood, must have absolute power to compel parties to try in this manner if he thinks it advisable. If there was no objection raised, then the action would be tried in this manner as a matter of course. For actions relating to the obstruction of light, and which involve technical points in regard to the construction of houses, a rota of assessors should be appointed by the Institute in the same way as the Corporation of the Trinity House select the Admiralty assessors. For cases involving engineering details, the rota should be chosen by the Institution of Engineers. If this were done, and the practice became common, we feel no doubt not only that many cases would be tried more quickly and more satisfactorily, but that many cases which are now sent to arbitration from a fear lest a judge and jury or a judge alone would not get to the bottom of them, would come before the Court at less expense to the parties and with satisfactory results.

OUR GAS BILL.

THE annual Gas Bill for the metropolis has been rendered as usual, and the result can not be regarded as wholly unsatisfactory. We refer, of course, to the Parliamentary Returns of the accounts of the Great Metropolitan Gas Companies for the year 1882. The feature in these accounts which strikes us as the most remarkable, so far as what we may call the Ædileship, or structural superintendence of the habitability of London, is concerned, is the comparatively small amount that is paid for public lighting. Out of a gross revenue of upwards of three millions, less than a quarter of a million has been paid for public lighting. The figures are 3,078,052*l*., and 223,211*l*., respectively. For the nocturnal brilliancy of London (barring any aid from the electric light), the public pay only about 7*l*., to every 93*l*. that they pay for their own private consumption. No means exist of dividing the latter into the very distinct purposes to which it is applied. It is obvious that a very large proportion of the gas consumed and paid for by private consumers adds to the illumination of the streets of the metropolis, as being burned in or before those brilliant shop-windows which form so luminous a feature in London at vesper tide. We do not know whether the gas companies have the means of forming any independent estimate of the proportion of gas thus consumed. But it is a statistical detail of much interest, which it would be very desirable, if possible, to obtain. We should think it highly probable that the cost of the gas thus "contrived a double debt to pay" is not less than 1,500,000*l*. Of the remainder there would be a proportion devoted to purposes of manufacture, of cooking, and of warming, and the balance will represent the quantity of gas consumed for what we may call strictly private lighting.

Regarded from this point of view, it will be seen how unfounded was the panic which sent down the price of gas shares on the introduction of the electric light. It is true that the latter is now being brought into competition with gas for what we have called private lighting. As to the result of that competition, we defer to anticipate the outcome of experience; but where electric light certainly has the field in a great measure to itself, that is to say, in the brilliant illumination of streets, squares, and open places, it is obvious that even the total displacement of gas by electricity for street-lighting, pure and simple, would be hardly felt by the gas companies. It would not exceed the increment of consumption, in a year or two, from the natural growth of London; and although, as we have before pointed out, the economic value of coal-gas is far higher for calorific than for illuminating use (the richer gases obtained from rock-oil being, on the contrary, better adapted for illuminating than for warming), yet we see no probability that gas will fail to continue to hold its own for many a long day.

It is not, however, so certain that coal will continue to be the source of gas. The coal consumed by the London gas companies in 1882 was over two millions of tons, or more than half the sea-borne coal that enters the Thames. This, however, is only about one-eightieth part of our annual product of coal; and, if it be doubled to cover the non-metropolitan gas supply, only comes to one-fortieth part, or 2½ per cent., of our annual yield. Even so, it provides wages for nearly 10,500 colliers. The annual average price of the best coals (exclusive of city or other dues) at the ship's side in the port of London, during the past sixty years, has fluctuated between the maximum of 35s. 9d. per ton, attained in 1823, and the minimum of 14s. 11d. per ton, realised in 1880. In 1851 it was at the same price, within a penny, as in the last-cited year; and the activity of trade and commerce in 1872–3 drove it up to 31s. 3d. in the latter year. It is thus evident that the supply of coal by railway, which, in the half-year ending 30th of June, 1882, was a little over 3,000,000 tons, has not had the effect of rendering the price of coal steady in London. Mr. Allport gave evidence before the select committee on canals, now sitting, to the effect that notwithstanding the large quantity of coal now borne to London by railway, the mean amount of sea-borne coal sent to the Thames has been practically unaltered by the additional supply. Thus there seems to be no very good reason for anticipating any great change in this part of the case within any assignable time.

Fortunately, however, for the consumers of gas, there is a compensation for the variation in the price of coal in a corresponding difference in the price of coke, and other residual product, so that the constant and known expenditure on works and manufacture is not liable to so severe a disturbance as that which occurs in the price of coal. If we put the price of coal to the companies at 2,000,000*l*. per annum, little more than another million of revenue from the public covers all their other expenditure, and provides a minimum dividend of 10 per cent. on the ordinary stock. The prices charged to the ordinary consumer in the past year were: by the Gas Light and Coke Company, 3s. 2d.; by the South Metropolitan, 2s. 10d.; by the Commercial, also 2s. 10d.; and by the London Company, 3s. per 1,000 cubic feet. If we take the average price of coal, as before mentioned, at 1*l*. per ton, and allow each ton to produce 10,000 cubic feet of gas, 2s. per 1,000 may be taken as the cost of that part of the total cost of gas which is due to providing the material, and 1s. per 1,000 as representing all costs of manufacture, as a balance after taking residual profits into account.

Our readers may remember the very prompt echo that was given to our remarks, on the 17th February last, as to producing light out of dirt. The result at which we had arrived by the route of chemical theory and analysis was, as a correspondent assured us on the following week, at the very time being wrought out by himself in the form of practical experiment. We have heard nothing of the matter since. But it has too much of the elements of truth in it, and, which may be more to the purpose, too much of the elements of £. s. d. in it, to be allowed to drop. Sixty parts of carbon and hydrogen, we then found, are to be procured from 100 parts of albumen, against sixty-five parts from 100 parts of coal. We should thus want some two million tons of the solid and most offensive elements of sewage to form the source of our gas, if Herr Sandberger's statements be verified. Whence is it to come? It is turning the tables with a vengeance to reply that the sewage of London will not be adequate to supply the amount! Four millions of people, while enough to render impure such a river as the Thames, will not furnish 5 per cent. of the weight of solid gas-forming matter required! Such, at least, is the result of calculations given in our columns years ago, which estimated the solid material contributed by three millions of people at 209 tons per diem, or 76,000 tons per year. This, indeed, is only one-seventeenth part of all the excreta, solid and liquid; the total solid constituents of which may amount to about 200,000 tons per annum for four millions of people. Still we have only a hundredweight where we require a ton. If every Londoner, on an average, now is the cause of the carbonisation of half a ton of coal for the production of gas in the year, he will only displace two quarters out of the ten hundredweight by his contribution to the new source of light.

We confess that this comparison looks to us very cheering. If we look at the immense vomit of the metropolitan drainage, we may naturally conclude that the supply is so far in excess of any possible demand for utilisation, that any attempts thus to diminish the virulence of the plague-spot cast on the Thames would be trifling and unimportant in face of the foul and mighty mass. It does not, however, seem that this is really the case. Two millions of tons is a great mass of matter. It is difficult to present it to the imagination in a concrete form. It is, at all events, considerably more than half the size of the Great Pyramid, which we find noted to be equal to 92 millions of cubic feet. It is equal to nearly twice the amount of sand dredged from the Suez Canal in a year. This bulk of coal, however, the returns tell us, is annually sent to London, and there converted into gas, and that all that portion of the solid contents of the London sewage which we have before defined as conceivably convertible into gas does not make up an amount that can in any way diminish this vast coal trade by the half, if even by the quarter, really seems to us one of the most encouraging facts with reference to the future purity of the Thames that we have yet noted. On the other hand, the consolation to the gas consumer is not so obvious. On the face of the figures, if he had all the benefit of the difference between a costless supply of material, as far as it goes, and his present supply at 1*l*. per ton, it would only come to a reduction of 3¼d. per 1,000 cubic feet of gas. And even that much saving would be reduced by the absence, we should conclude, of mercantile "residual products."

THE NEW THEATRE AT FOUNTAIN-COURT, STRAND.

"Then enlarge on his cunning and wit;
Say how he harangued at the Fountain:
Say how the old patriots were bit,
And a mouse was produced by a mountain."

WE recently adverted* to the proposed establishment of yet another theatre in a quarter which of late years, at least, has become identified with the cult of certain of the Muses, amongst whom, however, Polyhymnia and Urania cannot be reckoned. The Occidental tavern and part of Fountain-court will make way for the new structure. The court is so-called after the tavern of that name in the Strand, where met the celebrated Fountain Club, in political opposition to Sir Robert Walpole. This is Strype's "very fine tavern, ... with excellent vaults, good rooms of entertainment, and a curious kitchen for dressing of meat, which, with the good wines there sold, make it to be well resorted unto."† The tavern is represented by Simpson's Dining-rooms and the Divan. On the burning of his premises adjoining the Fountain, Charles Lilly, the perfumer, opened a shop,—now Rimmel's,—at the north-eastern corner of Beaufort-buildings. Lilly, familiar to those who read Steele's papers in the *Tatler*, receiving here for Steele letters addressed to that periodical, used to take them to the "Trumpet," in Shire-lane. He was employed there as officer of Mr. Bickerstaff's Court of Honour, in which people had actions brought against them for looking at their watches while their betters were talking, and for brushing feathers from an exquisite's coat with a cane "of value fivepence." At Beaufort-buildings stood the town mansion, its successor being burned down in the fire of 1695,‡ of the line since of that title. Originally appertaining to the see of Carlisle, the house passed, at the Dissolution, to the earls of Bedford, and from them to Edward, second Marquess of Worcester, author of The Century of Inventions, first printed in the year 1663. During the building of his new house in St. James's-street, Lord Clarendon hired this one for 500*l*. a year from the Marquess of Worcester,§ and here in the night of the 3rd of September, 1660, his daughter married James Duke of York according to the rites of the Catholic Church. Marvell, in his "Rehearsal Transposed," speaks of the Worcester House Conference, *temp.* Charles II. When living in Beaufort-buildings Fielding, dunned by the rate-collector, had recourse to

* See the *Builder*, p. 738, *ante*.
† Conf. also Dennis's "Letters."
‡ See the *Postman*, No. 80 for that year; and Strype, iv.
§ The Marquess had offered it "without requiring from your lordship one penny rent (yet that only known between your lordship and me); it is during my life at your service, for I am but a tenant in tail, but were my interest longer, it should be readily at your lordship's service."—Marquess of Worcester to Lord Clarendon: Lister, iii., 108.

Jacob Tonson for a loan of a few guineas on the security of a yet unwritten work. On his return he met an old friend whose necessities were as great as his own, and gave him the money. Reaching home and hearing that the collector had repeated his visit, Fielding said, more to the credit of his heart than of his sense of a citizen's obligations, that Friendship, too, had called, and had the money,—let the tax-gatherer come again. Part of the tavern site was subsequently occupied by a drawing-school, with Conway and Wheatley amongst its pupils; John Thelwall's lecture-room; and the premises of Rudolph Ackermann, the printseller, who introduced lithography and "Annuals" from Germany, illuminating his gallery with cannel-coal when gas-lighting was as yet a novelty. The Occidental Tavern preserves that repute as a resort of the dramatic profession which, under its former style of the Coal Hole, it enjoyed in the days of Edmund Kean. Procter, in his "Life of Kean," relates how he enjoyed a beef-steak at the Coal Hole, or a devil or a grill at one of the mean taverns near the theatre, and goes on to observe how he found himself out of his element when confronted with elegance and ceremony. Our elder readers will recollect the Coal Hole in connexion with the suppers there presided over by the *soi-disant* Baron Nicholson. As the Occidental it has formed head-quarters for the supporters and adherents of the junior member for Northampton. The steep flight of steps leading from Fountain-court to the Embankment, at whose foot still stands the Fox-under-the-Hill, shows how sudden is the descent to the river at this point. In the back room on the first floor of No. 3, Fountain-court died, on the 12th of August, 1827, aged sixty-eight years, the author of "Songs of Innocence and Songs of Experience" and painter of the "Ancient of Days" and the "Last Judgment." The close of an unprosperous career was solaced by the affectionate solicitude of his wife, and cheered by an unaffected piety which, through a life of unvarying poverty, had never deserted him. Son of a hosier at No. 28, Broad-street, Carnaby-market, William Blake was born there in the year 1759. As the boy exhibited a manifest talent for drawing combined with a total ineptitude for his father's business, they placed him in the studio of James Basire, engraver to the Society of Antiquaries. Leaving his instructor, he gained the acquaintance of Flaxman and Stothard, and secured the favour of the accomplished Mrs. Mathew, whose house in Rathbone-place (No. 27), was frequented by nearly all the literary and artistic celebrities of the day. Having heard him read some early attempts at poetry Mrs. Mathew persuaded her husband, a clergyman, to join him whom Blake subsequently addressed as "Dear Sculptor of Eternity"* in meeting the cost of printing them. Flaxman wrote the short preface to a little volume of some seventy pages 8vo., dated 1783, and entitled "Poetical Sketches by W. B." Blake then set up in business as a printseller, at No. 27, next door to his father, with one Parker, his fellow pupil, devoting his leisure to metrical compositions which, notwithstanding his confessed ignorance of music as a science, he set to beautiful airs. Katharine, his wife, sympathising with his conceptions and readily entering into the practice of his art, not only rendered him valuable help in taking proof impressions of his plates, but even became herself no mean draughtswoman, producing designs as original as her husband's. Without seeking here to account for his faith in the visionary appearances which he believed were present before him from time to time, and with whose guidance and admonitions he fancied himself inspired, we should point out that Blake had singular powers of self-concentration and abstraction from all disturbing elements whenever he applied himself to the task of invention. Permitting himself but little distraction, or even necessary relaxation, he achieved that excellence in colouring upon which his after-fame so justly rests. In this branch of art, indeed, he frequently acknowledged Apelles to have been his tutor, who, he fancied, revealed himself and encouraged him to perfect it. He did not survive to exhibit at Somerset House his marvellous fresco-painting of "The Last Judgment," which might have raised him from unmerited obscurity; but his last completed work, a set of twenty-one plates (executed for Linnell) illustrative of the Book of Job, insured the encomiums of such men as Lawrence, Baily, Chantrey, Westmacott, and James Ward. In his last hours Blake, propped up with pillows in bed, worked upon an impression of the frontispiece to his "Europe, a Prophecy," for tinting which he was to receive 3½ guineas. The specimen is worth any sum now, but that price was more than Blake had commonly received, and was considerable to one who, with his wife, worked and studied, lived and slept, in the one same room. This frontispiece represents the Creator, Wisdom with Him, "when He set a compass upon the face of the depth,"* a grand realisation of a passage from Raphael's description of the creation to Adam:—

> "——— in His hand
> He took the golden compasses, prepared
> In God's eternal store, to circumscribe
> This universe, and all created things:
> One foot He centred, and the other turn'd
> Round through the vast profundity obscure;
> And said,—'Thus far extend, -thus far thy bounds,—
> This be thy just circumference, O world!'"†

With a final effort Blake make a spirited likeness of her who was watching him. "Stay! Keep as you are!" he cried. "*You* have ever been *an angel* to me. I will draw you"; and thus, chanting songs to his Maker the while so sweetly that when his wife stood to hear he said, "My beloved, they are not mine; no, they are not mine," calmly expired that summer evening he whose finest works Flaxman and Fuseli declared would be as much sought after and valued in the portfolios of men of mind as those of Michelangelo himself.

* Letter to Flaxman, dated from Felpham (whither he went to prepare illustrations for Hayley's "Life of Cowper"), 21st September, 1800.

* Proverbs viii. 27.

† "Paradise Lost," book vii., lines 224-231. Such a favourite was this subject with him that he always gave more time and derived greater pleasure when colouring the which he declared hovered at the top of his staircase, and made a deeper impression on his mind than all that had ever visited him.

PASSAGES IN AN UNSUCCESSFUL CAREER.

I.—MY FIRST COMMISSION.

It may not be without interest and profit for some of those who are entering upon a professional career if I set down the circumstances of my first commission; and for the clearer understanding of my story I may as well state that after passing through the usual probationary course in a country office, my spare time occupied in sketching all the old churches in the county, I came to London to seek my fortune in the year 1851,—that second "*annus mirabilis*,"—the year of the World's Fair in Hyde Park.

By the recommendation of a friend, who had seen some of my measured drawings of old work, I was received into a London office, and after trial of my capacity was allotted the curious salary of 35*l.* per annum. Whether this was a fair equivalent for my abilities I cannot say, but the sum bears all the appearance of a careful appraisement thereof. I took a lodging in Chelsea, and I can recall, after an interval of thirty years, the incidents of my daily walk thence to my office and back again thither. I often pass along the old route "for auld lang syne" and note how like and yet how unlike it is to the place as I then knew it; and I have, and shall always retain, a special affection for the old landmarks which have escaped the scope of the improver. As I had no other pecuniary resources than the aforesaid 35*l.* per annum my lodging was, as may be supposed, a humble one. A single room, with a right,—not often exercised,—to take tea in the family parlour. London is even now badly off by comparison with the great northern towns for places where young men can profitably spend their evenings. It was worse off then. There were no public reading-rooms and such like, or, at least, I knew of none. A stuffy back bedroom looking into a grimy back yard garnished with a few sooty trees, and enlivened by a set of dingy, rapacious, and impertinent sparrows, was not, to one fresh from a country life, very attractive, especially on summer evenings. Short trips into the country were not so easy nor so cheap as they are now, and it must be remembered that our parks were waste places, and not the paradise of well-kept flower-beds and shrubberies which they have since happily become. Sometimes I would sit and watch Mr. Pearson's church at Vauxhall Bridge slowly rising, and many a sketch I made of its beautiful tower and spire. My pocket would not often permit the enjoyment of the theatre. There were, however, red-letter days, and a stray order for the Haymarket when Buckstone and Compton and Mrs. Fitzwilliam were in their prime, was a balm for a whole week's *ennui*.

On one happy day,—how well I remember it,—a friend, who held some subordinate professorship in a great collegiate establishment in Wildshire, wrote, telling me that he *thought* he had obtained for me some professional employment in connexion with the college, and would write again. Oh! cruel suspense. Better to have left me in sweet ignorance than thus to stretch me on the rack of expectation. In a few days, by calculation, weeks in effect, a note from the same hand brought particulars. The college building had been a nobleman's house, and amongst the various re-appropriation of the rooms for its scholastic purpose the ball-room had been told off to do duty as the chapel. Now, however, it was the intention of the authorities to pull this down and to build upon its site a new Gothic chapel *à la mode*, and my friend had persuaded the powers to allow me to submit sketches for the same. Here, then, was my chance. I set to work at once. My own little back room became, indeed, a busy place. The old-fashioned wooden bedstead occupied nearly the whole of it, and left but a narrow passage between it and the chest of drawers, which extended from the window on the left to near the door on the right. By sitting on the edge of the bed, however, and slanting the drawing-board upon the handles of the upper drawers, I managed pretty well; and nothing could have been more convenient for the saucers and palettes than the neighbouring wash-stand, so very close at hand. This sudden accession of professional occupation brought its anxieties. First, should I send the sketches in pencil, not too laboured, as if thrown off with practised skill? or ought they to have the attractiveness of colour to recommend them? I was no colourist, and knew it. Pen and ink had not yet become the fashionable medium. I decided on pencil, and as a sort of compromise between a mere uninviting architectural drawing and a water-colour sketch, I hit upon the idea of using tinted paper, and even thought of touching up the high lights with a little chalk or Chinese white. I bought a sheet or two of tinted paper, with a surface, I remember, like a Bath brick, and went to work in earnest with a pencil somewhat too soft for the occasion. A few days after the despatch of the precious parcel from the Golden Cross, Charing-cross, I received by post from my friend the blessed assurance that my design was not only approved, but universally admired.

But the ideas of the promoters had meanwhile expanded. The chapel was to be a church, to accommodate not only the inmates of the college, but the neighbouring rustics. It was to be Early English in style, and was to have a tower and spire! I was invited down into Wildshire to "prospect," as our cousins say, and thither I went part of the way by train and part by stage-coach, for the stage-coach then ran in remote Wildshire, careering briskly and joyously over the bleak moorland and through the deep-wooded valleys of the loveliest of English counties.

On my return I soon produced a grand design, working early and late and (I fear) "carrying on" a little before my less favoured acquaintances. This second design was also approved. But now a little mystery began to gather round the affair. It was communicated to me verbally by a friend of my friend that it was felt that the employment of so young and untried a man on so important a work was not unattended with risk. I was kept but imperfectly informed of what was passing, and my anxieties accumulated, when it was at last broken to me that the college had thought it only prudent to take the advice of some architect of eminence. Architect's name not disclosed. Had I any objection? Of course not. Full of confidence in myself I was ready to run the gauntlet of the whole Institute. There was, no doubt, something hazardous in this importation of a new professional element into the case, but I "saw it not, thought it not." Strange to say, the architect's report was entirely favourable. A little trifling alteration in the framing of the nave roof was all he had to suggest. Nay, so friendly towards me did he profess himself to be that he conveyed to me indirectly his willingness to receive me into his office, and negotiations to that end resulted in a sudden

leap in my income from 35*l.* to no less than 80*l.* per annum. Was ever man so blest? But, owing to some causes which have never yet been explained, I could not get my plans again, and this was a constant source of uneasiness. Of course I kept no copies, so eager was I, when the labour of preparing the originals was over, to get them before my patrons.

An ecclesiastical "Jorkins" now appeared upon the scene. I was told that before anything could be done high ecclesiastical sanction of my design was necessary, and that the dignitary in question was unhappily by no means struck with the excellence of my plans. He had scruples, too, as to the *morality* of employing an untried man, and entrusting him with the administration of some thousands of pounds; and he had, moreover, an architect of his own who possessed his entire confidence. This was disconcerting. Every one was my friend, almost every one, and no one could further the business in my favour. My architect employer was very friendly, but he knew nothing of the plans or of the then state of the project. I was obliged to sever my connexion with him because the 80*l.* per annum were not paid, and nothing but the very smallest fraction of that sum did I receive. I was pressed on every side, and once more threw myself despairingly on the mercies of the great metropolis for a living. Appeals to the authorities at the college brought no response. At length I heard, incidentally, that the church was making good progress under the direction of the architect to the ecclesiastical dignitary; and I learned on inquiry that he was the brother of the architect who had reported upon my plans, and further that the two brothers were at the time working,—well, as brothers should work,—harmoniously together.

This state of things gave me a *point d'appui*, and I again laid the case before the college, which brought me from the head of it a civil letter, laying the whole blame on "Jorkins," and what was more to the purpose enclosing a cheque for exactly one-tenth of what my commission would have amounted to.

But I was poor, I was friendless, and I was heart-sick. I had realised how hard it was to "kick against the pricks." I had not been careful to get any written instructions from any responsible person, and I was practically without remedy. The church is built, and is, I have been told, "a credit to all concerned." I have not had the heart to go and see it, and cannot, therefore, say whether my drawings were used or not; probably not, for the architect had plenty of ability. And thus weary and disheartened, ended my first commission. I have had others since, and I have been more careful about the preliminaries, but I have never since experienced either such a glow of hope or such depths of despair at success or failure. With one exception all the actors in the little drama I have briefly related, besides myself, have gone to their long home, and of the dead nothing disrespectful shall even be *thought* by me. But I should advise the youngest member of my profession to be clear about the terms upon which he goes to work, and, if I may say so, not to be unduly trusting in the entire disinterestedness of all his professional brethren. If the story of my first commission gives him any hints, and teaches him any useful lessons in the conduct of his own, I shall not have written altogether in vain.

THE NEW GERMAN THEATRE AT PRAGUE.

THE preparations for the building of the above structure are so far advanced that the details of the work are now being fully arranged. The new theatre is designed to accommodate 2,200 persons. The boxes will be 90 in number. The stage will have a depth of about 65 ft., and its upper portion will be arranged in such a manner as to allow of the scenery and decorations being placed in position according to the most improved principles. A spacious *foyer* is comprised in the plans and a wide corridor will separate it from the auditorium. There are special exits from all parts of the theatre, leading to the open air.

Electric illumination will be employed, and the arrangements permit of the stage and auditorium being made into a ball-room without much difficulty. The cost of the building (exclusive of the site), is estimated at about 70,000*l.*, according to the *Hamburger Nachrichten*.

THE EMPLOYMENT OF ARTISTIC MATERIALS IN THE ARCHITECTURE OF HOUSES AND HOSPITALS.*

IN describing the objects in this Museum, I shall limit myself to those which are plainly visible to you in this hall; thus, of necessity, omitting notice of the splendid food collection generously given us by Mr. Twining, which you have seen in the corridor. My subject prevents me also noticing the important objects relating to drainage and its accessories. But these will be minutely described in subsequent lectures by Prof. Corfield and Mr. Rogers Field and others whose practical acquaintance with these subjects is so well known.

Suffice it for me to say that we have the finest collection known to me of materials for drainage, and for other sanitary works; and that we have provided, also, for educational purposes, some of the very worst; for I need scarcely say that as great practical knowledge is often to be acquired from the history of failures as from the means of success. I must also omit, excepting for a special purpose, all mention of materials which are not decorative, and these may better form the subject of a future lecture on the construction of a house from foundations upwards.

At the outset of my subject I must mention that, although undoubtedly some of the objects here shown us, *e.g.*, the mosaic of the Great Law-giver and first sanitarian, Moses, kindly given to us by the Murano-Venetian Glass Company, are so merely for decorative purposes, yet there are very few which are not immediately connected with our work. Sanitation is not a dry, distasteful study. To use the words of our founder, Dr. Parkes, whom I had the pleasure of knowing in his work at Netley, "Hygiene is the art of preserving health, and of obtaining the perfect action of body and mind. It signifies rules for perfect culture of mind and body. It is impossible to dissociate the two." And, to quote Professor Tyndall, our institution should include "models of all contrivances and inventions which are calculated to promote the health, comfort, and general well-being of rich and poor."

Although, therefore, good drainage and its accessories are the chief requisites for securing a healthy dwelling, the materials of every other portion of that dwelling may aid us in our struggle for health, not only by being healthful in themselves, but by giving brightness and cheerfulness to the houses in which we live. It is this which I am about to describe, aided by the objects around us.

Now the first serious enemy with which we have to contend is damp, and a very sanitary process is that which can defeat it and make a house dry, but this is not quite so easily to be managed as may, at first sight, appear; and before alluding to the decorative processes which may prevent this I will briefly allude to the difficulties to be overcome. With bad materials of any kind, scarcely any thickness of walls seems sufficient to keep out continuous rains when driven by violent winds. At the end of the last century,—that bad time for architecture and construction alike,—it was usual to put an internal lining of wood and plaster as a remedy; but this is liable to rot, and is a terrible aid to the spread of fire. Hollow walls are now often used, and in skilful hands these are effectual. But one of the wettest houses that I ever saw was the result of unskilful work. The same remark applies to concrete and to walls built of many kinds of vitrified bricks quite impervious of themselves to damp, but which let it pass freely through the joints. I have now to consider the subject of an outside casing which shall be at once sound and decorative. For this, I know of none better nor prettier than that of roofing tiles, varied in form, and arranged picturesquely as in many an old house in the home counties, but firmly cemented against the walls. You have a specimen against the walls supplied by Messrs. Lawrence, of Bracknell. Or, if the house be of timber, these tiles can be merely fixed to strong laths, much as the black glazed bricks were to the old houses at Brighton. Somewhat resembling these are the black-headed bricks sent by Mr. Blomfield. Specimens of tiles glazed and overlapping so as to present an even surface are shown by Messrs. Cliff. The red tiles are somewhat harsh at first, but a few seasons' wear cures that, and the softened red is gradually tinted by the beautiful grey and yellow lichens which give so charming a tone to an old tiled roof.

Another good decorative material is such concrete as that sent by Mr. Lascelles, a very strong material, having a very fine face. Highly weather-proof and strong is also terra cotta, which when well-burnt combines well in construction with brickwork, made in such large blocks as to cover, with one piece, many joints of the brickwork, and, at places where the approach of damp may especially be feared, can be formed with projections so as to stop this enemy. (I shall use this term, terra cotta, to express also fire-clay goods.) It has the further advantage that the art-workman can put his own handiwork upon it whilst still soft in the clay. Such work was used in the old Greek temples and churches hundreds of years ago, and still it remains sharp as the day it was cut. It is adapted equally well for plain and moulded surfaces, as you may see in work sent here from Messrs. Doulton, Cliff, Jennings, and Stiff. With this material, or with concrete, may be combined the ornamental tiles, equally weather-proof, of which we have so many examples. They are impervious to wet, and help to make your houses picturesque as well as dry. But do what you will, slates or tiles will fall off; cisterns, I am informed, will overflow, and pipes will continue to burst till plumbers take more care in laying them. Then you require some material which will allow you to redecorate your walls without waiting for their tardy drying. I am afraid that this desideratum is not yet well supplied, but if you want solid work you may cover them with Lascelles slabs, which are made an inch thick, and can be decorated to any design you wish; or with Hitchins's, which are very thin and easily applied; or, in the case of halls, corridors, offices, &c., you may use tiles with great decorative effect, choosing such as are burned of the same colour all through, inasmuch as there is some risk of a surface enamel coming away in flakes when the tiles are fixed against a wall which is continually damp. Still more effectual, though seldom adopted, is the use of tiles detached from the wall, thus allowing warm air to pass in the space thus made and heating the whole surface of the wall. Such panels as are shown by the Campbell Tile Co., and that beautiful dado by Messrs. Gillow, show how this can be done. This plan was sometimes practised by the Romans, and by a tasteful arrangement of the tiles you can get a highly ornamental effect and avoid the risk of fire and rot from a wooden lining. In a warm bath-room, *e.g.*, where you want absolute cleanliness without the cold surface which glazed tiling would otherwise present, this plan would give you admirably what you require.

But you have a much more fearful enemy than damp,—fire. The thousands of instances of total or partial destruction which I have seen as architect to one of the principal insurance offices and to their Fire Brigade, have by no means lessened my feeling of horror at its terrible deeds. Awakened, as the inmates of a house usually are, in the dead of the night, dazed by the flame, half stifled by the smoke, seldom have they the only fire-escape which, so far as I know, is of much use,—presence of mind,—and they have to depend for their escape on outside help. Valuable, then, indeed, is any material which will stay the progress of the fire until help comes. Now, the chief parts attacked in a house are the ceilings, floors, and stairs. The ordinary plaster ceiling, if it could be depended upon, would be a good fire-resisting material, and it may be further protected, as ours is here, by such outward applications, as the Silicate paint. But the best plaster is not altogether a reliable one. It is fixed, and often not very securely fixed, to wooden laths, and has an unpleasant habit of tumbling down, even when not compelled to do this by fire. In particular, it has a strong objection to the vibratory motion caused by the measured tread of dancers over it, and shows its displeasure sometimes by throwing itself down at the most inconvenient time, and spoiling the dancers' supper and the hostess's temper.

The ceilings near you are proof against this, being pressed fibrous plaster,—a light material, which is screwed up in sheets, and (which is the important point) incombustible. The large and highly ornamental one is by the well-known makers, Messrs. Jackson, whose ceilings have been largely used in theatres, and I have reports from one of our most experienced architects in their construction that it is practically unin-

* By Professor Hayter Lewis. Read at the Parkes Museum of Hygiene, June 13th.

flammable. The others are by Mr. Hitchins, whose materials have stood some very severe tests in the way of fire, and both this and Jackson's are easily susceptible of very high decorative effect, at a very moderate cost. The doorways to the library and reading-room are of Mr. Hitchins's material.

The construction of floors is too large a subject for me to enter upon here, and I will merely mention that Mr. Lascelles forms joists of the same material of which his window is formed. They may be designed in panels, and moulded, and for highly decorative purposes may have the panels filled in with tiles, as has been done in the window. Where iron girders and columns are used (though always unsafe to be trusted when exposed to fire) they may be cased in the fibrous plaster which I have before described, or in terra-cotta, as has been done at the Natural History Museum, South Kensington, and the Patent Safe Company's buildings in the City. These casings may, of course, be very highly decorative.

A more important part of the house even than the floors is the staircase. Our best staircases are now built of stone, and are thus considered to be safe from fire; but they cannot be relied upon, although, of course, they do not add to the supply of fuel, and I have seen them utterly destroyed when the rest of the house has been saved, and I have little doubt that concrete steps, such as may be made by the Eureka Company or Mr. Lascelles, *e.g.*, would be much safer. In my present purpose, also, they are more peculiarly adapted, inasmuch as they can be moulded and enriched at very little cost, whilst the carving of a stone staircase, even to a moderate extent, is a very expensive affair. For this purpose, especially of that important part of a staircase, the landing, Mr. Drake's concrete can be well used, as it takes a good polish on both sides, thus serving both as ornamental floor and ceiling. A fair specimen, though somewhat worn, is that in front of me, which is, in fact, part of the proscenium of the new Islington theatre. Another good specimen is in front of the library fireplace.

But in regard to fireproof materials, I ought to mention that I include only domestic buildings, which have little in their contents which can burn, beyond the furniture. For storehouses and factories, filled with combustible materials, I know of nothing which is fireproof, except solid brickwork or terra-cotta.

Generally a wooden floor will be required for rooms, and, for this, hard wood is, no doubt, of much greater value than the ordinary soft woods for all sanitary purposes, as well as for protection from fire. The parquetry borders put by Messrs. Gillow as a wall lining, in order to be better seen, form a thick, solid mass of hard wood, with very close finish,—a most important point, inasmuch as the crevices between the boards, which we are so accustomed to see, afford secure lodgment for dust and dirt, whilst they give an admirable current to the flames. A floor of hard oak, or such material, with a parquet border, is good for use and ornament alike. The danger of fire, however, is a more personal one than I have hitherto described, and many a life has been lost and many a home made desolate by a dress or a curtain coming too near a flame. Now, you see those curtains over the bust of Dr. Parkes. "Flimsy things," you say. Well, they are so, and were expressly chosen and put there not for decorative effect only, but because they *are* flimsy,—would catch fire in an instant in their ordinary state, and blaze into a mass of flame, spreading destruction all around. But those before you, which have been supplied by Messrs. Astrop & Co., have been protected by a very simple method, and you may apply a light to them with perfect safety. Here is a piece cut off from one of them, and you see the result of trying to work into a flame. It smoulders, but that is all. It has been extensively used in theatres, and has been tried on old and new canvas scenery, and has proved to be a protection to them against fire, whilst it does not interfere with the painting or alter the colours, and I am informed that it is most valuable for staying for a time the action of fire on wood.

There is still another appliance for preventing the spread of fire, which we have here in a door made of the Eureka concerete, an incombustible material. Until quite recently iron was well-nigh our only material for this, but it is so heavy that, although a door may be fixed in the best position for staying fire, it too often remains fixed, and so is found open when safety requires it to be shut. Nor can it be altogether relied on even when closed, unless made in the costly fashion as used for safes and strong-rooms, inasmuch as I have seen doors when made only of a single sheet crumble up like parchment in the intense heat of a fire. Then they are extremely ugly, whereas the door which you see can be made of a very ornamental pattern, and at no great cost, to suit the other decorations of the house, according to the architect's design.

Next to the building itself and its decoration comes the warming of it. That little open grate behind me (one of Fletcher's), simple yet effective, is on the principle, so far as the fire space goes, of all good open grates. It has merely a few iron bars in front, and all the rest of thick fire-clay. Round it is a border of light glazed bricks, such as Messrs. Cliff make. They may be made of any colour, and be kept bright and clean with the greatest ease. As a contrast to this, we have Mr. Doulton's stove, which received a prize in the Smoke Abatement Exhibition, and may be made with an open fireplace if wished. It is formed entirely of terra cotta, so that the disagreeable effects attendant on an iron stove are lost. The glazing, which gives so bright a finish, and secures the colouring, is a positive gain in a sanitary point of view, as it enables the surface to be kept perfectly clean with the greatest ease. We have other specimens of stoves and grates, showing how a few glazed tiles will enable them to be kept cheerful and clean.

Following the supply of fire comes the supply of water, and here, I confess, the artistic element enters but slightly indeed. And yet this is just the very place in which one could expect it to enter. In the East, the elegant vase or water-bottle is a conspicuous object,—housed in a niche or replaced by a pretty little fountain. That vase or fountain is represented in our country by a filter, which holds, for our use, that liquid,—that fountain of health, as the poets term it,—whose purity makes it a well-spring of life to us, and, when impure, puts that life in peril. Bring the filter forward, put it where it may be seen and cared for by yourselves, and you will do well. Now, look at that long row of filters,—good, no doubt, many of them in action,—but see how many of them you would care to put into a place of honour in your houses, or which would not spoil the look of that place if you did. There is one made of the bright cheerful Doulton pottery amongst them and many others of his on the shelf behind me, and one or two, lightly sketched over, by Maignen, and a coloured one from Stiff. But not one other is there to which you would care to give a place of honour. And what is the result? That the filter is stowed away out of sight in some pantry as an ugly thing, watched over by the servants, and seldom cared for by any one else. With the cistern which supplies the filter the case is worse. Years back it was not so, and the cistern-front presented to the eye some of the finest specimens known of ornamental leadwork. But all that is a thing of the past; and now, uncared for by any one, stuck up out of sight in some cupboard or roof, covered with dust and adorned only with cobwebs, it passes its retired life in solitude, and whether in good or bad order, clean or dirty, no one but the plumber knows. But give it a tasteful form,—as it used to have, and place it where it could be seen, and there would be an extra ornament to the house, its condition patent to the inmates. There is no practical difficulty in the matter. Mr. Drake makes full-sized baths in his pretty material, and could make cisterns equally well. So could any manufacturer of good terra-cotta. Vessels as large as our cisterns were made, centuries ago, by the Etruscans and Romans, as every visitor to the Paris Louvre knows well. Those beautifully clean enamelled sinks which Messrs. Cliff give us are merely indications of what their large cisterns would be, and they could be carved, moulded, coloured and glazed as richly as any of the most delicate ware sent by Doulton or Cliff or Stiff. I hold that the artistic treatment of the sources of our water supply would be no little help towards insuring the purity of that supply. If it be the case, as I have described, that our cisterns and filters should be better shown, what shall I say of our cowls and windguards, so feelingly alluded to by Sir Charles Dilke? They are not hidden away, but show themselves by hundreds, making chimneys hideous, and working themselves up in every form by which smoke is supposed to be led or driven or sucked. I merely touch upon this tender subject, noting that no one has, as yet, succeeded in this department in emulating, even at the greatest distance, the beauty of the chimney-terminals which form such picturesque adjuncts to our old Tudor mansions.

One more thing I must not omit,—light,—that great searcher-out of all unclean things in a house, and a difficult thing it often is to give proper light to long corridors with rooms on each side of them, and with another story above, thus shutting out all access of light except at the ends, and sometimes even there. I call to mind the country mansion of a nobleman wherein the long corridors presented exactly this difficulty. To glaze the side doors or have openings over them was out of the question, and no other way was open but to cover the top corridor with skylights, and form a large portion of its floor (which was, of course, a roof to the *lower* corridor) of glass. But such a floor must be made ornamental both at top and bottom, and must also be so made as not to be dangerous from its being slippery. Hyatt's ornamental lights can be used in this case with safety, as may be tried by any one in that gallery or in the floor near me, but the specimen in the gallery has been hastily put together so that the underside in this case is not decorated.

Now I will suppose that you have your house ready for decoration. You choose your papers and are pleased with them, and no doubt mostly they are safe enough. But sometimes illness comes in your house. The little ones are struck down and you rack your brains to divine the cause. A little dampness, perhaps, in the walls, scarcely enough to cause alarm. But the doctor, who has noted the symptons, looks round those walls and from his lips there sometimes comes the ominous word "arsenic." For the brilliant colours, whether on papered walls or ladies' headdress, are often the product of that poison. Now look on the walls in front of you. Messrs. Woollams did not put that pretty colouring there merely because it *is* pretty, but to show, as plainly as we can, that the most beautiful tones of colour can be produced by the most innocent means. All the papers shown are coloured by media which have been tested to be absolutely free from arsenic. Given now, a harmless decoration, you still often want a paper which you can clean down, whenever wanted, with water well. You have that want supplied in that bay of Maguire's and in the beautiful specimen sent by Gillows, and again many of these richly designed in relief sent by Messrs. Woollams. But more than this is often wanted. For your bath-room, store-rooms, dairies, pantries, you require something which will give a hard, clean, polished surface, from which all that is not pure in itself and clean to the eye, can be at all times and without fear, washed bodily away.

For all these purposes the glazed tiles supply the need, and for the large swimming-baths (now happily common in well nigh every large town and public institution), the hard, enamelled bricks such as are shown by Messrs. Cliff, and others by Candy, supply a similar want. In your highly-finished private bath-rooms, the finest specimens of decorated tile-work may well be used, and will remove the look of coldness which, perhaps, attaches to the ordinary plain glazed tile, and finished with such ornaments as shown by Messrs. Doulton, Campbell Tile Company, Cliff, and Minton.

I know of no material so beautiful in effect, and at the same time more healthfully clean and durable. Warm the walls and the floor, as I have already described, when the bath is to be a warm one, and I think that you will have a bathing-place more healthful and more pleasing to the eye than the finest marbles could give you. But even in the humblest offices there is no need, but quite the contrary, to make these tile linings plain and unlovely.

A few lines,—a coloured border,—not costly because pretty, will be effective enough, and cause the servants to take an extra pride in keeping their pretty rooms clean and bright.

Especially, and with intense emphasis, do these remarks as to some simple form of decoration apply to hospitals and such buildings where all the surroundings should not only be scrupulously clean, but of a cheerful look to the poor inmates weakened by sickness and cast down by pain.

In one hospital for children now being erected at Birkenhead, the upper part of the windows in one of the large wards will be filled with stained glass representing the leading features

of well-known nursery rhymes, and the walls will be hung with pictures. And such work is going on, more or less, in most of our leading hospitals. In some hospitals, where contamination and bad odours are especially to be feared, all the walls of the wards are lined from floor to ceiling with glazed tiles of a pleasing colour, and fitted accurately, so as to give no lodgment for dirt in the joints, and I have gone through every ward in one of these hospitals, finding scarce a trace of an evil odour in any. For corridors and such parts as have extra hard work to endure, the walls are lined with such enamelled bricks as are shown by Messrs. Cliff. Their bricks are especially cast to fit rounded corners, and so prevent any lodgment of dirt. Nothing can be more clean and healthful than this, which forms itself an ornament, and in no other case can a little extra decoration be applied more easily, nor, I venture to think, with greater need. I wish to ask you kindly to let me bring this more home to you. Cast your eyes on the small part of the walls on our whitened ceiling which, by accident, have been left bare, and not finished, as we intended them to be, for you to see. I do not ask you to admire them. I claim for them no prettiness, and see no element of beauty in them. I have, indeed, heard a wall admired as chaste because it was so white, and described as being delicately tinted because it was light green or yellow. But suppose these white ceilings and tinted walls to be those of a hospital ward, presenting their blank and speechless faces day by day and night by night to the wearied patients. What is there in the cold white or the sickly yellow to help in the cure of the poor helpless creatures? What can they see in ceiling or wall to awaken a pleasing thought which may lighten their sorrow or ease their pain? In a listless mood, they may find an occupation in counting, perhaps, the number of spots on the walls; wondering how they got there,—why there are so many, or why so few, and so having done, fall back on their own dreary thoughts, and thus present to their kind and anxious doctor, patients whose mental weakness will well-nigh frustrate, perchance, the effects of all his most skilful remedies. But let the artist do his share of the work. Let him brighten up the wards, as I have ventured to describe, and as so often done now. Let him put upon that bare wall something to take away the sufferer's thoughts from himself. Show him, it may be, the simplest form of nature, most simply sketched, which may send his thoughts roving far away to some distant scene, leaving for a few seconds only, it may be, all present surroundings in the far distance; or, simpler still, let the dreary wall speak to him by some simple words,—some short sentences, some well-known text, brightly written and adorned, speaking to him of comfort now, and hope for the world to come, and I dare venture to say that in doing so much, albeit it may be so little, the artist, humble though his work may be, will have proved himself of no slight help to the most skilful surgeon or physician.

A discussion followed, some notes of which we may give next week.

ROYAL INSTITUTE OF BRITISH ARCHITECTS.

MEDALS AND PRIZES.

THE twelfth and concluding ordinary meeting of this Institute for Session 1882-83 was held on Monday evening last, Mr. Horace Jones, president, in the chair.

The minutes of the previous meeting having been read and confirmed, the Secretary (Mr. William H. White) read a letter from Sir John Monckton, Town Clerk of London, requesting the acceptance by the Institute of a copy of the medal struck by order of the Corporation to commemorate the recent visit of her Majesty the Queen to Epping Forest.

The Secretary also made an interesting statement with reference to foreign donations to the Institute and the relations of foreign architectural societies to the Institute. He said,—First and foremost I wish to acknowledge the services constantly rendered to British architects, both in their corporate and personal capacity, by M. Charles Lucas, one of our Hon. and Corr. Members in Paris. A letter received from him on the first of last month refers to the recently-issued paper entitled "Suggestions for the Conduct of Architectural Competitions," a translation of which he has prepared with a view of submitting it to the Paris architects, and a certain number of copies of this paper have at his request been sent to him for the purpose of forwarding them to the various provincial societies in France. M. Lucas makes a point, as far as lies in his power, of keeping the Central Society of French Architects acquainted with English works, and something he had told me in connexion with this attempt may be, perhaps, profitably repeated here. M. Lucas having been good enough to send copies of his excellent description of certain round churches in this country to a few representative British architects, I had occasion to correspond with him on the subject of his book, which also refers to the round temples of Greece and Italy and to the Church of the Holy Sepulchre at Jerusalem; and I have thereby learned how very slight is the opportunity afforded to our French brethren of becoming acquainted with English publications on architecture and the subsidiary arts. For instance, M. Lucas, desiring to study Mr. Fergusson's works on the Temples of the Jews and cognate subjects, failed to find a copy in any public or professional library in Paris, and his inquiries resulted in the conviction that the only works of Mr. Fergusson available to architectural students in Paris were the "Handbook" and the "History of Architecture," which M. Lucas had himself assisted in obtaining for the library of the École des Beaux Arts. The same may be said of the works of other English writers upon architecture, both living and dead, and M. Lucas writes a very natural and very flattering complaint of a void which can, I think, be to some extent remedied even now. Indeed, Mr. Fergusson, on learning what I have just stated, took steps to forward copies of some of his works to Paris. I need hardly add that it will afford me great pleasure to advise members who may be authors of architectural works as to the best way of offering copies to the professional libraries of Paris, and with the consent of the Council to assist them in transmitting such works. By an interchange of this description, which is something more than a mere return of compliments, practical benefit must accrue to the architects of both countries. Then, sir, another Hon. and Corr. Member in Paris, elected nearly thirty years ago, M. Alfred Armand, has sent to our library a second edition, much enlarged, of his valuable work "*Les Médailleurs Italiens, &c.*," accompanied with a letter stating that his retirement from active practice has not tended to diminish the interest he feels in the proceedings of the English society with which he is associated. The permanent secretary of the Académie des Beaux Arts, the Vicomte Delaborde, has also forwarded a copy of his notice of the late M. Lefuel, the architect to the Louvre and the Tuileries, a memoir which he read to the French Academy in October last. A new work on the alterations, additions, and schemes of improvement in Florence has been received from its learned author, Signor Poggi, an Hon. and Corr. Member (Florence), and numerous communications, large and small, from foreign members and others will be found noted in the lists of donations published in the Journal of Proceedings of this Session. In regard to our relations with the continental bodies, I am desirous of noticing first the Society of Architects of Amsterdam, a society which, founded in 1855, has just taken a position of more prominence than it formerly obtained, and from the beginning of this year the Journal of its Proceedings has been regularly received here. The Amsterdam Society has further strengthened its ties with us by electing, as an Hon. Corresponding Member, the Architect to the Corporation of London, at present occupying the Chair of the Institute, while Mynheer P. J. H. Cuypers, the distinguished architect to the Government museums in Holland, continues to favour us with information of passing events and with presents of drawings of actual works. From Madrid we receive, through the kindness of Don Mariano Belmas, an Hon. and Corr. Member, the Architectural Review conducted by himself; and the Central Society of Spanish Architects forwards its newly established journal. From Rome, the Cavaliere Fiorelli, an Hon. and Corr. Member, regularly sends, as a gift from the Italian Ministry of Public Instruction, the "*Notizie degli Scavi*," *&c.*, which we possess from its beginning in 1877. From St. Petersburg, we get the organ of the Society of Architects in that capital; it is called "The Architect," and is an illustrated record of modern Russian architecture of great and undoubted value, the volumes of which, dating from 1872, are preserved in our library. The relations recently entered into with the great professional societies of Berlin and Vienna are of a most cordial character. Besides presents of illustrated works from the Berlin Society, I have a letter from Herr Ende, who has recently been elected one of our Honorary and Corresponding Members. Writing on the 22nd of last month, he says that he will endeavour by occasional communications to keep his English colleagues informed of the most important works in progress in Germany, a duty which he regards as the more incumbent upon him, he says, because the acquaintance between the German and English architects has hitherto been very slight; and in his opinion a freer interchange of ideas will be fruitful of good results to both. From Vienna, I have a letter dated the 30th of last month from the well-known Secretary of the Austrian Engineers and Architects' *Verein*, Herr Leonhardt, who says that the publications sent to him by us are regularly read by a large number of the members of his Institute, and that the *Zeitschrift* and the *Wochenschrift*, which he sends to us, and which are always on the table of our Library, contain the principal news relating to professional matters in the Austrian capital. He further states that, at the National Technical Congress, to be held this year in Vienna, the question of professional education is to be again discussed. The solution of part of the difficulty, he thinks, is in finding the best educational method to employ in the "Middle" and "Higher Polytechnic" Schools. To show the difference between Austrian and English opinion on this subject, he says that in his country professional men are unanimous in thinking that a young man destined for the profession of engineer or architect should, after having spent from, say, his twelfth to his fifteenth year in a Middle School, be compelled to go through what is called a Higher Polytechnic School. He concludes with a reference to Mr. Arthur Cates, by whom his relations with us were begun,—relations to which, in a recent address, the President of the Austrian Institute alluded amidst cheers.

Thanks were accorded to the several donors.

The following gentlemen were balloted for and declared to be duly elected, viz.:—As *Fellows:* Mr. W. E. Jones, Bristol; Mr. Lewis Solomon (Associate), Gray's Inn-square; Mr. J. L. Clemence, Lowestoft; and Mr F J Martin (Associate), of the Department of Public Works, Calcutta. As *Associates:* Mr. H. F. Tomalin, of Northampton; Mr. Charles Turner, of Lincoln's Inn-fields; Mr. Oliver Essex, of Moseley, Birmingham; Mr. F. T. Mew, of Mitre-court, Temple; Mr. A. B. Cottam, of Watford, Herts; and Mr. A. W. Cross, of Hastings.* As *Honorary Associate:* Professor W. H. Corfield, M.A., M.D. (Oxon.), Bolton-row, Mayfair.

The Secretary announced that the annual *conversazione* of the Institute will be held in the South Kensington Museum (by permission of the Lords of the Council) on the 28th of June, when the President and Mrs. Horace Jones will receive the members of the Institute.

The Royal Gold Medal.

The next business was the presentation of this year's Royal Gold Medal to Mr. Francis Cranmer Penrose, M.A. (Camb.), Past-Vice-President of the Institute, and Surveyor to the Fabric of St. Paul's Cathedral.

The President began by alluding to Mr. Penrose's early days at Lincoln and Winchester; to his having earned, on obtaining his degree at Cambridge, the distinction of "Travelling Bachelor"; and to his Continental travels. His second visit to Athens was made under an agreement with the Society of Dilettanti, the result of which was the publication by the Society in 1851 of the magnificent work, "An Investigation of the Principles of Athenian Architecture," referring chiefly to the optical refinements exhibited in the ancient buildings at Athens, and it was perhaps only right that he (the President) should state how the curvature of the lines of the Parthenon was first brought to light. Mention of it was to be found in Vitruvius, but the fact was not noticed on the spot until the year 1837, when Mr. Pennethorne, brother of the late Sir James Pennethorne, men-

* All the gentlemen elected Associates have passed the Examination in Architecture.

tioned his discovery to some friends, through whom it reached Mr. Penrose, who spent several months of 1846-47 at Athens in mathematically examining the lines of the Parthenon and other ancient remains. Of these scientific researches Mr. Fergusson had written in his latest work that, though Stuart in 1762 first made known to his countrymen the beauties of Athenian architecture, and though we really *felt* the beauty of the style, it was not until the publication of Mr. Penrose's book that we had scientifically before us the principles which guided the architects in the design of the Parthenon. Such was Mr. Fergusson's mature opinion of Mr. Penrose's early investigations, which, to repeat the words used in the Annual Report of the Council, had been supplemented at various times by communications to learned societies, whereby he had given enhanced value and attracted fresh attention to his original work. The President then mentioned the various papers read by Mr. Penrose on the completion and decoration of St. Paul's, and on other matters connected with the metropolitan cathedral; and he enumerated some of the buildings erected under Mr. Penrose's superintendence. Referring also to the water-colour drawings, for the excellence of which Mr. Penrose had been distinguished from a very early period of his career,—his sketches at Athens having attracted attention similar to that with which those made by him in the Charente had been received,—the President concluded with a sigh of regret that Grecian architecture of the best period was now less studied and appreciated in this country than in former years, or rather perhaps that it was more neglected than it should be; and he trusted that the renewed attention of that old, well-endowed, and popular academic body in which Soane, Cockerell, and the two Smirkes had been names of weight and value, would regain the classical ground that had been too long given up. The Medal having been presented, the President congratulated Mr. Penrose in not alone receiving, but in deserving, the royal gift.

Mr. Penrose, who was heartily cheered, said,—Mr. President and gentlemen: The greatest honour that a man in the architectural profession can receive is that which may be bestowed upon him at the hands of his colleagues and contemporaries who have known him for many years. This honour you have done me in nominating me as the recipient of the Royal Gold Medal which you, sir, in so kindly and such flattering terms, have presented to me this evening, enhanced in value as it is by the implied approval of her most gracious Majesty the Queen. It is also no small matter to be put on the roll of those distinguished men who, in former times, have received this honour. I think it still receives great honour from the first name on the list, our venerated friend Professor Cockerell, as well as from the many distinguished men who have been his successors. I trust I may succeed in assuring you of my extreme appreciation of the honour you have this evening conferred upon me. I wish I had been more worthy of your confidence,—a confidence which has been shown to me throughout. Holding these views, I would not wish to be misunderstood. I am quite aware that the professional works carried out by me have not been on a scale that would have entitled me to be the recipient of this medal. There are many architects who are far more worthy of the medal in that respect, but I seem to be invested in some degree with credit as the representative of Greek architecture. It was my good fortune to light upon what may be called an unworked mine in Greek architecture. It was from Mr. John Pennethorne, who had been making surveys at Athens, that I heard of the existence of certain refinements in Greek architecture, and the work you have referred to, sir, was published by the Society of Dilettanti more than thirty years ago. That society, I am glad to say, is still thriving, still publishing. I have had many evidences of the favourable reception of that work, especially that which you have yourself quoted from Mr. Fergusson; and various people abroad, as well as in England, have referred with satisfaction to the work. Upon it Mr. Watkiss Lloyd has founded some extremely valuable theories upon the proportions of Greek temples, so that I hope the work is not without the value which you have put upon it. When I first heard of your determination to honour me with this medal, I had little doubt that the publication of that work must have been the principal circumstance which guided you in your choice of me. I had also reason to think that the position which I hold at St. Paul's, as successor to Sir Christopher Wren and Professor Cockerell, might also have influenced you in your choice. May I, then, be allowed to say a few words upon what I hold to be our proper attitude with regard to Greek architecture? I am by no means exclusive in my sympathies towards Greek architecture, and I hold that a man who can only see beauty in one art has an imperfect feeling towards architecture. There is a central principle or idea in all architecture. In Greek architecture I believe,—and I think it can be demonstrated,—that idea has its chief manifestation; but it is also evident even in Egyptian as well as in Romanesque and Early Gothic; and, much obscurer, no doubt, in the later Roman work, and in the later Gothic work of the fifteenth century, but reviving again with great distinctness in the Italian Cinque-Cento. What is important to us is to know how we should treat such principle. A love for the Parthenon by no means excludes a love for Lincoln, Salisbury, or Chartres, although it may make us fastidious in the presence of the degenerate Roman work of Baalbec and Spalato. It may also make us critical about such structures as Henry VII.'s Chapel at Westminster, where there is certainly great beauty of detail, although the architecture is somewhat obscured by it. The true work of the architect is with the business of to-day, and he should endeavour, in the buildings which he is called upon to erect, to embody the great principles derived from antiquity,—to incorporate them in his buildings, however, without copying anything bodily from the ancients. There is plenty of room for the careful study and the accurate measurement of ancient buildings, and only by such careful study, examination, and analysis can we possess ourselves of the power to form a correct idea of the principles upon which the ancients worked. At the beginning of the present century, no doubt, nothing in the shape of architecture would "go down" with the public except buildings erected on Greek models, and very many incongruous works testify to that misplaced preference. The same objection will apply to many of the Gothic works of more recent times; but I feel that the true answer to any such imperfect conclusion as that Greek architecture, having been tried and found wanting in this country, is no more worthy of study, is to be found in your kind presentation of this medal to-night; for, as I have said, I understand that the medal is conferred upon me because you regard me as being in some degree an exponent of Greek architecture. It is old advice to tell people to go to the fountain-head, but architects can do nothing better than go to the fountain-head of architecture for study. Students should be directed to economise their time by working at the buildings of the finest, most accepted, and purest character, passing by in the most cursory manner buildings which are in the first instance attractive from mere exuberance of ornament. Proportions are in the first instance to be studied. Your kind approval of what I did many years ago must give, I feel, much stimulus to others who may be engaged on similar works at the present time. Whilst I was at work at Athens I had great hope of bringing home some information to interest you, but I certainly had no hope of the great reward that I have just received at your hands. I should like to say a word about my old friend Mr. Thomas Wilson, my collaborateur, whom I may quote as one who, going direct from the immediate presence of Lincoln Cathedral,—the finest building of its kind, I hold, in this country,—to Athens, was yet not disappointed with the Parthenon. I have only to conclude by thanking you most heartily for the extreme honour you have done me in conferring upon me this valuable medal.

Mr. Ewan Christian desired to add a word or two to what the President had said with regard to Mr. Penrose's connexion with St. Paul's Cathedral. Mr. Penrose had shown the extreme care and the reverential love with which he regarded the noble building committed to his charge, for in all the works that had been carried out there under his direction, that love and care were manifest. In every single detail it had been his anxious care to bring out perfectly the work of his great master, Sir Christopher Wren. Out of all the Surveyors to the Fabric of St. Paul's Cathedral since Wren's time, not even excepting Professor Cockerell, there had not been a more worthy and competent holder of the office than Mr. Penrose. Mr. Penrose was deserving of the thanks of the profession not only for his researches in Athens but for his work at St. Paul's.

The President then proceeded to deliver the other medals and prizes, including the following:—

The Sharpe Prize, in the Pugin Travelling Studentship, awarded to Mr. Joseph Gibbons Sankey. In the same competition, a Certificate of Honour and five guineas were awarded to Mr. Henry Hardie Kemp, and a Certificate of Honour to Mr. Charles Aubrey Bassett-Smith.

[The Pugin Travelling Student, Mr. William Alfred Pite, receives his Certificate, together with the sum of 50*l.*, at the completion of his tour, and only after duly depositing his sketches, &c., made during that tour. A similar rule applies to the holder of the Godwin Bursary, Mr. Hugh McLachlan, Associate.]

An Honorarium of Ten Pounds (Competition for the Tite Prize not awarded this year) was presented to each of the following gentlemen, namely:—Mr. John Wallace, Mr. Hubert Alfred Gregg, and Mr. Harry Anderson Paley.

The Soane Medallion (with 50*l.* to be afterwards paid under the usual conditions) was awarded to Mr. Robert Alexander Briggs, Associate. In the same competition Medals of Merit were awarded to Mr. Frederic Richard Lees Edwards, and Mr. Edmund John Milner-Allen, Associate.

The Grissell Gold Medal was awarded to Mr. Harry Anderson Paley.

The Institute Silver Medal and Ten Guineas (drawings) were awarded to Mr. James Strong.

The Institute Silver Medal and Five Guineas (for Drawings) were awarded to Mr. William Henry Bidlake, B.A. In the same competition a Certificate of Honour and Three Guineas were awarded to Mr. A. Hemingway, and a Certificate of Honour to Mr. Harry Sirr.

The Institute Silver Medal and Ten Guineas (for Essays) was awarded to Mr. Harry Sirr.

Mr. R. Fellowes Chisholm, Fellow, Architect to the Government of Madras, then read a paper on the College at Baroda (Western India), of which we give some particulars on another page.

ARCHITECTURE IN INDIA.

ROYAL INSTITUTE OF BRITISH ARCHITECTS.

At the concluding meeting of this Institute for session 1882-83, held on Monday evening last, a paper on "The College at Baroda (Western India)," was read by its architect, Mr. R. F. Chisholm, Fellow, Architect to the Government of Madras. The preliminary portion of the paper was taken up with a careful vindication of the author's attempt, embodied in his design for the Baroda College, to adapt Indian architectural art and indigenous forms to the changed conditions and requirements of the present day. Like many modern architects, he said, he lacked the courage to declare the particular style of his building, but a native Guzerati writer gratified him very much by describing it as Early Hindu, which was precisely the style he had aimed at. Some arguments and illustrations followed with a view of rectifying a too-prevalent impression that most of the better sort of civil architecture in India is Mohammedan, because it arose under Mohammedan influences, and from the clever way in which the Mohammedans made use of the Hindu workmen, and adopted their forms in building the mosques. The author said he did not claim for the arts of India the mature position attained by the arts of other countries, but nevertheless he could testify from experience that there was a vast art-power lying dormant among the people of India second only to that of the Japanese. Some specimens of pottery exhibited to the meeting, and which were made by native workmen,—mere youths, in fact,—from the author's designs were adduced as an instance of what might be done. With regard to materials available for building in India, the author said he had produced in India, by the aid of native labour, good bricks, roofing tiles, and terra cotta; indeed, they could produce in Madras every known fictile body, from terra cotta to very hard transparent porcelain, and all thoroughly vitrified. Specimens of some of these goods were exhibited. Many the geometrical patterns which passed

Mohammedan were really Hindu, as was also the profuse ornamentation of the texts from the Koran. Any minute description of the Baroda College was the less necessary, as the working drawings exhibited spoke for themselves. The materials were red brick, a beautiful satin-grey sandstone, and glazed terra cotta in red and green. What would doubtless interest them from a practical point of view was the dome-arch. With a view to a description of the principal dome, it was premised that the central hall is a square of 60 ft., recessed at one side for a senator's platform, and on the remaining three sides for a gallery, projecting on brackets 7 ft. into the room. Thus the whole area of the room was, roughly speaking, about 80 ft. square. This form was adopted for acoustic reasons. Mr. Fergusson, in his "History of Architecture," had pointed out the method adopted by the Beejapur builders for counteracting the thrust of a cupola by hanging weight on the inside. This principle had been carried out in the Baroda College. The manner in which this was done and the dome built up was demonstrated by means of a diagram. In this case, it was proposed to leave the great eye permanently open, and to throw a light decorated cloth across it in such a way as to destroy excessive resonance and afford glimpses of the true dome from below. The recess at the north side measured 26 ft., and the distance between the central ribs 25 ft. The supports for the ribs being corbelled out added materially to the lightness of the appearance. The true dome, the author said, was original so far as he knew. The external diameter was 70 ft. The drum rested on a ring of carefully-dressed sandstone, cramped at the joints with gun-metal. The inner dome took a curvature securing the greatest strength; the outer one resting on this, as it were, by sixteen intervening ribs, all the thicknesses were but 1 ft. 3 in. There were thus sixteen chambers, and by opening the lower end to the outside and the upper end to the inside a very perfect system of ventilation was secured. No centre was used during the construction, save to the angles of the false dome. The true cupola was turned ring after ring in brick on a very rough scaffolding. A photograph hanging on the wall showed the scaffolding still in position. The dome from the roof contained 1,400 cubic yards of brickwork, including the four angle-domes covering the square, and costing in Baroda, exclusive of finial and the ornate covering, about 800*l*. The total weight of the dome was about 1,900 tons. The pressure at the base was under 3 tons, and the width of the ring at the base 2 ft. 3 in. All the domes were constructed in the same way; the smaller ones, covering a square of 16 ft., were only half brickwork. The exterior of all would be covered with glazed tiles. At present, owing to the length of time likely to elapse before the necessary quantity could be turned out, the domes were ornamented with coloured sgraffito in cement. In conclusion, the author said that although he advocated an earnest and honest study of native Indian art and its liberal use on palatial and monumental buildings, yet he would seize that opportunity of publicly deprecating as emphatically as possible any vulgar endeavour to squander ornament on new buildings of utility. Let as much thought be bestowed on the design as possible, as much labour on the execution as time would allow. But any attempts to redeem ugliness by useless additions to break a sky-line, or by heaping up mere ornament, were nothing better than vulgar ostentation and a waste of public money. India, like other portions of the British Empire, had already suffered a good deal in this way, and was likely to suffer more. Good architecture would naturally follow in the wake of honest building, but it was scarcely to be thought that the converse would hold good.

In the discussion which followed,

Professor Roger Smith, in moving a vote of thanks to Mr. Chisholm, said that the paper raised a point of great interest, viz., as to the style to be selected for works to be executed by European architects in India. He believed that in choosing to work in the native style Mr. Chisholm had chosen the most difficult path, and, therefore, if he had succeeded, as he appeared to have done, there was all the more honour due to him. The majority of foreign architects would content themselves,—and small blame to them,—with working in the style most familiar to them; and even in a country like India, European architects could often obtain the means of erecting their buildings,—at any rate, those to be used by Europeans,—in a European style. There was a good deal to be said in favour of erecting buildings for Europeans in a style which would be familiar to them. There could be no doubt, however, that the European architect who had studied the native style and native methods of work was able to erect with ease and economy buildings which were not only suited to climatic conditions, but which harmonised with the native structures. There could be no question that Mr. Chisholm had succeeded in mastering the details of the native style, and he had also mastered the Indian method of domical construction. He was to be congratulated on having successfully carried out so remarkable a work as the Baroda College. He (the speaker) had himself made essay in designing works for India, and he did not think that any one who was not prepared to spend his life in that country, and to thoroughly study its architecture, should attempt to produce works in the native style. It was only men who were willing to give up their life to the work who could hope to achieve such successes as Mr. Chisholm had achieved.

Mr. Penrose said he had much pleasure in seconding the vote of thanks, and the more so because Mr. Chisholm had shown his power of adapting the principles of a particular style of architecture to new uses, thus giving point to some remarks which he (Mr. Penrose) had addressed to the meeting a short time previously.

Mr. E. I'Anson said he understood Mr. Chisholm to say that in the construction of the dome no centres were used, and that the square plan of the space covered by the dome was resolved, by means of transverse ribs, into an octangular form. How were those ribs constructed? He presumed they were semicircular?

Mr. Chisholm said that centres were used only at the extreme angles. The "false dome" had centres, but the cupola, or true dome, had no centres at all, but was built up ring by ring, at the rate of about three rings per day.

Mr. Arthur Cates said the subject of the construction of the dome, described by Mr. Chisholm, was one of very great interest. Some years ago the construction of the great cupola at Bejapore was discussed at one of the meetings of the Institute, and it would have been interesting, had time permitted on the present occasion, if Mr. Chisholm could have given some further details of the construction of his dome at Baroda. He trusted, however, that he would be invited by the Council to supplement his paper by a detailed and technical account of the construction of the dome, illustrated by such diagrams as might be necessary. From what he could gather he (Mr. Cates) thought that Mr. Chisholm, working in a native Indian style, had produced a work of which they, as European architects, might well feel proud.

Mr. John Slater, after referring to the ingenuity shown in the construction of domes in India, said he recently had to superintend a building in London which was constructed entirely by German workmen, and that was a large brewery, in which there was a kiln, 20 ft. in diameter. The whole of that kiln was vaulted in brickwork, without any centering whatever. It was an excellent specimen of brickwork, and he did not believe that any English bricklayers could have done the work at all.

The Chairman.—I suppose the bricks were laid flat, in successive rings?

Mr. Slater.—Yes.

Professor Kerr said there was really nothing remarkable in what had been described. A dome required no centering at all. The dome and the arch were two very different things. In the case of the dome there was no thrust at all, if constructed in the way which had been described. Each ring or course was its own tie, and as the successive rings rested upon each other, it was only necessary to make provision below for sustaining the weight of the structure.

The Chairman, in putting the motion, said that very familiar illustrations of domes constructed on this principle would be seen on or about the 5th of August in the shape of oyster-shell "grottos." This being the concluding meeting of the session, he wished the members a pleasant vacation, and trusted to meet them all again next session.

TRURO CATHEDRAL.

THE Earl of Mount-Edgcumbe, in his address as President of the Royal Institution of Cornwall, said:—I may be forgiven for making some special reference to the cathedral, because the work has now risen to a point at which all its main features are sufficiently developed to enable any observant eye to trace them with interest to their completion, notwithstanding the bewildering screen of scaffolding,—in itself an object of curiosity and admiration to practical builders. Some have expressed regret that so much time and money have been spent in preserving and restoring the south aisle of the old St. Mary's Church, but I do not think that feeling will be shared by this society. True, owing to the decay of the elvan, much more than could at first be foreseen has had to be entirely replaced, but the work is beautiful and exceptional, showing in parts some foreign influence, and though, as in almost all our Cornish churches of that date, there is, unfortunately, little or no record of those who built it, it would have been a source of regret if it had been swept away for ever. But besides this, its preservation has been the means of leading the architect to the production in the new church of a special feature, which will distinguish Truro Cathedral from all others, viz., that the four parallel arcades on the choir side form five distinct aisles of varying width and height. The narrow aisle which runs through the restored portion of the old church and the proper south aisle of the new choir is not only a beautiful feature in the general effect, but most ingenious in its structural purpose. The two arcades which form it are tied together above by a series of panelled walls, and thus the piers practically form the southern buttresses of the new building, to receive the thrust of the flying buttresses of the choir, and to enable them to do this, heavy gable buttress tops (which can be seen over the walls of the old aisle) are placed above them for the purpose of diverting the lateral pressure to a vertical direction. The wall above the southern arcade of this small aisle is pierced with circular windows, and forms a clearstory of its own. The spacious crypt, which will be applied to many uses, extends under the whole of the choir and its aisles, and now, before it is vaulted over, can be well seen the height of the whole construction, and the work which the crypt piers, surmounted by large blocks of granite, have to perform in supporting the main arcades above. These arcades, erected respectively as memorials to Mr. Fortescue and Lord Robartes, and the triforium over them, can well be seen, enriched with the tooth ornament, beautifully executed, with the coloured shafts of Polyphant and Northampton stone introduced. In the choir, at the summit of the completed work, can be seen the prominent caps from which the vaulting will spring. At the east end the windows of the crypt and those of the lower tier are now visible, and the great lancets above, which will be twice their height, as well as the great windows of the eastern transept, are in course of erection. The general treatment of the windows internally is very beautiful, consisting, as it were, of a double arcade,—the outer one to be filled with glass, and the inner one forming a curtain or screen. Externally the most complete and, therefore, the most striking part of the building is the north aisle, with its lofty row of lancet windows; and here you can admire the effect of the warm-tinted Mabe granite. At the west end of the old aisle three arches at right angles to each other will support the bell-tower, which is intended to take the place of the old one which was removed; then comes the great porch at the southern end of the transept, the gift of Canon Phillpotts, which, until the nave is built, will be the main entrance, and one of the most striking features of the cathedral. Entering by this porch you see before you the position of the great central tower, two of the piers being completed to the same height as the choir, of which they form a part, while only the foundations of the other two are as yet constructed. Near these the walls of the north end of the transept are commenced, whilst immediately to your left (west of the south porch) is the portion of the baptistery, which is to be built entirely from a distinct fund, as a memorial to Henry Martyn, the great Cornish missionary. The transept, which is now commencing, and which will be proceeded with at once, is to be a memorial to the episcopate of Bishop Benson. There is nothing

which I shrink from so much as making appeals to my neighbours to support a work, but I think this is a time when we may appeal to all those who have funds at their disposal, and try at once to finish the work which the committee have undertaken. I think when that transept is finished,—and I hope we shall see our way to complete it, instead of going to the expense of roofing it in at a lower level,—I think this generation will have done its work, and that we ought not to make any further calls on the county. We shall have done as much as other generations have been found able to do in the work of older cathedrals, and I should say "Let us stop here"; but, in the meantime, the county having expressed itself in favour of going on with this work, I would say let us go on and get it completed.

THE CASTLE AT HEIDELBERG.

THE Grand Ducal Court has authorised the establishment at Heidelberg of an official building committee to replace that hitherto acting at Carlsruhe. The investigations of this body are intended to determine in a positive manner what steps are necessary to save this ruin from decay, and to preserve its artistic beauties. At a recent meeting of the Berlin Architects' Union Herr Schäfer read a paper on the subject, in which (according to the *Tägliche Rundschau*) he maintained that the German Renaissance style was only as yet in its infancy, and that, therefore, it would be advisable to wait a short time until the requisite artistic talent had been developed to do justice to such a national work as the restoration in question. After a lengthy discussion the proposal of Herr Schäfer was approved by a large majority.

AN ANCIENT BRIDGE.

AN interesting relic of antiquity was lately received at Berlin from Mayence, consisting of the remains of piles belonging to the bridge which once led from Castel to Mayence, and which is proved to have been in use fifty-three years before the Christian era. The pieces of wood are trunks of various trees, including oak, elm, and white beech and red beech. They are said to be internally sound, and to have pieces of iron at one end. It is intended to devote part of the wood to the manufacture of a piano-case.

The German papers state that the acquisition of these remains was difficult, as English collectors were offering high prices for such objects. Prince Alexander of Hesse has had some ornamental furniture made from oak which was discovered at the spot referred to, which he has presented to his son, Prince Alexander of Bulgaria.

QUEEN'S SCHOOL, CHESTER.

THIS school has recently been built on a fine site on the city walls, once occupied by the old gaol, and bought by the Duke of Westminster from the Corporation, and presented to the institution. The buildings consist of a fine school-room, 55 ft. by 33 ft., with an open timber roof; five class-rooms, lavatories, &c., and a dwelling-house to accommodate five mistresses. An arched cloister on the east side connects the various parts of the building. The materials are local red bricks, with terra-cotta windows, strings, dressings, and ornament, from Mr. H. R. Bowers's works at Ruabon. The walls are banded with Cefn stone, and the roofs are covered with brindled Staffordshire tiles. The building is called the "Queen's School," by command of her Majesty, and a terra-cotta figure of the Queen occupies a niche over the main entrance, and the Royal arms appear in the principal gable. The total expenditure (exclusive of the site) was 3,800*l*. The contractor was Mr. William Andrews, of Chester; and the architect, Mr. E. A. Ould, of Bridge-street-row, in the same city.

Competitions: St. John's, Forest-hill.—Six designs having been submitted in competition for St. John's Presbyterian Church of England, Forest-hill, that by Mr. J. Theodore Barker, architect, of 8, Furnival's-inn, was selected by the committee, and the work is now being carried out by Messrs. Wall Brothers, contractors, of Kentish-town.

THE NEW ALHAMBRA THEATRE.

ON the 6th of December last, the Alhambra Theatre,—a structure, although not erected for theatrical purposes, yet remarkable alike for its construction and for its decoration,—was entirely destroyed by fire. The original building was designed by Professor T. Hayter Lewis, and was devoted to scientific purposes under the name of the "Panopticon," in rivalry with the old "Polytechnic"; and when it failed to attract the public, it in turns became a circus and a music-hall, until at length the Alhambra Company converted it into one of the most successful theatres in Europe. Only twelve months before the fire very considerable structural alterations had been made to the dome, and the whole building lavishly redecorated; and one of the most striking features in the ruins after the fire was the great iron girder which was, at the time of these alterations, built across the proscenium, measuring some 60 ft. by 5 ft., lying in festoons across some unbroken cast-iron stanchions like a piece of tripe,—showing well the relative effect of the heat on cast and wrought iron.

Of the old building as it stood before the fire nothing will be left in the new building except the front wall, and of this the whole of the ground-floor portion has been removed to provide for the extra entrances and exits required, the superstructure being carried on a continuous compound girder. All the main enclosing walls of the theatre will be straight, but although the rotunda, which formed such a feature of the old Alhambra, will disappear, the auditorium will be covered by a flattened dome carried by columns occupying the same position as before, and standing on the same foundations.

The general arrangements of the new house will be as follow:—The ground-floor will have the usual stalls in front, with boxes on each side, a pit behind, and a larger promenade than before around it. Distinct entrances to the boxes and stalls will be provided, and in addition, a broad and level exit into Castle-street in the rear for public use. On the first tier will be boxes, and a dress circle and promenade with pass staircases on each side, connecting this promenade with the stalls below and with a broad entrance staircase from Leicester-square. On the second tier,—the old saloon level,—will be five rows of seats all round, and an extensive promenade within the house, a large *foyer* on the front. A broad double-flighted staircase leads to this floor from Leicester-square at the north end, and an extra exit staircase is provided at the south end. Our illustration of the *foyer* in this tier is taken from the head of the first-named staircase. There is only one tier, properly speaking, above this, but this is divided into two parts by a very deep step, so that the front, which forms the balcony, is hung down by cantilevers below the gallery, which forms the upper part. Each has its separate staircase.

The front portion of the building will be used in the basement for lavatories, &c.; on the ground-floor for entrances and exits; and in the first, second, and third tiers, as lounges for smoking, &c.

The stage portion of the building will be entirely rebuilt and remodelled, proper fire-proof dressing and waiting rooms provided, the scene-painting room converted into offices, and everything done to make the stage one of the finest in London.

In its construction the new theatre will, perhaps, be unique. With the exception of the stage floor and machinery, and the handrails of the staircases, no wood will be used in the building. The floors, roofs, steps, stairs, stages, box divisions, doors, gallery fronts, &c., will throughout be of concrete, and the roofs covered outside with asphalte. The whole of the framed construction of the building will be in iron, and all the iron will be embedded in concrete or covered with fibrous plaster. The ceiling of the auditorium is framed up with light tee-iron, the panels being filled in with fibrous plaster decorated before fixing.

The new theatre has been designed by and is being carried out under the superintendence of Messrs. Perry & Reed, 9, John-street, Adelphi, the drawings for the ironwork having been prepared by Professor A. B. Kennedy, of University College, who is testing and supervising the iron which is being delivered. The works are in a forward state, the main walls being nearly their full height, and a large proportion of the ironwork being on the ground; but although the commencement of the contract, which involved the clearing of the site and destruction of the old walls, was only made on the 23rd of April there seems a fair prospect that the contractor, Mr. W. Brass, of Old-street, St. Luke's, will be able to complete the building within the short time named in his contract.

Our two illustrations, which were prepared for the Academy, but rejected, "for want of space," show, the one the roof of the auditorium as it would appear from the passage to the balcony forming the third tier, and the other the *foyer* in the second tier, which takes the place of the old saloon.

DESIGN FOR PROPOSED SOUTHERN HOSPITAL, GLASGOW.

THE site selected for the proposed hospital is in many respects, a good one. It stands on sloping ground, having the Queen's Park opposite it on the north-west, and commands a splendid view of the Cathkin Hills on the south-east. No building can be erected on higher ground, as, in fact, the hospital, when built, will overlook nearly all the buildings which are and may be built close by. It is thus an open site, and one which can be easily drained, the ground falling rapidly both ways from the south-west corner.

These falls in the ground made one of the greatest difficulties in preparing the design, the hospital being intended to provide, in the first place, for 120 beds, with sufficient administrative accommodation for a proposed extension for a total of 250 beds, the first cost not to exceed 20,000*l*. It was, therefore, necessary so to use the existing levels that no more walling should be provided for the foundation and under the floors than was absolutely required.

It will be seen that the hospital is of three blocks, connected together by short ventilating corridors in such a way as to form on plan the letter H. This arrangement offered the advantages of sufficient isolation with no more corridor accommodation than was required for proper communication between the several parts. Two staircases only became necessary at eachend of the centre or administrative block, one for males and one for females, lifts for service and patients being close by. The general wards were placed next each other, end-to-end wise, the males being in the north-east block, and the females in the one to the south-west. The centre of the main front has on the first floor an operating-theatre, with a top-light towards the north-east, and a centre window facing the north-west; advantage has been taken of the projection of this part to form below a *porte cochère* as the main entrance, that patients may be admitted without getting injured by wet. The three blocks are on different levels; the centre block having in the basement the kitchen, domestic offices, and store-rooms; in the ground-floor, the physicians' and surgeons' examining and private rooms, the out-patients' and dispensary departments, matrons' and stewards' offices and rooms; on the first-floor, operating theatre and wards, with residential rooms for the medical officers. The main wards occupied the upper floors of the end blocks, the lower floors being filled up with the nurses' and servants' rooms, raised above the ground by open arches, for the purpose of ventilation and economy of walling; owing to the levels the block on the north-east was raised a story higher than that on the south-west. The questions as to sanitary arrangements, heating, ventilation, &c., were duly considered. The wards provided from 1,560 cubic feet to each bed in the main wards to 2,250 cubic feet in the small wards for cases operated upon. The laundry, mortuary, and lodge were separated from the main building, the two former being situated in the extreme corners of the site. The design was submitted by Mr. H. McLachlan.

Association of Municipal and Sanitary Engineers and Surveyors.—The Northern District Meeting is to be held at Middlesbrough, on Saturday next, the 23rd inst., when the discussion on the paper on Private Improvement Apportionments will be resumed, and a paper on "The Status of the Local Surveyor," by T. W. Stainthorpe, Surveyor, Loftus, will be read. During the day the members will visit the Tees Scoriæ Brick Works, and also the Cement Flag Works of Mr. J. A. Jones, at Middlesbrough, thrown open to the members.



Whiteman & Bass *Photo Litho* 236 High Holborn

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QUEEN'S SCHOOL, CHESTER.—Mr. E. A. Ould, Architect.

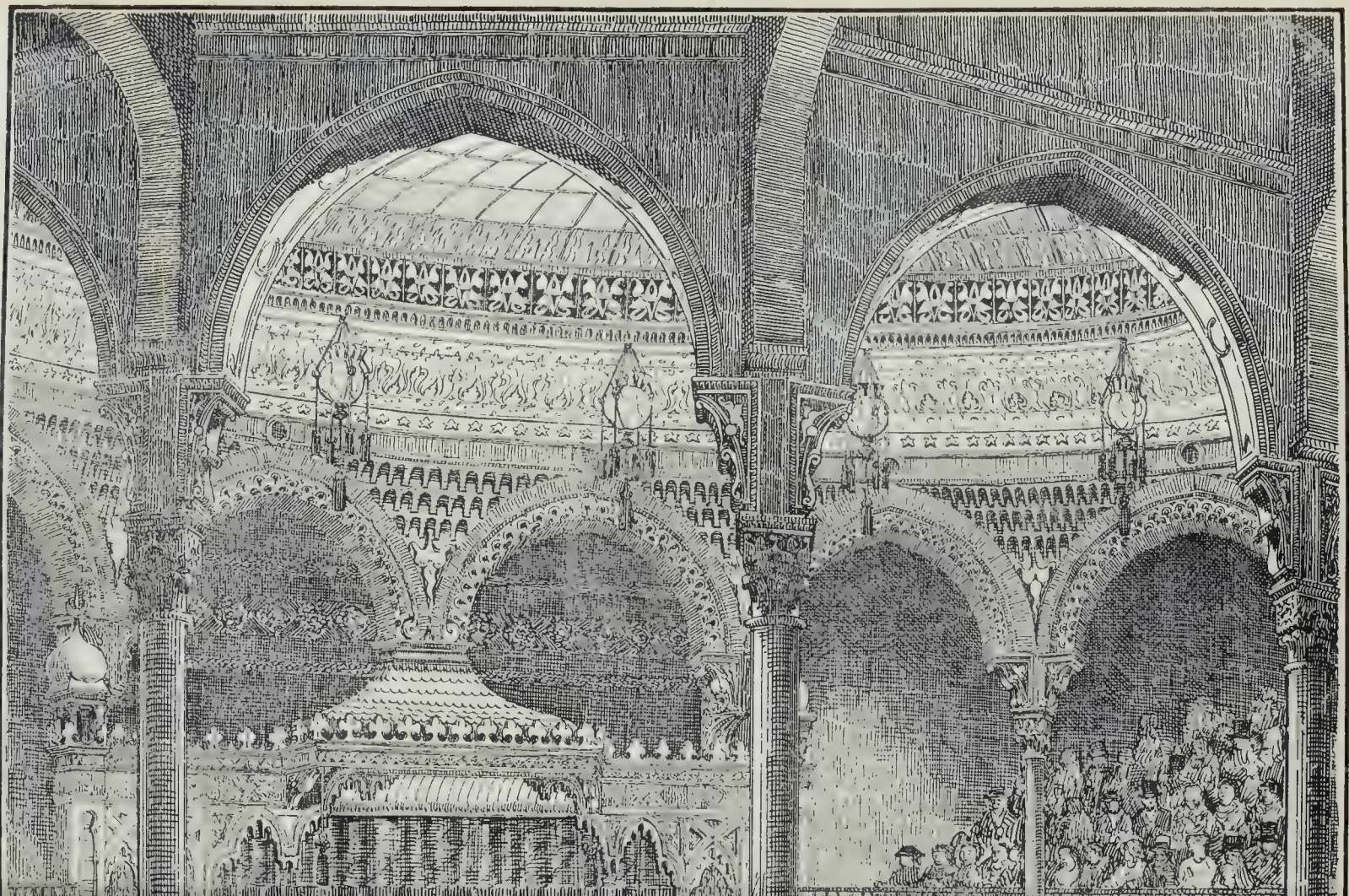


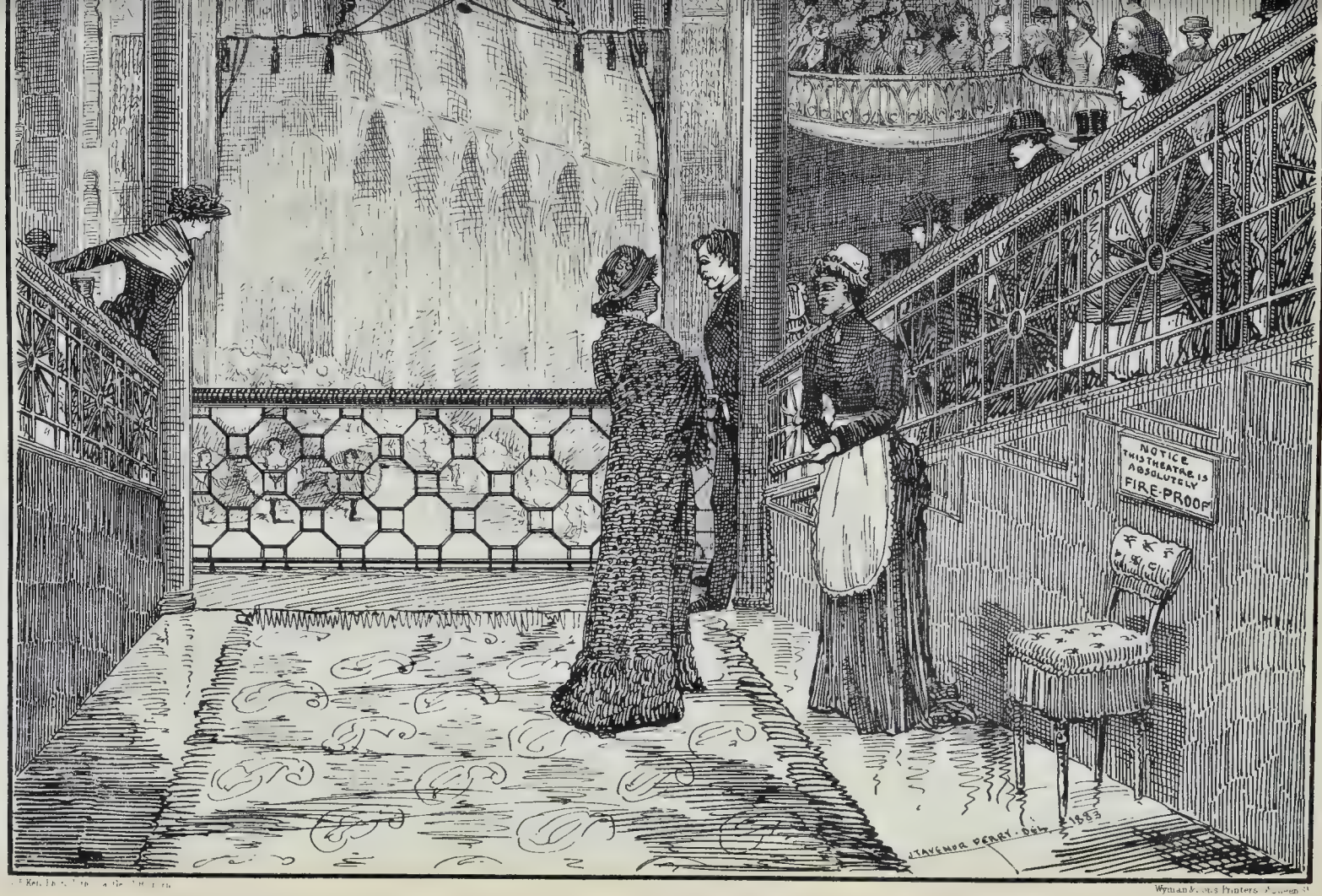


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THE NEW ALHAMBRA THEATRE, LEICESTER-SQUARE: THE FOYER IN THE SECOND TIER.—Messrs. Perry & Reed, Architects.





THE NEW ALHAMBRA THEATRE, LEICESTER-SQUARE: SHOWING PART OF THE ROOF OF AUDITORIUM.—MESSRS. PERRY & REED, ARCHITECTS.



PROPOSED SOUTHERN HOSPITAL, GLASGOW. Design submitted by Mr. H. McLachlan, Architect.

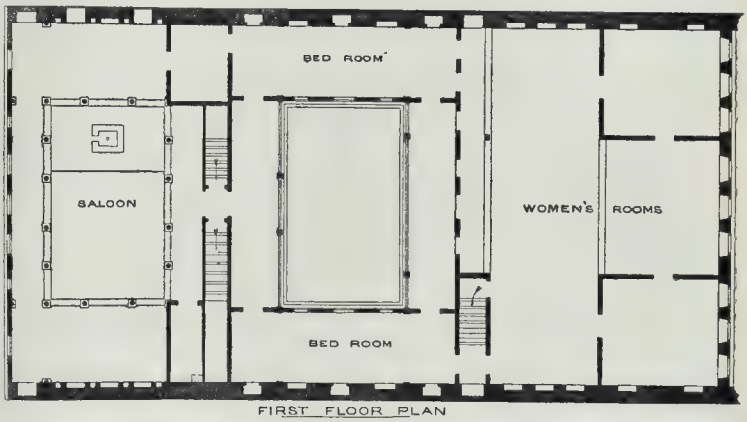
THE DOMESTIC ARCHITECTURE OF INDIA.

A FORTNIGHT ago we printed some portions of an exceedingly interesting paper by Mr. C. Purdon Clarke on this subject, read before the Indian section of the Society of Arts on the 25th ult. We return to the subject this week, as we are enabled to give the ground and first-floor plans of Kirpiram Vekil's house, Surat, with fuller details of its arrangement and construction. The plans (exhibited at the meeting) are the work of two Hindus, students of the School of Art, Bombay.* Commencing with the ground-plan, we first find the porch, which runs along the width of the house, and raised to the height of the plinth, 5 ft. above the street. In other houses, this height varies from 2 ft. to 6 ft. above the level of the street. For the great width, it is shallow; still more so in some houses where the porch is but 2 ft. deep. On the outside edge of the porch runs a curb of teak wood, upon which rests the row of stone bases of the wooden columns, with quaint bracketed capitals, which, in their turn, carry the heavy beam or lintel, the support of the whole upper part of the front of the house.

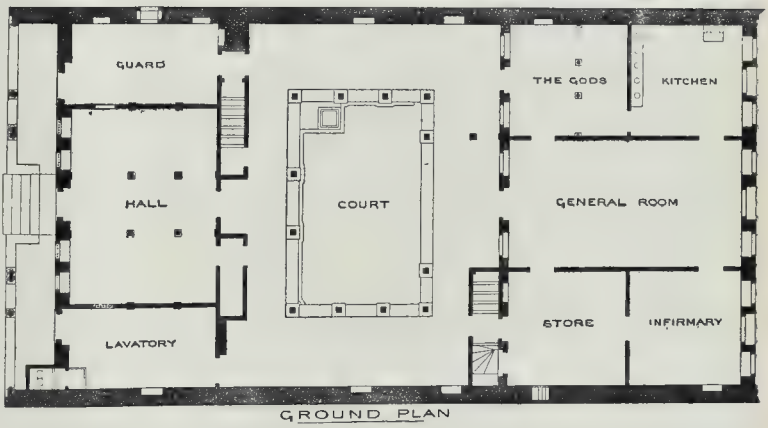
Some houses have no columned porch, but a small terrace, 2 ft. or 3 ft. wide and as many high, answers many of the purposes for which the porch is intended. Early in the morning, the men of the house assemble there, and, sitting on low stools, perform a part of the ritual of their toilettes. During the rains, the porch affords shelter to beggars, or people overtaken by heavy showers, and at night serves as a bed-room for servants of the house. Here travellers and houseless beggars are also allowed to sleep. The principal door is in the centre of the porch. On entering this we come to a large and somewhat dark hall, called "othan" or "parsal," used sometimes as a store or lumber room; as a public office or "kacheri"; or, if the owner of the house is an artisan, as a workshop. Into this hall any dying member of the family is brought, and laid down on the ground two or three hours before he breathes his last. During marriage ceremonies, it serves as a ladies' receiving-hall, and here, also, the servants of the house and lower class guests take their food. The rooms on either side of this hall have set uses. The one on the left is generally occupied by the aged head of the family, when too infirm to ascend the step-ladders which do duty for staircases. The principal staircase is situated near a door of this room, so that it may be watched by the patriarch, who notes all ascending it. In former days the armed servants of the house performed this duty, but now, under the security of the British rule, these picturesque retainers of the "good" old feudal times have disappeared. The room on the right side has its door in the courtyard, and in the house I am now describing an entrance from the hall. It is used as a lavatory attached to the latrine. One side is paved and enclosed with a low wall, sometimes but a few inches high; here stand a row of water-pots, from which the person polluted by having entered the latrine fills his brass vessel, and pouring the contents over his head, fulfils the rites of purification required by his religion. On the side of the hall, opposite to the street entrance, is a door of the same size, sometimes an open colonnade; through which the courtyard is entered. Beyond the courtyard are the women's rooms, and over it the broad balcony, which, running round at the level of the first floor, leaves but a comparatively small central space open to the sky. In small houses, the balcony is carried by beams, crossing from wall to wall, but here a colonnade is necessary. The central portion of the courtyard, sunk some inches below the curb surrounding it, is paved and used as a general bathing-place, well drained by a small gutter running to a cess-pit, just below the front steps of the house. On one or either side are swings for the recreation of the ladies of the house; and here they pass most of their time, some swinging and singing to amuse the others, who, sitting on the floor, labour at the interminable duty of sorting the cereals and pulses which form the staple food of the people. This, the wife's daily task, is performed with great care. A small quantity is placed on the polished surface of a low stool, every grain examined carefully, and separated from those broken and marked by insects. The corridor or covered passage round the courtyard is also used for the performance of the socio-religious ceremonies, such as thread, marriage, and caste dinners; here the family clothes are made, and the family jewels melted and remade by the "sonar." The staircase to the principal portion of the upper floor can be entered from here. It is seldom more than a step-ladder, with a rope rail, which, in time of trouble, serves to haul it up. Under the stairs are cupboard-like compartments for the storage of records and books. One of these contains the entrance to an underground cell or "bhûyar," where the valuable property of the family is kept secure from fire as well as robbery. As in the present day there is little fear of violence, this cell is used as a cool room, for retirement during the hottest part of the day; it is always partly lighted and well ventilated by concealed gratings. In another compartment will be found a secret passage to another cell, the existence of which is known to the chief members of the family only.

Before leaving the courtyard, a large stone mortar sunk in one corner must be noticed. In this the rice is freed from the husk by pounding with long ironshod wooden pestles. In a corner of the sunken centre of the court is a well-head, in this case over a tank, which is filled by rain-water during the monsoons. Leaving the cloistered court, we come to another hall, the women's room, where the wife, brothers' wives, and sons' and nephews' wives pass most of their time engaged in domestic work, in some houses under the superintendence of the owner's mother, who, during her life, is the chief lady of the house. To the right of the hall are two rooms, one for storing grains, the other an infirmary. The first room on the left is set apart for the worship of the family gods. It is furnished with a shrine, in front of which is a low stool or stone pedestal, for the use of the worshipper. On either side are stands for open lamps, and in the cupboards will be found quaint brass and silver vessels thirty to forty in number, as well as incense and different fragrant powders. Small niches in the wall contain the little lamps in which clarified butter is burned during the "puja" ceremonies. The next room is the kitchen, with a fireplace on one side. A raised stand of masonry runs along another side of the room, somewhat like a dresser, with a row of hollows on the upper surface, to hold steadily the large brass and copper pots containing the daily supply of water for cooking purposes. It is from 2 ft. to 3 ft. high, and the front is pierced with open arches, where the utensils of the kitchen are kept.

On ascending the staircase already described, the balcony round the court is found to be partitioned off into rooms on two sides, leaving two



FIRST FLOOR PLAN



GROUND PLAN

* Chiranjilal Doonichand, draughtsman, and B. A. Gupti, clerk to the school, directed by Mr. John Griffiths, superintendent and head master. The description of the house is taken from notes furnished by Mr. B. A. Gupti.

open corridors which serve as passages, or, in certain seasons, for drying grains, and during the hot weather as bedrooms, when the moon shines only. A central door leads to the principal room of the house, the divan-khana, or council-hall over the "parsal." An arcaded daïs runs round this room, raised a few inches above the oblong centre floor. This daïs is either carpeted or covered with a white cotton cloth over soft mats. Here, on great feasts, the guests sit and recline on cushions placed all round against the walls. In the centre portion, the travelling minstrel or religious bard, and the dancing-girls with their attendant musicians, perform for the gratification of the guests and the glory of the giver of the feast; on one side of it is a fountain, fed from a cistern in an upper floor. At the back of the house is another large apartment, where the ladies hold their "at homes." It serves also as a general sleeping-room for the widows and unmarried girls; and here are kept the family stores of clothes in heavy boxes. The whole of the third floor has sleeping chambers with plaster ceilings, above which is the "mala," or space between ceiling and roof, used as a store-room. In this house one of these rooms has a cooking-place with a chimney, and the usual stand for water-pots. The roofs slope inwards in small houses, and where the spring water is brackish, the roof and terrace water is collected, during the rains, into the underground cistern before mentioned.

PREVENTION OF FIRES IN THEATRES.

A PUBLIC meeting was held on the 31st ult., in the Hall of the Society of Arts, to consider the report of the Committee appointed by the Society to consider the Prevention of Fires in Theatres. Sir William Siemens, F.R.S., chairman of Council, in the chair.

The secretary (Mr. H. Trueman Wood) read the report of the Committee, which has been published in the Journal of the Society of Arts.

Mr. Shean (of the Fire Brigade Association) said that, had it not been for the terrible catastrophe at Vienna, the condition of London theatres would probably be the same now as it was ten years ago. In September, 1881, he addressed a letter to the Lord Chamberlain, in which he said that the arrangements for the prevention of fire at many theatres were notoriously disgraceful, but his lordship replied that he was not prepared to admit the fact. The Prince of Wales's Theatre, before it was closed, had one of the largest audiences in London, and that theatre was simply matchwood. The heat every night was such that, had an accident of the most trifling character occurred, it was no exaggeration to say that the audience would, in every probability, have been burned alive. The appliances for putting out fire were certainly inadequate. With regard to the water supply, he had tested the pressure at almost every theatre in the Strand, and the pressure at the six principal theatres twelve months ago was under 35 lb. on the square inch. Those who knew anything about fire-brigade work would know that with such a pressure it would be impossible to reach the roof of any theatre in the Strand. With regard to the inspection of theatres made by the representative of the Lord Chamberlain, he considered it was a simple farce. The gentleman who made that inspection knew nothing whatever of fire-brigade work or appliances. The manager of the theatre received a letter stating that a gentleman from the Lord Chamberlain's office would call on a certain day at a certain time; the fireman was told to put on his best coat, and receive him and escort him round the house. Whether the appliances were in working order or not, he was not in a position to say, so that that inspection was of no use whatever. The Lord Chamberlain's regulations were by no means well attended to; in many instances they were not attended to at all. It was very true to say that whether they were fairly well attended to or not depended principally upon the good feeling of the managers. That comprised everything, but the good feeling of these managers was a feeling guided by £. s. d., and was it right that the lives of thousands of people should depend upon the will of a manager to go to a few pounds expense or not? The firemen at all theatres should be enrolled in one body, under proper superintendence. There should be an established fire-drill at every theatre, in which the *employés* should be regularly exercised at uncertain periods. The use of lights on the stage should be guided by strict regulations. Those who knew anything about the lighting of stages knew that many of the iron gas-pipes were joined by indiarubber tubing, and he had been on several London stages when an accident had occurred by the tubing slipping off; the gas escaped, and the first light which came near ignited it. Again, the seats should be licensed; unless this were done, who was to say whether a row should take twelve or fifteen? Unless theatres were licensed to hold so many, and the manager was made liable if he took in more than the house was licensed to hold, it was impossible to prevent overcrowding.

Mr. Astrop said the great difficulty with most alkaline silicates was with regard to drying, but he had got over that difficulty by using a basic silicate of allumina. Tungstate of soda was referred to in the report, and it answered very well while it lasted. He had seen it used at the Princess's Theatre over and over again; but they were obliged to repeat it once a fortnight, which made it very expensive, on account of the labour, and they had therefore abandoned it in favour of the cyanite.

Mr. Hine (Nottingham) said this was a subject in which he had taken so much interest that he had come to London a day earlier than he should otherwise have done, in order to attend the meeting. He had noticed in various reports and letters relative to preventing fires in theatres many different schemes, some of which were very good, but he found, generally speaking, they all presupposed the fact that they would inspire such confidence in the audience that they would with equanimity and self-control walk out of the place as quietly as if they were coming out of a shop. Now, the question of panic was as important as that of fire, and, in fact, more danger arose from panic, whether the alarm was false or real, than from fire itself. It appeared to him that, so long as the staircase from the various galleries was the only mode of exit, great panics must ensue; but if an intervening space could be allotted, in which the audience could attain comparative safety prior to descending the staircase, this difficulty would be overcome. He would, therefore, suggest that on each side of a theatre there should be a large corridor, wide enough to receive that portion of the audience which happened to be on that side of the house, and as many staircases as there were floors or galleries in the theatre. The communication between these corridors and the theatre should be a series of doors along the whole line of the side walls, level with the floor of the boxes or galleries; the doors should be of iron, or, preferably, of two layers of wood, with cotton silicate between them, hung on spring hinges, so as to open and close of themselves. The audience would thus immediately be able to reach a place of safety, and there would be no difficulty after that in effecting their removal.

Mr. Cornelius Walford said he was not an expert on this question, but, from various reasons, he had had occasion to observe many theatres; he had had the advantage of visiting nearly all the theatres in Europe and America, and the real obstacle which this committee and every other had to struggle against was the structural difficulty. It was no use talking about paint and appliances of that sort. Theatres were so constructed that it was impossible for the audience to be safe, in the great majority of instances. It was impossible to stop a fire when a theatre was lighted with gas, or for the people to get out without danger from panic, quite irrespective of fire. The only theatres which he had seen likely to be safe were those of Russia. Those who were familiar with the theatres of St. Petersburg and Moscow would know that they were built in large open spaces, constructed in some cases very much like the Royal Albert Hall, with an outer shell and an inner shell; when a fire took place in the inner shell, the people had no difficulty in removing rapidly to the outer shell, or the passage between the two, and in that way they were safe. So long as theatres were built in holes and corners, with innumerable passage-ways, there would be extreme peril, so that every time he went to the theatre he looked to see what were the means of getting out.

Mr. John Hebb (Assistant Architect and Surveyor to the Metropolitan Board) said Mr. Hine struck the right note when he said the great difficulty was the prevention of panic. No structural excellence could compensate for the want of presence of mind amongst the audience. He was surprised that the Society of Arts should take the trouble to draw up a report of such a character as this, which was not at all calculated to allay the fears of an audience, but, on the contrary, was rather calculated to create alarm. The dreadful circumstances which attended the fire at Vienna had scarcely passed from men's minds, but the apprehensions excited by that calamity were now beginning to pass away, and he thought the Society was not doing any good work, but a very mischievous one, in calling attention to defects in theatres which were at present incapable of removal. The report was of a very elaborate character, but he did not find one suggestion which was novel or practical. It all dealt with platitudes. They were told it was necessary the theatre should have a good approach, and roomy corridors, and good staircases; and suggestions were made that perhaps it would be a good thing to have a fireproof curtain, but there were disadvantages in that; there were also disadvantages in having a secondary system of lighting. In fact, there were disadvantages attending pretty nearly all the recommendations which were made. It appeared to be a very inconclusive kind of report, and, as far as he could see, would not answer any practical purpose. Nor was the report more useful when it treated of the matter historically. He found, for example, the title of the Act of Parliament under which some very important works had been carried out by the Metropolitan Board of Works was misstated. The powers possessed by the Board were attributed to the Building Act, which dated from 1855; whereas they were conferred by an Act passed only in 1878, and which was an amendment of the Metropolis Local Management and Building Act. Nor did the Society give any information with regard to the extremely useful work done of late years by the Metropolitan Board of Works. They did not say that a large number of theatres had been surveyed, that very important works had been carried out; that in one case an expenditure of about 15,000*l.* was incurred in the acquisition of ground, and the carrying out of works; that, in another case, something like 4,500*l.* was spent on a single theatre; and that in other theatres sums varying from 1,000*l.* to 2,000*l.* had been spent for the purpose of improving the means of ingress and egress, and securing the safety of the public. All this the Society did not know; nor that the Metropolitan Board had acquired a large amount of information with regard to theatres abroad, had translated all the regulations made by different foreign municipalities, and drawn up a code of regulations which governed the erection of new theatres. Those regulations were of a very minute character, and went to the construction of every part of a new theatre. With regard to old theatres, the Board did not insist that they should be brought strictly in harmony with those regulations, but had endeavoured, as far as it was practicable, and with as little interference as possible with the comfort of the audience and the convenience of managers, to carry out the Act of Parliament giving them power over these buildings. The meeting, perhaps, was not aware of the very limited control which the Metropolitan Board had over theatres. The Board had only had control since 1878, and the Act of 1878 only gave the Board power to require the owners of new theatres to make structural alterations in case the safety of the public was imperilled. The exercise of this power is restrained by the necessity of obtaining the consent of the Lord Chamberlain in the case of theatres, and of the Home Secretary in the case of music-halls, and structural alterations could only be such as could be carried out at a reasonable cost. If the Society desired to do anything to secure or improve the safety of the public in theatres, the committee should devote themselves much more seriously to the work, and a report should be prepared of a more exhaustive character, and the suggestions made should be of a practical nature.

Mr. Dixon-Hartland, M.P., said he considered the subject so important that, for the last three years, he had been pressing it on the House of Commons in every possible way. He could not at all agree with Mr. Hebb, and he thought the Society was doing very valuable work in calling attention to the present state of London theatres, and he had no hesitation in saying that, at the present time, almost every one of those was in a state far from satisfactory. Mr. Hebb seemed to be speaking in defence of the Metropolitan Board of Works; but the Act of 1878, to which

he alluded, was in existence for two years before the Metropolitan Board acted upon it in any shape whatever; in fact, they never took the slightest notice of it until he brought the matter before the House of Commons, and he did not believe, if he had not done so, they would have taken any notice of it at all. When he asked the Home Secretary if their powers were sufficient, he said they were, and the Chairman of the Board, Sir J. McGarel Hogg, said the same. If they were not sufficient, they should ask for further powers. But what was the result? Take the case of the Alhambra Theatre; he examined that most carefully immediately after the fire. Under a part of the stage there was a soda-water manufactory in full work, and gas retorts for making gas for the theatre. Over another part of the theatre there was a lodging-house, where over 300 men were allowed to smoke in bed, only separated from the theatre by a thin wooden partition. Under the dress-circle was a great quantity of old properties stored, and the floor had open spaces where matches could drop down, which was really the cause of the fire. Mr. Walford was quite right when he said it was impossible to prevent fires in theatres. The average length of the life of a theatre was under twenty-three years. Do what you might, from the inflammability of the scenes, and the various gas-lights flaring about, it was impossible to prevent fires. He thought the proper way was to have the exits in such a shape that the public should be able to know that they could get out. The real danger was panic, and the only way to prevent panic was for the public to know that in case of fire they could escape without any difficulty. Every part should have a separate exit; no two parts should converge together so as to cause a block, and all the doors should open outwards.

Mr. Herman (business manager to the Princess's Theatre) said he did not speak against the report, because he could say, without fear of contradiction, that there was not one single recommendation in it which had not been adopted by the management which he represented.

Sir Frederick Abel, F.R.S., as a member of the committee which had put forward what was no doubt called a report, but what was, really, more a collection of information, expressed his gratification at the useful effect it already had. It had been objected that it did not deal with the subjects practically; but he would simply say, in reply, that the members composing the committee could not do so with the data before them, owing to the difficulty of getting authoritative information on many subjects from public and private bodies. They could only draw up memoranda calculated to elicit such information as they had been gratified by receiving that evening. It was desirable to direct attention to means which for many years had been more or less satisfactorily developed,—means not for rendering materials uninflammable, for that was impossible in the case of materials which were intrinsically combustible, but for diminishing the inflammability of materials used in structures such as theatres, or for decorative purposes. It had been his duty, in an official capacity, for the last thirty years, from time to time, to give attention to the materials proposed for effecting such purposes, and he could say with confidence that materials did exist, the proper application of which was not attended with any great amount of danger and inconvenience, and which, although they were not susceptible of universal application, in connexion with structural materials which are exposed to view, were extensively applicable, and with very beneficial results. There was no doubt of the benefits to be derived from the application of alkaline silicates which was worked out about thirty-five years ago by an eminent German chemist, Professor Fuchs, and which were used on a large scale in connexion with structural materials in Austria, nearly as long ago as that. They could either be applied alone or in conjunction with various mineral matters, such as whitelead, or, still better, oxide of iron pigments, or asbestos in a finely-ground condition. These materials might be applied for the purpose of providing on the surface of wood a coating which, when exposed to heat, becomes fused or partially fused, and thus formed a kind of vitreous coating on the wood, protecting it more or less from the action of flame. As pointed out in the report, wood thus treated, when subjected to the action of heat, did, like coal in a retort, undergo destructive distillation and yield gas, but the charred fibre itself did not burn, because oxygen was excluded from it. That was the chemistry of the matter; hence it was that combustibility was not prevented, but was greatly retarded when materials of this character were applied to wooden surfaces. Again, canvas materials or fabrics might be not only coated but impregnated with such substances as the silicates, which rendered them almost uninflammable. In many cases, the strength of the fibre was more or less deteriorated by such application, but in the case of scene-painting this would be of minor importance, and could be guarded against. He believed that the application of silicates and other materials in conjunction with them to canvas, and to other fabrics used in decorative purposes, would diminish the tendency of fire to spread when it broke out, and it was only to this extent that these materials could be useful. It would be wrong to expect too much of them, or to imagine that, by coating with asbestos paint, cyanite paint, or silicate of soda and lime, the substance was rendered uninflammable. All that could be done was to prevent the spreading of flames when once fire had broken out, but that was a most important thing, for very often a few minutes were of the most vital importance, not only as regards the safety of buildings, but of those in the building, and it would have a most important effect in diminishing the tendency to panic if it were generally known that managers made what use they could of such materials.

Mr. Hebb asked if Sir Frederick Abel was aware that tungstate of soda had been used in Paris for the purpose of preventing textile fabrics from fire, and had been discarded as being impracticable in use. He had heard that it was very much objected to by the actresses as destroying the appearance of their dresses, and the difficulties with regard to the scenery were also so great that eventually its use was discarded.

Sir Frederick Abel said he knew there had been difficulty in the application of tungstate of soda, and that it had not been persevered with in Paris on that account; but it did not follow that the difficulties might not be overcome.

The following resolutions were passed at the meeting:—

1. "That the present official system for the inspection of theatres is unsatisfactory, and does not adequately provide for the protection of the public from the risk of fire."

2. "That it is important that attention should be given by managers of theatres to the known methods for reducing the inflammability of structural and decorative materials, and that it is desirable that more use should be made of such methods."

3. "That in all cases where serious loss of property has occurred through fire, provision ought to be made for holding an official inquiry by some competent authority."

EXHIBITIONS.

Metallurgical Exhibition at Madrid.—This exhibition, which was opened a few days ago in presence of 2,500 invited guests, is situated in the Buen Retiro Park at Madrid. In addition to the main building, erected by a Belgian firm of contractors, there are about one hundred pavilions and smaller structures distributed in the form of a half-moon in front of the chief edifice. The extraordinary mineral wealth of Spain and the actual products of the mining industry of the peninsula are here well displayed. Like almost all Continental exhibitions, however, the buildings and exhibits are still in a very unfinished state. Owing to the intense heat of the weather the exhibition will probably be closed for some weeks in July and August, opening again in September.

Italian and Spanish Art in Berlin.—An exhibition of Italian and Spanish works of art opens this week in the Winter Garden at Berlin. The collection is one of the greatest value, only the works of the most eminent masters being admitted. The Italian Government has warmly interested itself in the matter, and an unexpectedly large number of excellent paintings and sculptures have been sent from Italy. Among other things, a fine collection of mosaics from the Royal Manufactory at Florence has also been obtained for this exhibition, these latter objects including many examples never yet shown out of Italy.

Sweden.—In commemoration of the introduction of the art of printing into Sweden four centuries ago, a typographic exhibition will be held in Stockholm in July. A great banquet is fixed to take place in connexion with the exhibition, on the 8th proximo.

THE SWISS NATIONAL EXHIBITION AT ZURICH.

THE architectural and constructive features of the exhibition building and its surroundings have already been noticed by us,* but amongst the objects shown, there are many of special interest, including stone for building purposes, which is obtained from various parts of Switzerland. In the lucid and comprehensive introduction which Professor Heim and Herr Meister have contributed to the catalogue, it is remarked that the country may be divided into four zones. That of the Jura yields principally a light yellow sandstone. The second district between the Alps and the Jura mountains comprises horizontal layers of sandstone, marl, &c., amongst which limestone is occasionally to be met with. The gneiss granite of Aargau is used for kerbstones in Zurich, and the red quartz-conglomerate known as sernifite is frequently employed in that canton for building purposes. The third section is the Alpine limestone district, which comprises a large portion of the northern slope of the Alps. The stone is principally dark in colour and is used for street-paving. The fourth zone is that of the central Alpine district, the principal features of which are cystalline silicate formations. The building stones which it yields are granite, gneiss-granite, and gneiss. The cement industry is worthily represented, and it will be remembered that Swiss technical authorities have of late years been active in their researches as to tests for cement, and other matters in connexion with this important subject.

The Swiss timber industry does not seem to occupy an important position.

The group in which building and the fitting up of houses are represented is divided into six detailed sections. In these plans and models joiners' work, metal work, kitchen fittings, heating and ventilation, and, finally, stone-work and roofing, are respectively dealt with.

A novel feature of the exhibition, and one to which special interest attaches, is the collective display organised by the Association of Swiss Hotel-keepers. It is remarked that this is the first appearance of that calling amongst recognised forms of industry, and no doubt the relative importance of the business in Switzerland entitles it to a place in a display which comprises forty-two groups, all connected with the industrial and intellectual development of the Federation. A series of rooms, fitted up to represent what apartments in a well-organised hotel should be, is no doubt of some practical utility, and is, at any rate, a proof of the enterprising character of the Swiss hotel-keepers. Models and photographs of all the principal Swiss hotels are to be found in this group.

FOREIGN COMPETITIONS.

Statue to Hugo Grotius. The committee which has been formed for the erection of a monument to the celebrated Dutch jurist, Hugo Grotius, in connexion with the recent tercentenary, has issued an invitation to sculptors, both Dutch and foreign, to send in sketches for a bronze statue to be placed upon a stone pedestal. The latest date for receiving the models and drawings is the 30th of November next. Two prizes are offered, the first of 500 guilders, and the second of 200 guilders. An honorarium of 3,000 guilders will be paid to the artist entrusted with the execution of the selected design. The monument is to be erected in the city of Delft.

Hall for St. Gallen.—A competition has been opened for designs for a public hall, suitable both for musical performances and for electoral and other purposes, to be erected at St. Gallen, in Switzerland. An interesting problem will have to be solved by the competitors in this building, as it is required to contain several large rooms, all of which must be capable of being thrown into a single great hall by easily movable partitions, and likewise capable of being subdivided into smaller apartments. The cost of the structure is not to exceed 450,000

* See p. 378, *ante*.

francs, or 18,000*l*. Three prizes are offered of the total value of 3,500 francs, and the designs are to be sent in to M. Dardier, engineer, St. Gallen, by the 2nd of September next.

THE ARLBERG TUNNEL.

THE tunnel through the Arlberg Mountain which is destined to give the western provinces of Austria a direct means of communication with Switzerland and the west of Europe was begun in 1880, and has been making such progress that it is estimated that the work will be completed and the line through it ready for traffic in August, 1884, or fully a year before the date allowed by the contract. The length of the tunnel is 10,248 mètres, or about six miles and a third, and it runs between the station of St. Anton on the eastern, and Langen on the western, side of the mass of the Arlberg mountain. The first borings on either side were commenced in the middle of 1880; and by the end of 1882 the total length of the floor gallery accomplished was 6,813 mètres, or rather more than 66 per cent. of the entire distance. The section of this gallery was from 7 mètres to 8 mètres in area. The boring was effected by Ferroux's machines on the eastern and by Brandt's machines on the western side. The roof gallery of 4½ to 5 square mètres in section was bored by hand, and 6,347 mètres, or 62 per cent. of the entire length had been got through by the 31st of December last. The additional boring and blasting for the requisite enlargement of the roof and floor galleries had also been completed by the same date for a distance of 5,112 mètres, or about 50 per cent. of the total distance. Finally, by the end of 1882, the whole of the masonry of the floor, walls, and roof had been finished up to a distance of 4,885 mètres, being about 48 per cent. of the entire length of the tunnel. The average distance accomplished in the floor gallery per month in 1882 was about 300 mètres, the maximum of any month being 350 mètres. In no Continental tunnel has such a rate of progress been equalled except in the case of the Laveno tunnel on the Upper Italian line between Pino Sesto and Calende. That tunnel which is nearly two miles long, goes through a very firm dolomite, and the boring there was done by the Ferroux machines. In the case of the Arlberg tunnel, the contractors were bound by the terms of the contract to complete 3·3 mètres of the floor gallery on each side of the tunnel per day. In 1882 they made on the average a progress of 10 mètres, and had, in fact, done at the end of the year 1,522 mètres, equal to 461 days' work, more than required by the agreement. For this they are able to claim a premium at the rate of 80*l*. a day. In another part of their work, however, they incurred a considerable penalty. By the provisions of the contract they are bound to proceed with the completion of their work in such a way that the masonry must be kept finished to within 600 mètres of the head of the gallery on each side of the tunnel. At the end of 1882, however, reckoning the two sides of the tunnel, the masonry, instead of being altogether only 1,200 mètres behind the face of the gallery, was 1,928 mètres in the rear, 741 mètres on the east and 1,187 mètres on the western side, so that the arrears for which the contractors were liable to penalty were 728 mètres. This was reckoned equal to 220 days' work. Subtracting this from the 461 days they were in advance in the original gallery, they found that the premium to their credit at the end of 1882 was reduced to 241 days, which at 80*l*. per day represents a sum of 19,280*l*. With regard to these peculiar provisions of the Arlberg contract the explanation given is as follows. The history of the St. Gothard tunnel had shown that it was of little use to push forward the first gallery unless the completion of the tunnel in the rear was carried on pretty promptly. The Railway Company likewise wished to have the entire work finished as soon as possible, and it was thought that the system of premiums and penalties adopted in the contract would act as a powerful incentive to the contracting firms. Such, no doubt, is the natural tendency of the arrangement, but it has proved rather hard on the contractors on the western side, where the extremely unfavourable character of the rock has rendered the task imposed by the contract in reference to the *pari passu* completion of a certain proportion of the tunnel, hitherto insuperable. In fact, as the contractors on the two sides are working separately, the firm working at the western end is paying the penalties while that on the east is gaining all the premiums.

On the eastern side the nature of the strata in 1882, as in 1881, has proved very favourable for boring. At first there was gneiss, with frequent fissures and occasional intervening layers of limestone and clay, so that sometimes it was necessary to resort to provisional timbering; but in the second part of the year micaceous slate was met with, with only occasional faults. The direction of the layers was parallel to the axis of the tunnel, and this facilitated the boring operations. Up to September there were six Ferroux machines employed in the gallery. Towards the close of the year they were increased to eight, which were fixed on a boring carriage, and driven by air at a pressure of from 3½ to 4 atmospheres. The increase of the number of machines made it necessary to carry the gallery higher, but the work proceeded more rapidly. At every attack from 25 to 30, and afterwards from 30 to 33, holes of 40 millimètres of medium diameter, and of a total length of from 40 to 50 mètres, were bored, resulting in an average advance of the gallery by from 1·4 to 1·7 mètre. The time occupied in each such attack was from six to seven hours, 52 per cent. of the time being devoted to the actual operation of boring. The quantity of dynamite used averaged 38 lb. for every mètre made. The rubbish was removed by hauling on the single temporary line, men being employed in propelling the wagons where the boring was going on, while steam-engines were used in the finished part of the tunnel. To avoid smoke in the tunnel, the steam was brought up to a pressure of about 15 atmospheres outside the tunnel, so that for a journey to and fro no stoking was necessary.

On the western or Langen side of the tunnel the work was attended with greater difficulties. At the end of 1881 the strata became more favourable in character, but soon changed again for the worse. In the middle of January, 1882, the rock began to show faults and interstices filled with graphite and clay. Then came micaceous slate, with quartz and gneiss veins and schists, with layers of graphite and clay, rendering timbering necessary. Towards the close of the year very strong, wooden, shaft-walling, with ground-sills had to be resorted to. The water did not give much trouble, and was less abundant than in the previous year. The direction of the layers was parallel to the axis of the tunnel and the dip perpendicular. In the month of February the number of Brandt machines fixed on a boring-carriage, and at work in the gallery, was increased from 2 to 3; and they were driven by water-power at a mean pressure of 95 to 100 atmospheres. Four machines were employed towards the close of the year with the effect of saving time. Each attack lasted from 6½ to 7½ hours, half of which was spent in the actual operation of boring. The number of holes was from nine to twelve, their width being 70 millimètres, and the total length bored from 12 to 18 mètres, resulting in advancing the gallery by from 1·3 to 1·4 mètres. The unfavourable character of the strata caused a loss of time averaging about fifty-three hours per month. The quantity of dynamite used averaged about 36 lb. for every mètre advance.

AMSTERDAM EXHIBITION.

ALTHOUGH, as we have said, from an architectural point of view there is little to praise in the Amsterdam Exhibition,—in fact, the less said the better,—there is an important and attractive feature in the shape of a large collection of paintings, many of them above the average and not a few of them of great excellence. Only four countries, however,—Holland, Germany, Belgium, and France,—have sent art objects in large numbers. The art-productions of Austria, Italy, Spain, Sweden, and Russia together occupy but two small rooms. In the Dutch section the impressionist tendency which appears to prevail in that school at the present time predominates mostly in landscapes, with all its advantages and drawbacks. The lagoons, canals, foliage, and meadows are of great effect when seen from a distance, but their attractions disappear on closer inspection. Amongst the large number of painters who do homage to this leaning in art may be mentioned Bakhuizen, Bilders, Du Chattel, Gabriel, Mesdag, Poggenbeek, Roelofs, and Schippern. Springer paints more in the style of the old Dutch masters; his works will bear closer examination. His paintings in the exhibition which show this are "The Marketplace of Goslar," and two street scenes from a Dutch town. The *genre* paintings in the Dutch section belong to the best in the exhibition. There are some remarkable sketches of soldier life by Isaac Israels, a precocious painter only eighteen years of age. The Germans are most strongly represented. There is quite a galaxy of works from Düsseldorf, whilst the artists of Berlin and München have also sent a great many works. There are but very few pictures from other towns. Quite recently the German section has been enriched by a painting by O. Achenbach, "The Shore at Naples," an autumn landscape by Oeder, and "A Lady Artist in her Studio," by Siegert.

The Belgians shine by *genre* paintings, some of the best works of the school being sent by Jan van Beers. This artist paints very skilfully, though without any great conception; but a veiled sensuousness is a characteristic of all his pictures. Of other works of excellence in the Belgian section may be mentioned a scene of children riding on donkeys at the sea-shore, by Jan Verhas; a lady in her boudoir, by François Verhas; another lady playing the guitar before the cradle of her child, by Willems, an artist who appears to paint with predilection satin dresses. Of historical paintings, "The Retreat of the French from Russia," and "The French Cuirassiers at Reichshofen," both by J. van Yverdonck, are the only real battle-pieces of the exhibition. There are also some good portraits in the Belgian department; amongst them some by Émile Delpenée. Besides the Italians, only the Belgians are represented by a large collection of statuary. France has made extraordinary efforts in the art section, hers being the largest and most tastefully arranged collection. Two highly realistic paintings are two scenes taken from the streets of London by Bastien Lepage, one being a shoeblack, the other a flower-girl. Amongst able works may be classed one by E. Dantan, "The Public in the Paris *Salon*," a picture which in its essentials might be compared with a "Private View at the Academy"; one by H. Briscot, "The Philistines of the Province"; Beyle's "Girl from Normandy"; P. A. Cot's full-length portrait of a lady. The portraits of the French are excellent, notably one by P. A. Cot, representing the little son of the painter, and others by Jules Lefebvre, E. Duez, and Bonnat. Strangely enough, a favourite subject with French artists, battle-scenes, are very scarce. Detaille and De Neuville have no paintings in the exhibition; a picture by Protais must be classed amongst those of his of less merit. The nude has become almost a speciality with the French school, and at the Amsterdam Exhibition the artists of France are alone in that department of painting. A young girl, by Jules Lefebvre, is perhaps the best, but a little mannered. A large room in the French section is full of water-colours; another contains beautiful Gobelins, and as beautiful vases sent by the Manufacture Nationale de Sèvres, works of the highest class, and to be preferred to French paintings.

As we stated above, Austria, Italy, Spain, Sweden, and Russia are but sparsely represented. In the two so-called international rooms, which contain their productions, the only Austrian painter who exhibits is Gustav Wertheimer, who has "The Kiss of the Wave," in which a siren is drawing a sailor into a watery grave. Italy has, as to former exhibitions, contributed those sculptures which no artist can praise, but which please everybody,—little children of both sexes, with pretty dresses trimmed with lace. The general public overlooks the conventionalism of the smiling children's faces, and enjoys the whole *ensemble*, the natural treatment of hair, toilette, and other minor points. Falero, a Spaniard, residing at Paris, has sent a witch with utterly red hair carrying a torch. The sea-pieces of Aivasowsky are amongst the more interesting works in the two rooms, which contain a great many paintings below the average.

Queenborough Pier. — The directors of the London, Chatham, and Dover Railway Company having arrived at a definite and final understanding with the Royal Zeeland Steamship Company, the owners of the mail steamships running between Queenborough and Flushing, have decided upon the erection of the pier which was destroyed by fire last year.

THE HUMBOLDT MONUMENTS.

THE chief event of the past month in Berlin was the unveiling of two monuments to the Brothers Humboldt, erected in front of the University in that capital. The statue to Wilhelm von Humboldt, the statesman, jurist, and philologist, was erected at the expense of the Prussian Government; that to the better-known traveller and natural philosopher, Alexander von Humboldt, was raised by a national subscription. The features of each of this remarkable pair of brothers are perfectly familiar to the present generation in Germany, owing to their numerous and excellent presentments in the portraits of Wach, Begas, and Hildebrand, and in their busts by Rauch, David, and Bläser. The sculptor of Alexander von Humboldt's statue is Herr Reinhold Begas, the creator of the Schiller monument. He represents the naturalist as sitting on a block of rock, over which a cloak has been spread. He is attired in an overcoat, knee-breeches, and buckle-shoes, and is leaning on a memorial tablet, on which are engraved the names of Archimedes, Columbus, Galileo, and other pioneers in natural science. There are at his side an herbarium and a globe, indicating Humboldt's botanical and geographical researches. In his right hand the *savant* holds a laurel wreath. On the pedestal his name, "Alexander von Humboldt," is inscribed, and is surrounded with another laurel wreath, about which butterflies, bees, and lizards are disporting themselves. Over the laurel wreath astronomy is represented by genii carrying a telescope. On the pedestal one of the two reliefs represents mankind nurtured by Nature, under the image of a mother suckling an infant, while a second child is trying to reach the other breast. This allegorical group is reclining outside a forest, above which towers the smoking cone of a volcano. The other relief on the right side of the statue contains another allegorical group, representing Science instructing youth. By the side of Science an infant boy is measuring distances on the globe.

The monument to Wilhelm von Humboldt is the work of the sculptor Herr Paul Otto, who lives in Rome. It is in marble, and represents the noble-hearted statesman in the attire of the times of Napoleon I., and sitting on a chair the sides of which terminate in griffins' heads. On his knee he has a book open, while on his right is a scroll consisting of the charter of Berlin University, of which he was the founder. The reliefs on the back of the chair represent Homer old and blind, leaning on a staff, and reciting to the people passages from his poems. On the other side is Socrates teaching his disciples. Over the group is a Centaur listening to the song of Apollo. In the middle are two caryatides supporting a relief representing Athene inspiring Ulysses. On the right of the relief is Archæology seated on a Corinthian capital, while a genius is bringing to her the bust of Vitellius, as the ripest of the plastic works of classical times. To the left is Philology leaning on a tablet, which has the name Socrates inscribed on it. By her side is a genius handing to her a scroll representing history. Both statues are highly spoken of by all competent judges, and in the inaugural ceremony nothing was wanting to lend distinction and *éclat* to the proceedings. The German Emperor, all the Princes and Princesses of the Imperial Family, all the Ministers and the Court were present to do honour to the memory of two of Germany's greatest sons, and to inaugurate their statues on a spot which had hitherto been confined to monuments commemorative of the warlike heroes of the past century of Prussian history.

FROM THE UNITED STATES.

An American Viaduct.—The great viaduct which is being built across Lake Ponchartrain by the New Orleans and North-Western Railway, will, when completed, be 29½ miles long. It will, in fact, be the longest structure of the kind in America. It is built on 32,644 piles, in addition to which its construction will require altogether 15,000,000 cubic feet of timber.

Cotton Factories in the Southern States.—According to the latest reports, the cotton manufacture is being introduced on a gigantic scale into the Southern States of the Union, that is to say, into the very region which has hitherto been content with merely growing cotton. An indication of the rapidity with which the manufacture is being taken up is seen in the fact that, at the present time, there are no fewer than 181 new cotton factories in course of erection in the cotton-growing states. The competition of the "poor whites" and negroes will, it is to be feared, make itself felt before long more or less severely in Lancashire.

The Black Canyon.—The question whether by partial tunnelling or widening, the so-called Black Canyon can be made available for a line of railway is just now occupying the minds of some enterprising engineers in the West. The Denver and Rio Grande Company think so favourably of the project that they have determined to cause a thorough survey to be made of the Canyon. The peculiarity of it is that it is a narrow gorge with perpendicular sides, 3,000 ft. high, with the river Gunison running at the bottom. These walls are of Syenite rock. For a distance of about 1,800 ft. the two walls meet; in other words the river runs for that space underground. The stream throughout is of extraordinary rapidity, and the exploring party on the intended expedition will go literally with their lives in their hands. A boat of the greatest possible strength is being built for the expedition. It will be victualled and provided with various appliances thought likely to prove useful on the voyage. The boat, with its living freight, will start at the upper end of the Canyon, and constant watch will be kept for its arrival at the lower end, beyond the subterranean portion of the course of the river.

The Hudson Tunnel.—The tunnel under the Hudson, which was intended to connect New York with Jersey City, threatens to prove a failure. The work of boring and excavating has, at any rate, recently been confronted with such difficulties that it appears impossible to complete the tunnel according to the method hitherto adopted. The inrush of water has of late been so great that the contractors are unable to make any progress, and unless some more effective plan of operations can be devised they will be compelled to abandon the enterprise.

Electric Railways in America.—Hitherto, while experiments with electric railways have been made with more or less success in several European countries, there has been nothing doing in this matter in the United States. At last, however, a company has been formed, which is to make the first attempt of the kind on the New York Elevated Railway. The motive power is to be supplied by some new appliances for electric transmission of power, invented by Mr. Edison.

THE BIRMINGHAM SCHOOL BOARD AND THEIR ARCHITECTS.

AT the meeting of the Birmingham School Board on the 7th inst., Mr. G. H. Kenrick presented the report of the Sites and Buildings Committee, which reported that they had had under consideration the present arrangements under which the services of the architects to the Board were rendered, and seeing that the Board had erected schools more rapidly than was anticipated at the time this arrangement was made, they recommended that the following addition should be made to Board Minutes Nos. 3,409 and 3,459, regulating the payment for such services:—"Whenever the value of the buildings paid for by the Board and entrusted to them exceed 5,000*l.* in one year, then the architects shall receive a commission of 2½ per cent. on such excess; this resolution to apply only to such work as may be undertaken subsequent to this date." They further recommended that that part of Board Minute, No. 3,409, directing the architects to report upon the condition of the school buildings twice in the year, should be rescinded, and the following substituted:—"That the Clerk of the Works be required to report regularly to the architects upon the condition of the existing schools, so that every school is reported upon at least once a year, and that the architects be requested to bring before the committee the results of their examination of these reports."

Mr. Kenrick having moved the resolution with regard to the extra payment to the architects,

Mr. Hawkes said he thought this afforded an opportunity, at any rate, for the new members, to express their opinion on the arrangements as to the architects. The Board was now asked to add to the remuneration of the architects, Messrs. Martin and Chamberlain, and at a time too, when the Board was resolved to take active measures for the erection of a number of new schools. It therefore became of great importance for them to consider, first, whether they should make the addition to the remuneration which was proposed by Mr. Kenrick, or whether they should not pause, refuse to make such increase, and take steps to consider whether it would not be wise to put a period to the contract which the late Board entered into with those gentlemen. He found that during the last ten or eleven years thirty schools had been erected, at a cost ranging from 14,000*l.* to 15,000*l.* Three more sites had been purchased, and consequently there would be three more schools, so that they were looking forward to a further incumbrance of 45,000*l.* by way of capital expenditure, besides the income outlay in the shape of furnishing. It was, therefore, of the greatest importance for the Board to consider whether they would be doing wisely to adopt the resolution which the chairman of the committee recommended. Looking at the fact that one firm of architects had for eleven years been alone employed by the Board, he had an incurable objection to continue it. Even if the architects proposed to do the work for nothing, such was his feeling that they were acting unjustly to an eminent profession in the town, which was involved in all its taxes, rates, and municipal liabilities, and subjected to the services that burgesses must render, and having amongst its members eminent men who were famed not only in Birmingham, but throughout England, he should feel an invincible repugnance to continue the practice which had prevailed. He therefore opposed the motion, which, however, after some further discussion, was carried by 9 votes to 5.

Mr. Kenrick moved,—"That the Sites and Buildings Committee be authorised to obtain the necessary plans and specifications for the erection of a school for 1,000 children on the site in St. Andrew's-road."

Mr. Hawkes said he should vote against the proposition, because he thought, having erected thirty schools, they might hold their hand a little in the erection of the eight new schools that were talked of. He also objected to it because the architects of Birmingham, eminent as they were in their profession, are to be absolutely excluded from any opportunity of competing. The Board ought to give themselves the opportunity of considering whether they had the best schemes laid before them. As the Chairman of the Estate Committee for many years in the Town Council, he could not help saying that the system of competition was a very wise one. He was told, in answer to that, that the Board would not show much gratitude to the architects by considering whether they should terminate their engagement. Now, their architects did not come to them for gratitude,—they came for £. s. d.; and having paid them, the Board were no more bound to go to them again than any one else a second time to a butcher for a leg of mutton.

After some further discussion, the motion was carried.

THE PROPOSED TOWN-HALL FOR BIRKENHEAD.

DUPLICATE TENDERS.

AT a meeting of the Birkenhead Town Council on the 6th inst., a memorial signed by 650 ratepayers in favour of the new Town-hall being placed in the centre of Hamilton-square was read by the Deputy Town-Clerk, and a long discussion ensued. Mr. Fred. Smith moved that the subject be referred to the General Purposes Committee, and Mr. Houston seconded the motion, which was lost by 32 votes to 8. A letter was read from Mr. E. Gabbutt, contractor, again complaining of the rejection of his tender for the erection of the new Town-hall,* and intimating that proceedings would be taken against persons not named. In connexion with this letter a resolution of the General Purposes Committee was considered, to the effect "that having carefully considered the correspondence and all the circumstances of the case, the tender of Mr. James Leslie, of Bootle, to erect the new Town-hall in accordance with the drawings, specifications, and quantities prepared by Messrs. C. O. Ellison & Son for 40,497*l.*, be accepted," subject to the usual conditions as to the fulfilment of the contract. Several questions were asked as to the duplicate tenders, the telegram from Mr. Leslie reducing his tender, &c., and after

* See *Builder*, p. 620, *ante*.

explanations, which were accepted as satisfactory, the resolution of the committee was adopted, Mr. Fred. Smith withdrawing a motion to refer the matter back a second time.

Reporting to the General Purposes Committee on Mr. Gabbutt's last letter, Messrs. C. O. Ellison & Son divide the subject into four parts:—1. The custom of accepting the lowest estimate for public work, unless there are good reasons to the contrary. 2. The foot-note upon Mr. Gabbutt's tender. 3. The works referred to by Mr. Gabbutt. 4. The supposed difficulty in his getting quantities. They say:—

"Nos. 1 and 2 must be taken together. The custom alluded to is that on which we always act, and but for the foot-note Mr. Gabbutt admits putting on his tender, we should have urged its acceptance, having great faith in the reputation left by his father in the trade, although we have seen Mr. Edmond, or Edward, but on the one occasion of his calling as to this work. The foot-note, however, being practically an attempt to secure, behind the back of all the other competitors, terms far more advantageous than those on which they had tendered, and the acceptance of which would at once have handed over to Mr. Gabbutt all the advantages we had been at so much trouble to secure for the public benefit, we at once lost all confidence in him as the contractor for the proposed work, and in common fairness to the others recommended the adoption of the next lowest tender sent in upon the terms of the specification you had already approved. . . . .

Mr. Gabbutt says in his letter:—'A peculiar feature of this contract is that 16,000*l.* are provided in sums to be dealt with by the architects for sundry works,' as to which he is further good enough to say that in his opinion 'the ratepayers of Birkenhead should have the advantage of public competition as well with regard to the 16,000*l.* as to the remainder of the estimate,' the first statement being simply untrue, and the latter misleading. The fact being that the addenda to the quantities to which Mr. Gabbutt alludes only contains 14,357*l.*, and that made up as follows:—8,157*l.* total of sub-tenders to which we shall again refer, 2,700*l.* set apart in the specification for the use of the committee for heating and ventilation, &c., and 3,500*l.*,—not 16,000*l.*, as stated by Mr. Gabbutt,—'to be dealt with by the architects for sundry works.' And even for these we have already had estimates, but deferred closing in anticipation of being able to make still better terms for our clients. As to the 8,157*l.*, this is the total of the lowest estimates received by us from specialists, as many as five estimating for one thing; and that no wrong should be done to the sole contractors by our act, we sent to each a list of the lowest tenders received, giving the sub-contractors' names, and plainly marking the documents as follows:—'Amount of lowest estimates received by the architects for the several works required to be done in a special way, and by tradesmen approved by them. Note: These figures being net, the contractor must add for himself any profit he may require thereon, and include the same with sums herein in the general tender.' A course which allowed each to add the same profit he would have done had the estimates been got by himself, placed all on one equal footing, and, whilst securing for the building the best possible results, prevented the too common curse of open competition, viz., finding when too late that work requiring special means of supply, or the highest skill, is in the hands of men whose only recommendation is the lowness of the price quoted in their eagerness to secure the job. . . . .

We beg permission to refer to the question of 'duplicate tenders.' On this, as on all other points, we are quite sure that if fairly looked at our action is not even open to doubt. Had we actually occupied the position of 'architects to the municipality,' to which, according to the referee's report (August 30, 1882), and adopted by the Council, we should become entitled on the verification of our estimates, even then we should not have violated any professional law or rule by asking to have copies of the tenders sent to us at the same time they were sent to our clients. It must, however, be remembered that we are not yet officially appointed to the position we have now fully earned, and that our right thereto depended entirely upon the estimate in question; consequently, whilst carefully guarding your interests, it was only to be expected we should also protect our own by asking for copies of the tenders to be sent to us, so that if the amount was above the 42,000*l.* stipulated, we could at once point out how and where reductions could be legitimately made to bring the cost below this figure, instead of waiting, and for want of this ordinary precaution finding ourselves perchance voted out as not complying with the terms of the competition."

ADDLESTONE CHURCH.

THE parish church of St. Paul, Addlestone, Surrey, has been lately re-opened, after considerable works in restoration and improvement. Originally built at the period of the Gothic revival,—over forty years since,—upon lines of plan and construction not based upon the best Mediæval precedents, it has been found difficult to apply very thorough ecclesiastical treatment in the Pointed style. Much has, however, been done to bring the structure into better accord with the advanced spirit and taste of the present times. The old square boxed pews have been cleared out; the aisles have been re-arranged; a central passage in the nave, wanting in the original plan, has been provided; and new open benches of convenient form, with handsome traceried ends next aisles, have been substituted. The chancel has been newly seated with stalls having carved poppy-head terminals, and paved with encaustic tiles, the aisles and nave being paved with red and black Staffordshire tiles. The chancel ceiling has been newly boarded in panels with moulded ribs, and the canted plaster ceiling of the nave, —its most unsatisfactory feature originally,— has been relieved by flat decorative treatment, panels in pale grey and salmon tints. The organ has been removed from the western gallery, and, after considerable enlargement of its musical power by Bryson, been re-erected in a transeptal addition which has been built on the north side of the chancel, communicating therewith and with the north aisle by Pointed arches, pierced through the original walls. This transept is of Early Pointed style (the basis of the church), and sufficiently large to comprise a choir vestry. Private donors in the parish have expressed their interest by contributing additional stained-glass windows, a corona in the chancel, gilt alms-dish, baptismal ewer, &c., and the ladies have presented new furniture of handsome design for the Communion-table. The works have been executed, including repairs to the fabric, by Mr. Harris, of Woking; Messrs. Herrings, of Chertsey, have provided hot-water pipes for heating. The architect appointed by the vicar and churchwardens and committee to design and superintend the works was Mr. Samuel Knight, of Cornhill.

NEW CEMETERY, STOKE, SURREY.

THE new cemetery at Stoke-next-Guildford was formally opened on Saturday last week, when the Lord Bishop of Winchester consecrated a portion of the ground. The buildings were designed by Messrs. Peak, Lunn, & Peak, architects, Guildford, and the whole of the works have been carried out under their superintendence. The chapel is built of Bargate and Bath stone, the roof being covered with Broseley tiles, with the exception of the spirelet, which is of oak shingle, and the style is Gothic of the Geometrical Decorated period. Similar materials were used for the lodge, which includes a waiting-room; the style adopted for these being a quiet type of Domestic Gothic. The principal fittings throughout are of pitch-pine. The general contractor was Mr. R. Pink, of Milford; the ironwork, including the wrought entrance-gates, being entrusted to Messrs. Weyman & Mason, of Guildford; the oak fencing was erected by Mr. W. Hebburn, of Worplesdon; the planting was performed by Mr. W. Virgo; and the grave indicators are from the potteries of Messrs. Ambrose, Walker, & Co., of South Stockton. The cost of the site, buildings, road-making, and other works, has been a little over 4,000*l.*

The Fisheries Exhibition.—The number of visitors at the Fisheries Exhibition on Saturday was 15,547, making a total for last week of 73,424. The total number from the opening of the exhibition has been 364,545. When the exhibition was first opened it was stated that 10,000 visitors a day would be required to clear expenses and save the guarantors. Now, however, they may fairly look for a profit.

ETON COLLEGE.

ON the 19th ult. Mr. J. W. Clark, formerly Fellow of Trinity College, Cambridge, gave a lecture on "The Architectural History of the Buildings of Eton College," a detailed report of which appears in the *Eton College Chronicle*. The lecturer observed that when King Henry VI., at the outset of his reign, turned his attention to education, and determined that his "prymer notable werke" should be the foundation of the college at Eton, it was natural that he should select Winchester as a model. Notwithstanding Henry's ardent desire to imitate, and if possible to surpass, Wykeham, he began by founding a college at Eton (1440), and a college at Cambridge (1441), independent of each other. King's College, Cambridge, was not founded on its present site until 1446. In fact, the scheme seems to have suffered, from the very beginning, from want of careful consideration. It was repeatedly altered when it ought to have been completed. The advowson of the Parish Church of Eton was obtained August 29, 1440; and the pieces of ground composing the site adjacent to it were conveyed to the college in 1442. The building work was commenced in 1441, when the first stone of the chapel was laid at the high altar by the king in person. It is probable that the design for the new buildings was repeatedly changed during their progress, for the document in which the plan of the whole college is developed is dated March 12, 1448, when a large staff of workmen had been employed for seven years upon them. The library was to be in the centre of the east side, and the gate of entrance opposite to the hall on the north side. This quadrangle was to be approached through an outer court, which was to have "a faire yate" ont of the road. This outer court would have occupied the site of Weston's yard. The whole was to be surrounded by a stone wall 13 ft. high; and the ground was to be "enbanced," that is artificially raised, to different levels in different parts, the exact height of which is minutely prescribed. The whole of this scheme is clearly taken from Winchester. The design for Cambridge, and the plan of New College, Oxford, closely resemble it. The existing plan of Eton, though bearing a general resemblance to it, differs from it in all its details, except the Hall. The accounts show that in 1443 a contract was made for ten chambers on the east side of the college, a Hall with cloisters and seven towers. These are probably the seven towers on the east and north sides of the cloister-quadrangle; and the buildings of which they form part are therefore among the first erected. In the same year, Bekyngton was consecrated Bishop of Bath and Wells in the new chapel, "which was not as yet half finished," after which ceremony he gave a banquet "on the ground-floor of the new buildings of the college, on the north side, where the chambers had not as yet been subdivided by partitions." On the strength of this description we may assign the commencement of the long chamber to 1443. In 1848, the year in which the will was signed, we find an estimate for the completion of the chapel and buildings. As the chapel is said to be 103 ft. long, it is clearly the chapel mentioned in the will. The estimate shows that carpenters were at work on the roof and stalls, and that it was expected to be finished by Michaelmas, 1449. Again, the "quadrant of the college," as it is termed, was so far advanced that only 40*l.* was required to finish it. The actual chapel, however, is of very different dimensions,—150 ft. long by 40 ft. broad. This is to be explained by a most extraordinary change of plan, evidence of which exists. The lecturer infers that the king had the nearly completed church pulled down, and the present church begun, of which only the choir was completed. The old materials were, in part at least, used up again, as is shown by the state of the east window, where the irregularities in the curve of the arch-mould may be explained by the theory that it was constructed out of blocks prepared for, and perhaps actually laid in, an arch of smaller span. The death of Henry VI. interrupted the works, and they were not resumed until 1468. The chapel was finished about 1482. At this time the cloister-quadrangle was still incomplete on the west side, and it was not finished until 1516—1520, when Provost Lupton built the Provost's Hall, the gate, and the rooms south of it. Upper School was built by Provost Allestree between 1665 and 1681, but, proving insecure, it was pulled down and rebuilt in 1689.

THE DOWSON ECONOMIC GAS

AT THE NEW COUNTY ASYLUM, GLOUCESTER.

THIS gas has been fitted up at the new County Lunatic Asylum in Gloucestershire, to do the whole of the cooking and bread-baking for the staff and inmates; for the heating of water for baths, laundry, &c.; for the heating of drying and fumigating closets; and for driving two 8-h.p. Otto gas engines for pumping, &c. The general contract has been carried out by the Dowson Economic Gas Co., of 3, Great Queen-street, Westminster, while the cooking and heating apparatus was made by Messrs. J. Slater & Co., of 251, High Holborn. The whole of the apparatus has lately been tested by the architects, Messrs. Giles & Gough, and the following are extracts from a report, dated 26th May last, they have made to the Building Committee of the Visiting Justices:—

"*Laundry Boiler.*—The boiler, cold supply-tank in upper part of laundry, and the flow and return pipes to the same, contain a total of 642 gallons. During the first day's trial some of the gas-burners were not used, and those in use had the cocks about one-third off. Dampers were open about 3 in.

Result.—Heated 642 gallons from 64° to 150° F. in four and a half hours, with the consumption of 4,710 cubic feet gas, requiring 61 lb. of coal, and costing, with wages, under 1s. 1d.

Hot water was then drawn off into laundry-troughs with the following

Result.—Drew off in 55 minutes 460 gallons at 110°, while the temperature of the boiler was fully maintained, with consumption of 1,400 cubic feet of gas, requiring 19 lb. of coal, and costing, with wages, under 4½d.

The dampers were then left open, and on the following morning the temperature of the boiler flow was 90°.

On the second day's trial the boiler was emptied and refilled with cold water. All the gas-burners were used, but the cocks were about one-third off. The dampers were open 2 in.

Result.—Heated 642 gallons from 63° to 150° in three hours, with consumption of 7,560 cubic feet of gas, requiring 97½ lb. of coal, and costing, with wages, 1s. 10½d.; and heated the same to 162° in three hours and a half, with the consumption of 8,800 cubic feet of gas, requiring 113 lb. of coal, and costing, with wages, under 2s. 1d.

Hot water was then drawn off into laundry troughs at the temperature of 150°, but the temperature of the water running into the troughs gradually fell to 142°, while the boiler flow did not fall below 161°. This apparent anomaly led to its being noticed that the flow and return branches to the laundry were connected respectively with the flow and return of the boiler, and it was supposed that this probably caused water at a comparatively low temperature to flow to the troughs from the boiler-return. The valve on the branch-return was then closed, and the drawing off into troughs was resumed.

Result (after stopping return from laundry).—Drew off in one hour 420 gallons at 150°, while the temperature of the boiler was fully maintained with the consumption of 2,500 cubic feet of gas, requiring 39½ lb. of coal, and costing, with wages, 7½d.

The dampers were nearly closed, and on the following morning the temperature of the boiler flow was 137°.

Generally.—The results show that with this gas system the coal consumption is about half that usually required for heating by coal fires, and it is believed that a still higher efficiency will be obtained when all the flues, &c., are dried and warmed with regular use, and when the chimney draughts can be better controlled."

It will be remembered that at the Smoke Abatement Exhibition the Dowson gas was awarded the highest honours, consisting of a gold medal and a special prize of fifty guineas given by Sir Wm. Siemens, F.R.S., for "The best method or arrangement for utilising fuel as a heating agent for domestic and industrial purposes combining the utmost economy with freedom from smoke and noxious vapours." The gas was very carefully tested by the Exhibition experts, and it is very satisfactory to find that the subsequent trials on a thoroughly practical scale at Gloucester have confirmed the results published in the Smoke Abatement Reports.

We understand that a contract has been let to light a portion of this asylum with incandescent electric lights, and that the motive power will consist of "Otto" engines worked with the Dowson gas.

THE GLASGOW INSTITUTE OF ARCHITECTS AND THE POLICE BILL.

MR. WILLIAM MACLEAN, writer, the secretary of the Institute, has sent to each Member of Parliament for Scotland, in reference to the Burgh Police and Health (Scotland) Bill, a letter in the following terms:—

No. 81, Bath-street, Glasgow, 11th June, 1883.

SIR,—As instructed by the Council of this Institute, I beg to enclose a copy of a communication addressed by the Institute to the Lord-Advocate in reference to the Burgh Police and Health (Scotland) Bill, now before Parliament, and most respectfully direct your attention to the very important point specially referred to therein.

The only object which the Institute has in view in actively interfering in this matter is to aid in securing for the country a proper Building Act, and for this they believe the complete separation of police and building regulations to be essential.

The threatened opposition to the present Bill, on the ground that it "interferes compulsorily with the existing system of police and municipal administration, and repeals several local Acts obtained by burghs, after due Parliamentary inquiry, for the better government and improvement thereof," seems itself to prove the expediency of the course which from the first the Institute has recommended; for while it is quite possible that there may be good reason for some diversity in the police regulations of burghs, there can be no justification for diverse building and sanitary regulations, and there is no necessary connexion between police administration and the administration of laws relating to buildings. The independence of burghs in other matters should not free them from the obligations of identical building laws.

The Council of the Institute do not think it necessary at the present stage to criticise the clauses of the present measure in detail; but I am desired to say that in their opinion they are exceedingly defective and unsatisfactory. I have the honour to be, &c.

For the communication addressed by the Institute to the Lord-Advocate, referred to in the foregoing letter, we have not space.

PROPOSED ASSOCIATION OF INSPECTORS OF NUISANCES.

A MEETING, at 9, Conduit-street, W., was held on Saturday, the 9th inst., in a room lent for the occasion by the Sanitary Institute of Great Britain. The chair was taken by Mr. E. C. Robins, F.S.A., who was supported by Mr. G. J. Symons, F.R.S., and Mr. E. White Wallis. Mr. S. C. Legg then read the notice convening the meeting. The first resolution was proposed by Mr. A. Harland, A.R.I.B.A., Mem. San. Inst., viz., "That an association be formed, consisting of inspectors of nuisances holding appointments as such, and of those not appointed, yet holding the certificate of competency of the Sanitary Institute," and seconded by Mr. E. R. Boulter, of Bexley. An amendment was then proposed by Mr. G. S. Sherbourne, of Chelsea: "That an association be formed, consisting of inspectors of nuisances and sanitary inspectors holding or having held appointments as such." This was seconded by Mr. G. B. Jerram, A.M.I.C.E., of Walthamstow, and carried by a large majority.

The next resolution, viz.:—That this Association be called the Association of Inspectors of Nuisances; proposed by Mr. Thomas Stael, Limehouse, and seconded by Mr. Rains, St. George's-in-the-East. An amendment to that was proposed by Mr. Buckworth, St. Saviour's:—That this Association be called the "Association of Public Sanitary Inspectors," and seconded by Mr. Boulter, of Bexley. This having been carried, Mr. S. C. Legg nominated a list of gentlemen to form a provisional committee to arrange certain matters to be brought before the next meeting, on July 7th. Mr. G. J. Symons, F.R.S., was called upon to address the meeting. A vote of thanks was given to the chairman for presiding, who, to show his sympathy with the movement, kindly promised a donation of 5*l.*

Destruction of a Theatre by Fire.—An alarming fire broke out on Saturday afternoon in the Gaiety Theatre of Varieties, Peter-street, Manchester, belonging to Mr. E. Garcia, and in less than an hour the place was burned to the ground. The building was a large wooden one, erected originally as a circus. Some years ago a gallery was added, and it was turned into a music-hall. Had the fire broken out two hours later a fearful calamity must have ensued, as there is always a large audience at the Saturday evening performance. The cause of the disaster is not known.

THE LONDON SCHOOL BOARD AND ITS CONTRACTS.

MR. E. N. BUXTON presided at the usual weekly meeting of the Board, held last week. The adjourned debate on the following motion was resumed by Mr. Richards:—"That the present system of letting contracts be abolished, and that on the conclusion of existing agreements, before any fresh contracts are entered into, at least ten days' public notice shall be given, inviting tenders; and the Board shall require sufficient security for the due performance of such contracts." Mr. Richards thought that every builder in the metropolis should have an opportunity of competing for the contracts of the Board.

Sir Edmund Hay Currie said there were two kinds of open competition; one system was, as far as possible, carried on, but it would not be advantageous to allow "ordinary" open competition.

Mr. Lobb supported the motion. He said that a more important and businesslike motion was never brought before them. It struck at the root of the extravagant expenditure of the Board. Upwards of three millions of the ratepayers' money had been expended in the erection of school buildings. New members may have overlooked the fact that four years ago such was the extravagance of the London School Board in the school-building department that the Education Department stepped in and prohibited the Board from spending more than 10*l.* per place. At that time the same party who were now opposing the policy of open tenders were spending as much as 14*l.* and 15*l.* per place in the building of schools. Had the Education Department made it imperative that the London School Board should not spend more than 8*l.* per place, it could have been done, and about 1,000,000*l.* sterling saved. There were 1,400 builders in London, and out of these twenty-one firms have received up to May 31, 1883, 333 contracts from this Board. There need be no difficulty in entrusting the building of the schools to new firms. Why should a select few have all the patronage of the Board? They had an architect with thirty-two assistants. New builders had only to follow his specifications. He (Mr. Lobb) could understand the opposition to the change if they were threatened with a strike in the architect's office, but they need not be under any apprehension of any such catastrophe. He appealed to members to strike down at the root of one of the greatest abuses and most extravagant departments of the expenditure of the Board. Abolish the "close system," and adopt the resolution of open tenders, and make a selection from the 1,400 builders in London.

On a division, the motion was lost,—18 for and 27 against it.

SANITARY ASSURANCE ASSOCIATION.

THE third of a series of Wednesday evening lectures was given on the 6th inst. at 9, Conduit-street, W., by Captain Douglas Galton, Chairman of the Council of the Parkes Museum, on the subject of co-operation in sanitary matters. Captain Galton instanced the advantages which had resulted from co-operation in connexion with life and fire insurance, and argued in favour of the same principles being applied for the preservation of life from preventible diseases. The insurance company enables the provident person, by payment of a moderate annual premium, to secure for his family a provision against his death. The Sanitary Assurance Association enables the wise householder to have the sanitary condition of his dwelling assured for a similarly small annual premium. Through the agency of this and other movements he looked forward to the time when an unsanitary dwelling would be a thing of the past.

Sir Joseph Fayrer, who presided, together with Mr. H. Rutherfurd, Sir William Robinson, late Governor of Madras, Mr. R. B. Grantham, M. Inst. C.E., Mr. F. B. Jessett, F.R.C.S., Mr. Mark H. Judge, A.R.I.B.A., and others supported the views advocated by Captain Galton, to whom and the chairman votes of thanks were accorded.

Mr. Edwin Chadwick, C.B., will take the chair at the meeting in the Parkes Museum, on Thursday next, June 21st, at eight p.m., when Mr. Robert Rawlinson, C.B., will give an address on "The Hygiene of Armies in the Field."

SOCIETY FOR THE ENCOURAGEMENT OF FINE ARTS.

ON Saturday in last week the council of this Society invited Mr. J. Edmeston, who has, for several years, acted as chairman, to a complimentary dinner at the Café Royal. Sir J. W. Ellis, bart., vice-president, occupied the chair, and was supported by Messrs. Phil. R. Morris, A.R.A., Storey, A.R.A., C. B. Birch, A.R.A., Major Mercier, Dr. Phené, F.S.A., E. P. L. Brock, F.S.A.; Linton, president of the Institute of Painters in Water Colours; Orrocks, Cope, West, R. C. Belt, Lennox Browne, Dicksee, Allen, Sir C. F. Sharid, and Messrs. Gilbert, A. Cates, G. Truefitt, Cave Thomas (vice-chairman), and others.

The chairman proposed Mr. Edmeston's health in flattering terms, alluding especially to the services which had been rendered by the latter acting as Lord Mayor's Deputy during his recent year of office.

Mr. Edmeston acknowledged, in feeling terms, the unexpected compliment paid to him, expressing his belief that the demonstration was really an expression of approval and interest in their society, and of confidence in its future.

SURVEYORS' FEES.

IN the Lord Mayor's Court, before the Assistant Judge and a jury, the case of Ingledew *v.* Ray was disposed of this week.

Mr. Wildey Wright, barrister, who appeared for the plaintiff, stated that his client was a surveyor in Fenchurch-street, and the defendant was a builder at Lewisham. Last year the defendant was desirous of obtaining a mortgage on certain houses at New Cross, and he instructed the plaintiff to make a survey of them. That was done, and afterwards he gave to the plaintiff a commission-note in these terms:—"In consideration of your procuring or arranging for me an advance, I agree to pay 2½ per cent." The sum of 700*l.* was advanced on mortgage by the London and Suburban Building Society, which was subsequently increased to 800*l.*; and for time and trouble occupied in this and other matters of business for the defendant, a charge of 42*l.* 14s. was made. There had been paid 5*l.* 13s. on account, leaving still due a balance of 37*l.* 1s. 6d.

The plaintiff, Mr. Joseph Ingledew, was called, and stated that before the advance was made he placed the matter before several of the largest building societies in the metropolis, and to each of them he paid a guinea. For surveys his charge varied from one to three guineas.

His lordship.—There need be no question about the surveys, but is the plaintiff entitled to charge merely for going to see certain people?

Mr. Wright.—I submit that he is, according to the custom of the profession.

His lordship.—I am afraid I must bind you to the agreement. The commission is only to be paid on the completion of the mortgage.

In further examination the plaintiff stated that in regard to a second property belonging to the defendant he was engaged to procure a mortgage, and it could have been got except that his commission on the first transaction had not been paid. For looking out a suitable dwelling-house for the defendant he charged 3*l.* 3s., and altogether his bill was fair and reasonable.

The defence was that the plaintiff agreed to forfeit his commission unless an advance of 900*l.* was obtained, and also that certain surveys made were not authorised.

His lordship ruled that unless a surveyor received definite instructions he could not make any charge, and as to inquiry-fees respecting a mortgage, he might go to twenty places and make a charge in each instance, but it would not be legal.

In the result, the jury found for the plaintiff for 22*l.* 14s. 6d.

MASTERS AND MEN.

Arbroath Joiners.—At a meeting of the operative joiners employed in Arbroath, held on the 4th inst. to take into consideration the question of asking an increase in the rate of pay, after much discussion it was unanimously resolved to petition the employers for an immediate advance to the extent of ½d. per hour. The present rate is 6d. In the course of the discussion it was stated that the wages in Arbroath were below those of Montrose, Brechin, and Dundee. In these towns the rate ranges from 6½d. to 6¾d. per hour.

Glasgow Masons.—On the 6th inst., at a meeting of the Glasgow Trades Council, the masons' delegate explained that, rather than run the risk of a strike, the men had agreed to accept the increase proposed by the Master Masons' Society, to commence on the 6th of August instead of at the present time.

BUILDING PATENT RECORD.*

APPLICATIONS FOR LETTERS PATENT.

2,733. J. Smith, Blackburn. Water-closets. June 1, 1883.

2,827. W. P. Thompson, Liverpool. Seal traps for wash-basins, water-closets, &c. (Com. by A. Edwards, Ashbury Park, U.S.A.) June 7, 1883.

2,828. G. Wedgwood, C. F. Wedgwood, L. Wedgwood, and G. A. Marsden, Etruria. Ornamenting tiles, bricks, &c. June 7, 1883.

2,838. F. G. Lynde, Melton Mowbray. Latches for doors, windows, &c. June 7, 1883.

2,845. J. McConnell, Ballymena. Metallic cement. June 7, 1883.

NOTICE TO PROCEED

has been given by the following applicants on the date named:—

June 5, 1883.

576. D. F. W. Quayle, Castletown. Window sashes. Feb. 2, 1883.

1,131. J. B. Adams and J. Telford, Liverpool. Balancing, securing, and fastening sliding window-sashes. March 2, 1883.

June 8, 1883.

619. G. W. von Nawrocki, Berlin. Hinges for doors, &c. (Com. by O. A. Ludewig, Stettin.) Feb. 5, 1883.

695. J. Hay and G. Robertson, Glasgow. Window sashes. Feb. 8, 1883.

714. S. Deards, Harlow. Apparatus for warming houses. Feb. 9, 1883.

984. F. Hammond, London. Chimney-pots for facilitating draught in chimneys, &c. Feb. 23, 1883.

1,488. A. M. Clark, London. Construction of stable drains and floors. (Com. by P. A. H. Basserie, Le Mans, France.) March 21, 1883.

ABRIDGMENTS OF SPECIFICATIONS,

Published during the Week ending June 9, 1883.

4,783. G. Hurdle, Southampton. Window-sashes, &c. Oct. 7, 1882. Price 6d.

A toothed wheel, containing in its interior a coiled spring, is mounted in a frame led into the sash, and it gears into a rack on the side of the sash panel.

4,811. A. J. Boult, London. Door-stops or checks. (Com. by G. R. Elliott, Boston, and J. M. Winslow and T. E. Clary, Norwood, U.S.A.) Oct. 10, 1882. Price 6d.

A spring and piston are combined with an ontar spring, by which the door when opened is automatically closed without slamming. A rack and locking device are used to retain the door partially open.

4,839. A. J. Boult, London. Sash-balances. (Com. by C. E. Bogle, U.S.A.) Oct. 11, 1882. Price 2d.

The end of the sash-cord is secured above, and the cord passes through a pulley on the sash and over the stationary pulley above, whereby only half the weight is required to balance the sash. (*Pro. Pro.*)

4,842. F. Garon, Southend. Locks or door-fastenings. Oct. 11, 1882. Price 2d.

The knob is fixed to the spindle without using a screwed spindle, a screw-collar, a screwed rose, a tap-screw, or other parts liable to get out of order. (*Pro. Pro.*)

4,875. E. Guattari, London. Device for preventing the surreptitious opening of doors and windows. Oct. 13, 1882. Price 6d.

A spike has two opposite rows of teeth and a cross handle. This spike is inserted in the crevice of the door, &c., and turned round, when the teeth bite the door and the door-post, and prevent the opening of the door.

4,936. P. M. Justice, London. Water or stench-trap connexions. (Com. by C. Lightbody, Brooklyn, U.S.A.) Oct. 17, 1882. Price 2d.

The sewer-traps are provided with a water-tank connected with the sealing bend of the trap. A float-valve controls the supply of water from this tank. (*Pro. Pro.*)

4,951. J. M. Hart, London. Automatic registering apparatus for closet doors. Oct. 18, 1882. Price 6d.

The opening of the door draws back a travelling arm, and allows a trigger to act on a ratchet wheel, by which the indicating dials are worked.

4,958. H. Fleming, Halifax. Adjustable coverings or casings for locks and latches. Oct. 18, 1882. Price 6d.

The case of the lock has a lid, which may be hinged thereto or slide on the body of the case.

4,980. H. McRuer, Glasgow. Cooking ranges. Oct. 19, 1882. Price 4d.

A vertical flue is arranged above the fire, by which the fumes of cooking are carried off. An adjustable grating is fitted to the front of this flue, the opening of which is regulated by a sliding-plate.

* Compiled by Hart & Co., Patent Agents, 186, Fleet-street.

ARTISANS' DWELLINGS.

SIR,—Seeing the large number of these dwellings now being erected, and having been an inmate of them for some considerable time, may I draw the attention of your readers to some faults of construction?

The first few days of my occupation I could not account for a musty smell which pervaded the place. The cause I soon found was the closet, which was flushed by the waste from the sink: the consequence being, that when the closet-lid was down the stench came up the waste-pipe, this pipe not being trapped. I got over this by keeping the closet-window constantly open, and taking away the closet-lid. If this caused a family of two such annoyance, what must it be where some of the suites are inhabited by a dozen?

The windows are divided into three parts, the bottom one a fixture, the top sash only running part the way down, so you cannot get at the outside to clean them, and you cannot clean them from the inside unless you have an extraordinarily long arm.

The entrances ought to be from a central courtyard, and not from the street, because they afford capital dormitories, "and something worse," for tramps. Landings ought to be large, and the stairs flyers, not winders. I once saw a coffin being taken down one of these steep winding staircases, and it made the undertaker's men use language ill-suited to the occasion.

BENJAMIN BOLT.

GREEK CHURCH, LONDON WALL.

SIR,—Passing by this church the other day I was perfectly astonished beyond measure to see that the work of destruction of this fine architectural work had already begun. Some of the interior was gone, and these church-wreckers had already knocked a hole in its fine-proportioned dome. The building is, sir, as you know, quite new, only having been built a few years ago.

Now, I would ask, where is this spirit of desecration and destruction to end? Not far from this spot is the grand old church, the remains of a stately pile of buildings,—Austin Friars Priory Church. It, I say, behoves all lovers of this fine specimen of Gothic architecture (this and St. Bartholemew the Great being the only specimens of the Priory Church left), to keep a sharp look out, else some fine morning they may be astonished to see a host of church-spoilers and breakers, taking off the roof and preparing to pull down the walls.

It is perfectly sad and distressing to those whose minds soar above pecuniary gain and stock-jobbing, building offices and warehouses, and promoting companies, to see this hateful spirit abounding within the City of London. But what else can we expect, when we see a bishop of the diocese, and those set in high authority, promoting a Bill now in Parliament to this end and purpose? It has given a direct encouragement to the profane and thoughtless in their evil work to destroy every edifice of religion, whether belonging to the Greeks, Churchmen, or Dissenters. One great image is being set up, and that—Mammon! I say, Sir, it is most grievous and sad.

R. PAYNE.

TIMBER STAGES AND THE BUILDING ACT.

MR. COBBETT'S TIMBER STAGE, DRUMMOND STREET.

SIR,—As I saw no reporters present when this case was before the magistrates at the Marylebone Police-court on the 23rd ult., I am, perhaps, right in assuming that the report contained in the *Builder* of the 2nd inst. was communicated. I need only disclaim generally some of the evidence attributed to me; but as an accurate statement of the essential facts of these cases is always desirable, I venture to ask you kindly to insert the following.

The stage as erected covers a space of ground about 22 ft. by 28 ft., and is about 17 ft. 6 in. high. It consists of nine upright posts, in three rows of three each. Stout girders in both directions unite the posts at the top. The posts and girders are about 13 in. square, all mortised and tenoned, and farther secured by dog-irons, and the structure is stiffened by substantial braces and cross-braces. The posts are tenoned to stone bases mortised for them, and which rest on deep concrete foundations under the ground level. Over the girders are set on edge, but not yet nailed, joists, 11 in. by 3 in., about 12 in. apart.

Prior to commencing the work, application was

made to the Metropolitan Board to sanction a similar structure; but with the addition of boarding and metal work on the flat top, but the application was refused.

These are all the facts pertinent to the question, which I understand to be whether this is a "building" or not. Lawyers are accustomed to add "within the meaning of the Act." The Act, however, appears to me to have but one meaning, and that is the common-sense grammatical meaning. A "building," I take it, is anything built, or, as Mr. Justice Byles has said, "some structure or erection of considerable size, intended to be permanent, or at least to last for some time, whether let into the ground or not."

I accept this description, and I find in the Building Act the following "buildings" mentioned for the purpose of exempting them, viz., "bridges," "piers," "jetties," and "walls" of various kinds, as well as houses. There appears a general tendency to confound a "building" with a "house," and to say that a structure is not a building unless it has a roof; but I believe that both "building" and "house" are derived from the same Saxon, and while the former includes every "structure," the latter means a building with a roof. Thus we have "dwelling-house," "coach-house," "summer-house," "fowl-house," "out-house," "pent-house," and so forth.

The Building Act declares all "buildings" of whatever kind, except those specially exempted, to be subject to it. My own practice, equally with that of my predecessor (going back more than fifty years, and hitherto undisputed as far as I know) has been to treat the structures in question as "buildings." I am not able to understand upon what principle it has been decided that the one in question is not so; but I take it that it is a question of fact as to which there is no appeal; nor, if it were otherwise, do I consider it my duty to carry a case to the Superior Court. The decision, therefore, binds this particular case only; but it is, of course, embarrassing as regards future practice. I have a case now where a saw-mill proprietor has erected, in a most crowded locality, a wooden annexe to his saw-mill, with a boarded flat over it; and on my remonstrance has (guided by this decision) simply removed the boarding. His machinery projects from his mill into the annexe, and he will, no doubt, pile deals on the top so as to keep out the weather, and thus defy the provisions for safety from fire which the Act was intended to insure, and, as I still think, when rightly interpreted, does insure.

If this decision be correct, what an anomaly we have in an Act so jealous of fire as to disallow in a walled building a scrap of wood nearer than 4 in. to the face of the walls, while a structure of the most inflammable kind, heaped with goods equally inflammable and stacked for drying purposes in the most dangerous manner, may be erected close by, with chimneys all round delivering their smoke and heat,—if not flame,—right amongst the wood.

FREDERICK WALLEN,
District Surveyor for West St. Pancras.

FLUES.

SIR,—Observing some remarks in a recent number of the *Builder* respecting smoke-flues, advocating 9 in. by 9 in. as being usually quite sufficient, I beg to call attention to the practice of some of the foremost architects in Canada in this particular. They usually make their flues circular in section, and about 9 in. in diameter; thus increasing the average thickness of the outer casing, and at the same time accommodating the section of the flue to the natural form of a column of ascending vapour. As one who used this method in several large buildings in Toronto, I can vouch for its good results. The practice is to use wooden moulds about 2 ft. in length, round which the brickwork is carefully built. The moulds are slightly tapered, so that they can be easily withdrawn.

E. F. H.

CHIMNEYS.

SIR,—The size for chimneys given in yours lately cannot be accepted without considerable qualification. In the time of Mr. Cubitt, when Belgrave-square, &c., were built, the grate in vogue was Stephens's patent,—a very contracted one with sharp draught. Since then, open dog-grates with tiled sides have become the fashion, and now open grates with bobs and tiles. These require chimneys of the old dimensions, and so do nearly all kitchen fireplaces.

FREDERICK EDWARDS.

The Whalley Viaduct. — Improvements which will cost 20,000*l.* have been commenced at the great railway viaduct at Whalley, the alleged insecurity of which has been the theme of much comment. The alterations will consist of the re-arching of the top of the viaduct with bricks, and the asphalting of the surface. The work will take twelve months to complete.

CHURCH-BUILDING NEWS.

Barnstaple.—The parish church of SS. Peter and Paul, Barnstaple, was re-opened on the 24th ult., after restoration,—a work which was commenced by the late Sir Gilbert Scott in 1866. The work then done comprised the restoration of the south aisle and strengthening the timbered spire, which is covered with lead. A few years later the chancel and north and south chancel aisles were completed. The work just finished includes the nave, north aisle, and north transept. The old pews and galleries have been cleared out, and the large stone columns and wooden beams have been removed. The oak roofs, which were covered up with lath and plaster, have been cleared off, and the fine old oak timbers, with the beautiful carved bosses, exposed to view. The timbers, where necessary, have been spliced and strengthened, and in some cases new oak plates have been fixed. The transept roof is entirely new, with carved bosses at the intersections, and stone corbels to support the plates. These roofs have been covered with new oak boards and felt, and covered with new slates. A new stone ridge and two stone crosses have been fixed on the gables of the north aisle and transept. The apparatus for warming the church, which has been supplied by Messrs. Haden & Son, of Trowbridge, is a combined system of warm air and hot water, and appears to be very efficient. An opening has been cut in the north chancel aisle to allow the organ to be brought out some 7 ft. for the purpose of bringing the sound more into the church. The instrument has been taken down and cleaned, and four new stops have been added; other improvements also having been effected, and a new oak case, of elaborate design, has been supplied by Mr. J. O. Scott. This work has been carried out by Mr. Vowles, of Bristol. A new choir vestry has been arranged behind the organ, and the seats have been re-arranged in this aisle. The bays of the new arcade are particularly graceful, the arches springing from ornamental stone corbels carved by Mr. Hems, of Exeter. The old Jacobean pulpit which had little about it to make it valuable, has given place to one in Bath stone. The chancel stalls and fittings generally are of oak, and were made some fourteen or fifteen years ago. They were carved by Mr. Harry Hems, who has, from Mr. Scott's designs, just made handsome sedilia, bishop's seat, and altar-rails, all in pollard oak. The floor has been laid with encaustic tiles, the table has been restored and surmounted by a rich marble slab. This work has been carried out by Mr. Youings, of Barnstaple. Two pendants have been supplied by Mr. Skidmore, of Coventry, for the Sanctuary. The brass rail is supplied by Messrs. Potter, of London. The whole of the nave has been fitted with new oak seats, similar to those of the south aisle. The old monumental slabs have been re-laid in the middle passage, as nearly as possible in their original places, with a tile border about 15 in. wide on each side. The wooden floors have been well ventilated from the outside, and the space under covered with a layer of concrete and smith's ashes. The whole of this work has been done under the direction of Mr. J. O. Scott, architect, of London, and superintended by Mr. H. Roome, his clerk of works, London; Mr. J. Davy, of Barnstaple, being the general contractor. Mr. Pickard, of the same town, has done the carving to the pulpit and Mayor's seat and the bosses to the transept roof.

Mucklestone.—The parish church of Mucklestone, an edifice of considerable antiquity, is undergoing complete restoration. The church was built in the thirteenth century, and about a hundred years ago was enlarged; but its accommodation is insufficient to meet the requirements of the present day. The plans of the thirteenth century having been discovered, the building is being restored after the original design, Lord Crewe, through whose exertions chiefly the scheme is being carried out, giving 1,000*l.* towards the cost of the work.

Knowle.—On the 4th inst., after several postponements, the consecration of the Church of the Holy Nativity, Knowle, took place, and with the service was combined the induction of the Hon. and Rev. Hanbury Tracy as vicar. It is now sixteen years since the building of which the present structure is the outcome was erected. The first church was a wooden one. In 1870 the foundation-stone of a permanent structure was laid, the designs being furnished by Messrs. Ponton & Gough. The plans provided for a church in the Byzantine style of architecture. The chancel and two bays of the nave were opened for service in 1871. The services were during this time carried on in the wooden structure, and this was not removed till sufficient of the permanent nave had been built round it to take its place. The main walls of the church are of red and white Bridgwater bricks; the walls are unplastered, and are on the interior cased to the height of about 4 ft. with encaustic tiles. The usual nave arcade is so arranged that the pillars are at a short distance from the walls; narrow side-aisles are thus formed, so that when the complete design is carried out the whole area of the nave will be unobstructed. The apse is semicircular, with a domed roof of 30 ft. in diameter, constructed of cement and concrete in accordance with the style. The nave walls have yet to be carried to the height of those connected with the chancel, and if the original plans are carried out a tower or spire will be erected. The total outlay on the building, which seats about 600 persons, has been 6,000*l.*, besides about 500*l.* for the organ.

DISSENTING CHURCH-BUILDING NEWS.

Clevedon (Somerset).—On the 6th inst. a new chapel for the Wesleyan Methodist denomination was opened at Clevedon. The buildings are Early English in design. The main walls are of Pennant stone, with Bath stone dressings and strings. The windows are of similar stone, and have traceried heads. The roofs are covered with slate, and a lofty ventilating-turret is placed in a central position on the ridge. The architect is Mr. Herbert J. Jones, of Wellington-chambers, Bridge-street, Bristol, under whose direction and supervision the works have been carried out. The chapel will seat 500 persons. The whole of the works have been executed by Mr. W. A. Green, builder, of Clevedon, the amount of the contract being about 2,700*l.* The committee intend erecting a manse on a portion of the adjoining site, for which designs have been prepared by the architect. The total cost, in order to carry out the entire scheme, will be over 4,000*l.*

Helston.—It has been resolved to erect a new Wesleyan chapel here, at a cost of 2,500*l.*

Streatham.—The new Wesleyan Chapel here has been opened for service. It occupies a commanding site, facing the main road to Croydon and at the corner of Stanhope-road, close to Streatham railway station. It is built of coarse Kentish rag stone with Bath stone dressings, in the Early English style. At the angle of the building it is intended to erect a tower and spire 160 ft. high, the foundations of which are already in. The chapel is entered from the front by a wide flight of stone steps, divided by a landing into two divisions. These deliver on to a wide lobby, giving access by folding doors to an inner vestibule, and then to the chapel proper. The seats are divided by a wide central aisle 5 ft. wide, and two side aisles. The size of the chapel is 80 ft. by 52 ft., and there is also a chancel of aspidal form, 33 ft. deep and 23 ft. wide; on either side there will be an organ-chamber and vestries, but these are omitted for the present, as are also side galleries, but as sittings are provided on the ground floor for over 700, it is hoped that they may not be added at all. There are small transepts at the chancel end, the seats of which face the centre aisle; all are of the best deal, stained and varnished. The chancel has choir stalls of suitable design each side. The floor is of Minton's tiles, and it is raised two steps above the floor of the chapel, and the communion space one step above these again. The architect is Mr. Charles Bell, of New Broad-street, City. The builders are Messrs. J. & C. Bowyer, of Upper Norwood, and the total cost of the works when completed will be upwards of 8,000*l.*

Sig. Alexander Castellani, the well-known antiquary, died on the 8th inst., at Portici, near Naples, aged fifty-nine. He took an active part in the revolutionary movement in Rome in 1848. Deeply implicated in the conspiracy of 1852, he was imprisoned in the Castle of St. Angelo, but, successfully feigning madness, was liberated, and sent out of the Pontifical States. From that time he devoted himself to antiquarian pursuits, and chiefly to making collections, in which he dealt largely.

NOVELTY IN THE TYRES OF CARRIAGE-WHEELS.

A NEW description of wheel-tyre has been patented by Messrs. Merryweather & Sons, fire-engine makers, London. The object of this tyre is to prevent the skidding of carriage-wheels when travelling over roadways where tramways exist. The tyre is notched on both edges, and as this overhangs the rim of the wheel it effectually crosses and re-crosses the tram-line without twisting or skidding.

An experiment with a fire-engine having the improved tyres was tried near the London Hospital, where the tramway has been in a bad state owing to some underground work, and the result proved most satisfactory. It is anticipated that carriages, hansoms, mail-carts, and other quick-running vehicles, will save at least half their annual cost in the repairs of wheels and axles by the use of the new tyres.

Books.

ILLUSTRATED HANDBOOKS OF PRACTICAL ART.

Art-work in Gold and Silver, and *Art-work in Porcelain*. By HENRY B. WHEATLEY, F.S.A., and PHILIP H. DELAMOTTE. London: Sampson Low & Co. 1883.

THE number of various "Handbooks" of art is so great at present that we almost stand in need of a classification of the Handbooks themselves. The series of which we have two new numbers now before us, bear the names of Mr. H. B. Wheatley and Mr. P. H. Delamotte on the title-page, the first-named gentleman being assistant-secretary to the Society of Arts, the latter professor of drawing and painting at King's College; but, as in the case of some other series of handbooks, we are left in some doubt in regard to the real authorship, as we observe that the "editor's preface" is signed with the initials of the two gentlemen whose names are on the title-page, so that it is not very clear whether they are occupying the position of editors or authors.

The two numbers of the series now before us deal with the subjects of "Art-work in Gold and Silver (Modern)," and "Art-work in Porcelain." By the phrase "modern," in application to the first-named subject, is intended the period from the Renaissance to the present day, commencing with some account of the life and work of Cellini. In this one is glad to find a little variation from the constant sing-song of praise of Cellini, and a recognition of the fact that his taste was no more unimpeachable than his character, and that, in fact, the two had a certain bearing on each other. A highly-elaborate design for a jug, given on page 66,* gives, it is observed, "a good idea of one class of Cellini's work. It is over-ornamented, and such as might have been expected from the character of the man. He was a blusterer with but little admiration for any work but his own. He had no compunction in melting down the fine productions of his predecessors; still, he was a great artist, and his influence was immense." Had he been a man of less power, it might, perhaps, have been said that his beauties were his own, and the faults those of his day; but he was really too strong and influential a man to be regarded in that way, and probably had some considerable influence on the taste of the day, or at least went his own way without being entirely dependent on it. The fault in many of his sumptuous designs is that which is exhibited in the illustration referred to; they show a want of clean lines and of logical connexion of the various parts of the design; they are rich, but what may be called lumpy in effect, and the human figure is tortured into the designs, in the way of handles and stems, in a manner quite at variance with any true feeling for the dignity and importance of the figure when used as an adjunct to, or a heightener of, decorative design. The figure, in work of this kind, should be introduced to add a higher expression to the design; it should be framed amid the inferior portions of his work, as the most precious portion of the design, the central interest of it. But Cellini, like too many modern designers and silversmiths, who are more able to reproduce his want of taste than his power and brilliancy of treatment, introduces the figure often as if merely to show into what contortions he can twist it to serve as a handle or for some other practical purpose, and how cleverly he can model in these unmeaning and unnatural positions. And when the figure is not maltreated in this way, the outlines of the design of Cellini are too often ragged and bulbous, for no ostensible reason except the desire to produce what he seems to have regarded as a rich and sumptuous effect, but which is obtained at the expense of pure form and of truthfulness of design. And unfortunately the historical influence of Cellini and his followers has impressed this kind of idea of taste upon the modern silversmith's mind to far too great an extent. We have often had occasion to observe this in looking at such collections as the designs made for the prizes given by the Goldsmiths' Company. It is useful to compare this class of design with the specimens of German silversmiths' work given in the Handbook. As a general rule, German work of this class has not had at all the repute which its qualities deserve; though less sumptuous than Italian work, it generally shows cleaner line and greater purity of form, and a more consistent idea running through the whole. The English work of the earlier Renaissance period has on the whole less character than either the Italian or German. It escapes mostly the faults of exuberance of the Italian renaissance school, but rather apparently by reason of a more tame system of modelling than through any definitely-accepted principle; and it seldom attains to the combined elegance and solidity of character which distinguish the best German work of that period.

The English work of the seventeenth century, however, loses some of the faults of that of the previous period, and is in many examples remarkable for really fine design of a severer type than that of the preceding period. The "Poison-cup," belonging to Clare College, which is engraved on page 84, is a good example of this, though a little weak in the design of the handle, which, moreover, can hardly be comfortable for the hand,—one of the first desiderata of a handle, too often neglected. Another example is the rosewater dish and ewer belonging to St. John's College, Cambridge (p. 88), dating from the latter half of the seventeenth century. Here we have a great reaction from the florid style of the sixteenth-century school; in this school of design the form is first considered, and the ornament subordinated to it, and kept within its lines,—indeed, in the case of the dish, severity of line is carried a little too far, and some breaking of the lines into curves would have relieved the stiffness of the form. On the other hand, the form of the ewer is most elegant and well considered, and the object would rank as artistic for its form alone, independently of added ornament; and if we cannot quite say that this ought always to be the case, it is at all events a very great addition to the artistic value of the object. A still finer example of rich ornament confined within the boundaries of a symmetrical form is the Flemish salver, engraved (p. 90) from an example in the South Kensington Museum. One or two of the Dutch examples given are also very admirable in balance of style.

We are glad to observe also that the vulgar and pretentious style of the eighteenth century in France is critically condemned in the succeeding chapter. The extra interest aroused lately in this school of work by the Jones Collection at South Kensington has tended to stimulate a taste, too prevalent already, for this gorgeous, but, nevertheless, vulgar style of design, which has, unfortunately, left its trace only too much upon French silversmiths' work of the present day, much of which is very florid and exuberant in style. On the other hand, there is one great living designer and worker in precious metal,—Zuloaga, of Madrid,—whose art may compare with anything in silversmith's work that has ever been done. It is Moresque, but with a manner of his own, and a combination of chasing and damascening peculiar to himself, and exceedingly rich and beautiful in effect. One example of his work is engraved in the Handbook, but not on a sufficiently large scale to do justice to the detail. A good deal of Zuloaga's work was in some of the International Exhibitions at Kensington a few years ago; we called attention to its superior character at the time. The Handbook contains a chapter on gold and enamel work also, with some interesting illustrations.

The companion volume on porcelain art-manufacture has the same kind of merit as that on gold and silver work; it includes good critical remarks, a sufficient account of the subject, and a number of very well selected representative illustrations, not executed in colour (of which the price at which the volumes are issued would not allow), except the frontis-piece, which as a piece of colour is not in the highest taste: it is a modern Sèvres vase, of the blue and gold order of treatment so common in Sèvres work, and which we always regard as a common-place combination, showy rather than artistic. Taste in colour may perhaps be allowed to vary more with climate and social habits than taste in form; and it may be that the present tendency of taste in colour (among those English people who have any such taste at all) disposes one to unduly depreciate these brilliant and rather raw effects of blue or rose porcelain and gold; but it is certainly difficult to understand a period when the most cultivated and fastidious persons regarded this kind of combination as one of the most desirable and enjoyable decorative effects. The form and details of the modern specimen engraved here, are, however, more refined than is the case with many of the examples of the Louis Quinze period.

Both Handbooks are useful and well got up, and contain much information in small compass.

* The numbers of paging and illustrations appear to run, in both books, in continuation of a previous Handbook,—one commences at page 73, the other page 65; but there is no note to indicate from which previous numbers they are continued, which is rather an oversight.

Miscellanea.

Tewkesbury Abbey and the Abbey House.—The Earl of Carnarvon, as President of the Society of Antiquaries of London, has sent for publication the annexed reply to a memorial laid before the Council by the Tewkesbury Abbey Restoration Committee, urging the importance of securing for the Abbey Church land and buildings which formed part of the ancient monastery, but which have long been in private hands. "Resolution of the Council of the Society of Antiquaries of London, May 30, 1883, in reply to a memorial of the Tewkesbury Abbey Restoration Committee:—'The President and Council of the Society of Antiquaries of London rejoice to learn that an opportunity, which may not occur again for many years, now presents itself for securing to the Abbey Church of Tewkesbury the residence known as the "Abbey House," standing in its own grounds on land which embraces the site of old monastic buildings, the house itself being a portion of those buildings. This property is about to be sold under the will of the late proprietor, and the Council earnestly hope that funds may be forthcoming to purchase at least the portions immediately adjacent to the church, so as to place these valuable architectural and archæological features of the Abbey in a state of security, and remove what has often been felt to be a great ecclesiastical incongruity. The publication by the Society, in 1821, of a series of large drawings and plans of Tewkesbury in the *Vetusta Monumenta* is sufficient indication of the interest which the society has long taken in that venerable building, and which now induces them to make this appeal on behalf of those adjacent remains, which have unhappily been so long alienated from the edifice of which they at one time formed an integral part, and to which they may now be restored.'"—The memorial referred to is said to have emanated from the National Committee in London for the restoration of the Abbey, not the local committee, who are, it is stated, displeased at the form in which it has appeared.

Ground Leases.—In reply to Sir Henry Wolff, in the House of Commons, who asked the First Lord of the Treasury if Her Majesty's Government would consent to an inquiry, either by a Royal Commission or by a Committee of the House, into the present system of ground leases in towns, whether of houses or of land for building and occupation,—Mr. Gladstone said this question has not been discussed in the House, and her Majesty's Government are not aware of a state of facts which would enable them to think it right to move for an inquiry.

Death of a "Steeplejack."—A steeplejack named George Williamson, of Manchester, who fell from the St. Alkmond's Steeple, Shrewsbury, on the 8th inst., died at Salop Infirmary at half-past two on Saturday morning. He never recovered consciousness, and the injuries he received were of a most shocking character. Deceased was married, and leaves five children. At the inquest a verdict of "Accidental Death" was returned.

Unhealthy Dwellings.—In his last report, Dr. Liddle, the Medical Officer of Health of Whitechapel, draws attention to some newly-erected dwellings, partly in Commercial-street and partly in Shepherd-street, Spitalfields, the block having seventy-three rooms for thirty-nine separate families. There are 151 persons,—fifty-nine adults and ninety-two children,—living in fifty-three of the rooms, some of which, the doctor says, "are totally unfit for human habitation." There was no light in them even on a bright day, and "the sanitary arrangements" were "very unsatisfactory." There is no yard or open space to a building intended for more than 200 people, and Dr. Liddle thinks that this case exemplifies, in a striking manner, the necessity of such legislative enactment as shall prevent the erection of unhealthy dwellings. Some of the rooms have been closed by order of the authorities. Another building of the same character is described as "Plough-street-buildings," Whitechapel, having in one block eighty-three rooms, of which seventy-nine were occupied by 178 persons, ninety-one of whom were adults and eighty-seven children, "the lower order of foreigners, and very dirty."

Rebuilding of the Temple at Freemasons' Hall, Great Queen-street.—The paragraph in our last issue finished abruptly without completing the report of what took place in a very large and important meeting of the Grand Lodge. We are now informed that the report of the Board of General Purposes, advising the execution of certain work under the Grand Superintendent of Works, at a cost of 35,000*l.* over the insurance money, was not approved, and after a very long discussion, it was decided to appoint a joint building committee, four members representing the Board, and four representing Grand Lodge. The members duly proposed and seconded were Messrs. John Gibson, R. W. Stewart, F. Robinson, Sampson Pierce, G. Burt, E. Griggs, Henry Lovegrove, W. Smallpeice, and J. L. Thomas. The Earl of Carnarvon, Pro-Grand Master, declared the election to be in favour of Messrs. J. Gibson, R. W. Stewart, G. Burt, and J. L. Thomas, to represent Grand Lodge. The committee will obtain plans and estimates to submit to Grand Lodge.

Memorials of the Dead.—The second annual meeting of the National Society for Preserving the Memorials of the Dead was held on the 7th inst., at the rooms of the Society of Arts in the Adelphi, Dr. Trollope, the Bishop Suffragan of Nottingham, in the chair. The report, which was read by the secretary, stated that the number of members had steadily increased, and now reached nearly 500. It recorded the names of a variety of parishes in which the society had taken action, with more or less success, to stay the ruthless destruction of monuments. It also stated that the inscription on the monument of one person known to fame, Mrs. Bracegirdle, had been rescued from oblivion and re-cut, through the society's agency, in the cloisters of Westminster Abbey. Resolutions were proposed, seconded, and carried, affirming the usefulness of the society to the public.

A New Public Library for Rochdale.—On the 7th inst., at the monthly meeting of the Rochdale Town Council, presided over by Mr. Alderman Baron, the ex-Mayor, Mr. Councillor Fishwick, proposed that a public library should be erected on a site of ground at Willow Bank, nearly fronting the Town-hall, at a cost of 4,500*l.* Rooms on the third story of the Town-hall, previous to the fire, were used for a reading-room and library, but they were so inaccessible on account of their height, and were considered so dangerous on account of the weight of the books, that the Council for some time past have been discussing the advisability of erecting new premises. The result of the discussion was a decision to erect a spacious stone building of a single story, the cost of which is not to exceed 4,500*l.*

Bequests.—The will (dated Jan. 8, 1883) with two codicils (dated Feb. 9 and 26 following), of Mr. Charles Edward Barlow, late of The Lawn, Camden-park, Tunbridge-wells, who died on March 27 last, has been proved by Mrs. Julia Barlow, the widow, and Frederick Last, the executors, the personal estate amounting to over 28,000*l.* The testator makes bequests to the Builders' Benevolent Institution and the Architects' Benevolent Society. Any sums given by him in his lifetime to these charities are to be taken as on account of these bequests.

Pictures for South Kensington.—In the House of Commons, on the 7th inst., Mr. Dillwyn asked the Vice-President of the Committee of Council on Education whether purchases of pictures for the South Kensington Museum had been recently made; and, if so, whether it was intended to establish at that institution a second national collection of pictures in addition to that of the National Gallery; and, if such were the case, by whose recommendation and on whose judgment the purchases of pictures for South Kensington had been made.——Mr. Mundella said purchases of this nature had been made for South Kensington in accordance with a practice of many years' standing, but the sum so spent did not exceed last year 400*l.* The purchases were always made on the recommendation of the director of art.——Mr. Dillwyn said he should call attention to the matter when the vote for South Kensington was taken.

The Value of Property in Somerset and Wilts.—Mr. George Nicholls, of Bristol, has just conducted one of the most important sales of property which has taken place in Bristol for many years past, having sold twenty-one lots out of twenty-three offered, the sum realised being 17,265*l.*, exclusive of amounts for timber. One lot, a farm of 30 a. 3 r. 2 p. in extent, was sold for 3,200*l.*; and another farm, of 37 acres, at Churchill, was disposed of for 3,500*l.*; whilst a third farm, of 52 acres, was knocked down for 4,550*l.* At Devizes, Mr. Nicholls also sold this week a farm of 45 acres for 4,500*l.*; and Park Dale House, Devizes, with 8 acres of land attached, for 2,180*l.* He likewise disposed of 13 acres of pasture and arable land for 1,300*l.*

The Ashburnham Manuscripts.—We regret very much to hear that the negotiations between the Trustees of the British Museum and the Government on the subject of the Ashburnham manuscripts have not concluded satisfactorily. The Trustees recommended the purchase of the Stowe and Appendix sections for 90,000*l.* The Government declined, and offered 70,000*l.* Lord Ashburnham would not abate his price. In order to make a last effort the Trustees proposed to make up the 20,000*l.* by reductions in the Museum estimates for five years. The Government decline, and refuse to give more than 70,000*l.* The Treasury letter, refusing more than 70,000*l.*, was before the Trustees at their meeting on Saturday last.

Asbestos Goods.—Mr. John Bell has published an illustrated catalogue of Asbestos Goods which will be found valuable, and should be circulated. There are many ways in which asbestos may be usefully employed, and the supposed costliness of it serves to deter persons from using it. Mr. Bell's pamphlet will serve to dispel this erroneous impression.

TENDERS.

For new boys' and girls' schools at Norwood, for the Guardians of the Lambeth Union. Mr. Henry E. Coe, architect:

Priestly & Gurney	£55,621	0	0
Mowlem & Co.	54,390	0	0
J. W. Horbes	53,600	0	0
Earnell & Sons	53,300	0	0
W. Smith	53,249	0	0
J. Longley	53,130	0	0
W. Donoghue	52,162	0	0
Nightingale	52,230	0	0
Booth Bros.	51,400	0	0
W. Oldrey	50,987	0	0
G. Shaw	49,956	0	0
Bowyer	49,673	0	0
W. Shepherd	49,615	0	0
Kirk & Randall	48,867	0	0
C. Wall	47,376	0	0
Lucas & Sons	47,000	0	0

For enlargement of Oldfield-road Board School, Stoke Newington. Mr. E. R. Robson, architect:—

L. H. & R. Roberts	£2,895	0	0
E. Lawrence	2,774	0	0
W. T. Nibbett	2,748	0	0
T. Boyce	2,683	0	0
W. Shurmur	2,646	0	0
W. Oldrey	2,600	0	0
C. Goad	2,570	0	0
C. Wall	2,449	0	0

For building new warehouses and offices, on the site of Shaw & Overman's Almshouses, near St. Saviour's Church, Southwark, for the Managers of the Humphery Estates. Mr. George A. Dunnage, architect, 5, John-street, Adelphi. Quantities by Messrs. Linsdell & Gilfard, Gresham-buildings, Basinghall-street:—

Greenwood	£4,009	0	0
Larke & Son	3,590	0	0
S. Chafen	3,530	0	0
T. H. Adamson & Sons	3,457	0	0
W. Bangs & Co.	3,385	0	0
Higgs & Hill (accepted)	3,284	0	0

For the erection of four houses and shops in Brixton-road, for Mr. Earle Bird. Messrs. Fowler & Hill, architects:—

Pack Bros. (accepted)	£5,300	0	0

For road and sewer works, on the Sands-end Estate Fulham. Mr. Charles Belton, surveyor:—

Wainwright & Co.	£3,850	0	0
E. J. Pound	3,774	0	0
Kellett & Bentley	3,415	0	0
W. Adamson	3,379	0	0
F. & W. Iles	3,075	0	0
W. Nicholls	2,975	0	0
C. Killingback	2,847	0	0
Nowell & Robson	2,770	0	0
James Smith	2,769	0	0
John Bell	2,506	0	0
H. S. Pollard	2,082	0	0
S. & J. Saunders (accepted)	2,050	0	0
William Owen	1,979	9	6

For dwelling-house and stores at East Croydon Station, for Messrs. Fremlin Bros., Maidstone. Mr. M. L. Caley, architect, Tunbridge Wells:—

W. & H. Castle	£4,448	0	0
Clements & Wallis	3,900	0	0
Simonds	3,583	0	0
Maides & Harper	3,530	0	0
H. Stiff	3,518	0	0
R. Avard	3,516	0	0
Smith & Bulled	3,494	0	0
A. Bullock	3,473	0	0
E. Vaughan	3,418	0	0
R. Ward	3,414	0	0
J. Smith & Sons	3,174	0	0
W. Holt	3,170	0	0
J. Arney	3,147	0	0
La Gassick & Co.	3,100	0	0
S. Page	2,960	0	0

For new roads and surface-water drains, &c., on the Red Oaks Estate, Theydon Bois, Essex, for Mr. George Warman:—

Wilson, Walthamstow	£477	0	0
Peill & Sons, Bromley	465	0	0
Pizzey, Horsecy	462	0	0
Bloomfield, Tottenham	461	0	0
Keeble, Regent's Park	456	0	0
Harris, Camberwell	453	0	0
Jackson, Leyton (accepted)	439	0	0

For Teddington Local Board surface water drainage:—

H. Smith	£2,500	0	0
Jas. Taylor	2,418	13	5
W. Wood	2,330	0	0
J. Piller	1,990	0	0
J. Bell	1,918	0	0
J. Young & Co.	1,913	13	11
S. J. Saunders & Co.	1,875	15	9
Cowdery & Co.	1,781	5	7
Trimmer & Co.	1,763	0	0
Carter	1,741	18	1
Beadle Bros.	1,624	0	0
Harris (accepted)	1,570	0	0

For rebuilding premises, 114 and 115, Holborn. Mr. F. Chambers, architect:—

Wagstaff	£4,541	0	0
W. Brass	4,365	0	0
W. Shurmur	4,320	0	0
Colls & Co.	4,296	0	0
Ashby & Horner	4,257	0	0
Greenwood	4,213	0	0
Holland & Hannen	4,176	0	0
J. Grover	4,173	0	0
Conder	4,173	0	0

For alterations and additions to the Britannia public-house, Bow Common-lane. Mr. C. A. Legg, architect:—

C. Marr	£997	0	0
W. Shurmur	981	0	0
J. Anley	940	0	0
Parrish & Hawker	875	0	0
J. Walker	829	0	0

For alterations and additions to 17 and 18, Water-gate, Grantham, Lincolnshire. Mr. W. E. Brown, 6, Poultry, architect. Quantities by the architect:—

G. Hewitt, Leicester	£2,350	0	0
Rudd & Sons, Grantham	2,287	0	0
Wartnaby & Sons	2,150	0	0
R. Hockley	2,116	0	0

For new general offices, for the Consett Iron Company, Limited, Durham. Mr. W. Lister Newcombe, Newcastle-upon-Tyne, architect:—

Humphrey Atkinson (accepted) £6,339 5 0

For the erection of a manse, Bellingham, Northumberland. Mr. Wm. Lister Newcombe, Newcastle upon-Tyne, architect:—

Robson & Tremble (accepted).

For additions and alterations to the Northern Counties Institution for the Deaf and Dumb, Newcastle-upon-Tyne. Mr. Wm. Lister Newcombe, architect:—

L. Gaby (accepted).

For additions and alterations to St. George's Church Hyde. Mr. James Hunt, architect, 4, Warren-street Stockport. Quantities by the architect:—

Graham & Sons, Manchester	£1,700	0	0
Statham & Sons, Pendleton	1,652	0	0
Wharam, Hyde	1,558	13	0
Simpson, Hyde	1,510	0	0
Haughton, Godley	1,340	0	0
Robinson, Hyde (accepted)	1,245	0	0

For painting, paperhanging, &c., at Ford-croft, St. Mary Cray, Kent. Mr. W. R. Ansell, architect, Mansion House-chambers, 11, Queen Victoria-street:—

G. W. Stewart, Walworth (accepted)..£203 0 0

For necessary labour in sea defence works, for the Worthing Board of Works. Mr. Walter Horne, surveyor:—

James Page, Shoreham (accepted).

For the execution of certain works of house drainage (Contract No. 10), in the township of Urmston, for the Barton Sanitary Authority, Urmston. Mr. John Price, surveyor:—

Williams & Whittaker, Flixton (accepted).

For hospital at Hangleton, for the Hove Commissioners. Mr. E. B. Ellice Clark, engineer and surveyor. Quantities by Mr. B. H. Nunn :—

	Hospital.	Boundary Walls.
Botting, Brighton	£5,450 0 0	£1,425 0 0
Sawyer, Clapham	5,175 0 0	1,543 0 0
J. Parsons & Son, Hove	5,274 14 0	1,321 2 8
Chappell, Pimlico	5,048 0 0	1,290 0 0
Anscombe, Brighton	5,021 14 2	1,283 13 10
Bruton, Brighton	4,850 0 0	1,400 0 0
Peters,* Horsham	4,750 0 0	1,055 0 0
Longley, Crawley	4,685 0 0	1,296 0 0
J. Stenning, Brighton	4,650 0 0	920 0 0

* Accepted.

For new conservatory at 7, Castlenau, Barnes. Mr. G. Edwards, architect :—
Scharien & Williams (accepted).

For erecting new school in Anson-road, Tufnell Park, for Mr. A. Bayles. Mr. Geo. Truefitt, architect :—
Thomas Watson, Dulwich (accepted)... £509 0 0

For painting, whitewashing, repairs, &c., at the St. George's Union Infirmary, for the Guardians of the Poor of the St. George's Union. Messrs. H. Saxon Snell & Sons, architects :—

	Interior.	Exterior.
A. Pemberton	£730 0 0	£370 0 0 !
F. Stevenson	555 0 0	445 0 0
Abrahams Bros.	not given	405 0 0
Chas. Wall	410 0 0	488 0 0
Sheerman & Son	368 12 0	487 0 0
C. F. Kearley	323 0 0	479 0 0
M. & M. Fleming*	310 0 0	310 0 0 !

* Accepted.

For the erection of St. Marylebone Nursing Institute, Notting-hill. Messrs. H. Saxon Snell & Sons, architects :—

Wm. Brass	£9,789 0 0
E. Toms	9,593 0 0
M. Manley	9,581 0 0
Mowlem & Co.	9,434 0 0
W. Oldrey	9,271 0 0
Wall Bros. (accepted)	8,993 0 0

For pulling down and rebuilding the Princess of Wales public-house, Grove-street, Deptford (exclusive of cabinet, counter, pewtering, and gasfittings, &c.), for Mr. Frank Barnes. Mr. Henry Roberts, architect, 113, Lewisham-road :—

W. Shurmur	£2,286 0 0
Mark Redman	2,197 0 0
H. L. Holloway	2,147 0 0
Hubble & Trott, Deptford (accepted)	1,785 0 0

For alterations and additions to Devonshire Villa at Brondesbury. Mr. Walter Graves, architect :—

Williams & Son	£516 0 0
Ward & Lamble	397 0 0
J. O. Richardson (accepted)	300 0 0

For detached residence, Hornsey-lane. Mr. Walter Graves, architect :—

C. Goad	£3,260 0 0
Williams & Son	3,167 0 0
G. Green	2,950 0 0
Ward & Lamble (accepted)	2,753 0 0

For two offices, adjoining Willesden-green Station, for the Metropolitan Railway Company. Mr. Walter Graves, architect :—

Williams & Son	£353 0 0
Ward & Lamble	342 10 0

For stable, Cairns-roads, S.W., for Mr. G. J. Brown. Mr. G. T. Poole, 81, Chancery-lane, architect :—

Ayres	£375 0 0 !
Richens & Mount	320 0 0
Sugden & Wood	295 0 0
Matthias	272 10 0
Higgatt & Brown	252 10 0
Hall	247 0 0
Pyte & Co.	240 0 0
Still	230 0 0
Warr	219 0 0
Riddell	209 15 0
Dean	200 0 0
Howard	194 4 0
Aldridge & Jenvey	185 13 8
Cubitt	184 10 0
Hancock, Battersea (accepted)	171 5 0 !

For the erection of house with shop, Berkhamsted, Herts, for Mr. E. Platt. Messrs. Batterbury & Huxley, architects :—
J. Honour & Son, Tring (accepted).

For draining, kerbing, and making up Sophia, Drayton, Wallwood, and Bulwer roads, for the Leyton Local Board. Mr. Wm. Dawson, surveyor :—

Lovedale & Brooks, Woolwich	£2,114 1 1
Wilson, Walthamstow	1,973 13 2
Rutty, Bow	1,879 0 0
Wheeler & Hindle, London	1,867 15 1
J. W. & John Neave, Stratford	1,767 5 10
Woodham & Fry, Greenwich	1,765 0 0
Bell, Wood-green (withdrawn)	1,665 14 0

For two pairs of semi-detached cottages, on the Little Massingham Estate, for Mr. Wm. Walker (exclusive of bricks, lime, sand, and cartage of the same). Messrs. William Adams & Son, architects, King's Lynn :—

Nelson, Terrington	£642 0 0
Lofts & Son, Ely	612 0 0
Foreman & Jarvis, Lynn	590 0 0
P. H. Dawes, Lynn	562 0 0
Boddy, Harpley	560 0 0
Chilvers, Snettisham	550 0 0
Leach, Lynn	478 0 0
Rolling & Southgate,* Rudham	429 0 0

* Accepted.

For business premises, Brixton-rise, for Mr. John Bowron. Mr. G. T. Poole, 81, Chancery-lane, architect. Quantities supplied :—

Smart	£894 15 0
Marwell Bros.	870 0 0
Whitlock	797 0 0
Hall, Camberwell (accepted)	767 0 0

For making up roads on the Sunny-gardens Estate, Hendon. Messrs. Barker & Roscoe, 191, Earl's Court-road, surveyor :—
John Bell (accepted).

For making up Bardolph-road, for the Islington Vestry. Mr. Chas. Hygens, surveyor :—
John Bell (accepted).

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VOL. XLIV. No. 1517. SATURDAY, JUNE 23, 1883.

ILLUSTRATIONS.

The New Church of Auteuil, near Paris.—M. Vaudremer, Architect 848
Sketches at Romsey: the Abbey Church and National Schools 848
Sunday School Memorial Hall, Leicester.—Mr. J. Tait, Architect 849
Cottage Hospital at St Paul's Cray.—Mr St Pierre Harris, Architect 850
New Brewery at Burton-on-Trent.—Messrs. Scamell & Colyer, Architects 852
Longitudinal Section of New Brewery, Burton-on-Trent 853
The Dutch Method of Bonding Brickwork 857

CONTENTS.

Coloured Sculpture 845
The Arrnes of Industry and the Principles that Regulate the Commissariat 846
Architectural Designs by the late W. Burges 847
The Royal Collections of Pictures 847
The Space at Hyde Park-corner 847
Passages in an Unsuccessful Career: My First Competition 848
Restoration of the "Salle du Jeu de Paume," at Versailles 849
London's Mediæval Fishmarkets 849
Visit of the Society of Engineers to Nottingham 849
Discovery of a Coptic Church of the Fifth Century 849
Excavations 849
The New Church at Auteuil, near Paris 849
A Few Hours at Romsey 849
Cottage Hospital, St. Paul's Cray, Kent 850
Sunday School Memorial Hall, Leicester 850
New Brewery at Burton-on-Trent 850
The Dutch Method of Bonding Brickwork 850
The Calamity at Sunderland 850
Art and Sanitation in Houses and Hospitals 850
The Influence of Natural Forms on Architecture 850
Proposed British School of Archæology and Art at Athens 851
Competitions 851
The Gas Institute 851
Foreign Exhibitions and Congresses 851
A Pre-Historic Cemetery 851
The late Earl of Crawford and Balcarres and the Dunecht Outrage 851
Large Sales of West End and other Property 851
The Wimbledon Park Estate Sale 852
Artisans' Dwellings in the City of York 852
Work at Lincoln Cathedral 852
Banbridge County Down 852
Art Exhibitions 852
Sanitary Notes 852
The Metropolis Building Act Amendment Bill 853
Congress of French Architects 853
The late James Mountford Allen 853
The German Parliament House 853
More Light for Dark Passages 853
A Trade Unionist's View 853
Beanfeasts 853
Housing the Poor 853
Statues 853
Monuments 853
Messrs Spottiswoode's New Buildings in St. Bride street 854
Building Patent Record 854
Provincial News 854
Church-building News 854
Dissenting Church-building News 855
Stained Glass 856
Rail Penetration 856
The Strawberry-hill Estate 856
Miscellanea 856

Coloured Sculpture.



GERMAN sculptor, Herr Carl Cauer, is showing in his *atelier*, at Kreuznach, a small collection of sculpture, in which he has attempted a new solution of the much-debated problem of employing colour upon such works. The question whether sculpture is improved or injured by the application of colours is one upon which the greatest authorities hold the most conflicting opinions. The great critic, Winkelmann, and the Classical school after him, regarded the painting of sculptured works with colours as a relapse into primitive barbarism. The undeniable fact that some of the best sculptures of ancient times show traces of colour, Winkelmann and his followers considered to be due not to the original sculptors, but to additions made in the later more luxurious and corrupt ages of the Roman Empire, when art declined and taste became once more vitiated and barbarous. With regard to Greek art of the best period, it is only in the present century that we have gradually obtained materials for adequately appreciating it at its true value; and down to the present day the great majority of artists and art critics have condemned all colouring in plastic works, except in so far as the material employed possessed natural colours. This objection to colour extended even to architecture. In the year 1861 a Congress of French, Belgian, and German artists,—painters, sculptors, and architects,—was held at Antwerp, where this question was discussed. On that occasion, though not altogether without opposition, a resolution was adopted by a vast majority affirming that a correct classical style admits in plastic works no colour but that natural to the material employed, and that the ideal colour in all monumental edifices and in sculptures was uniform white, as best exemplified in white marble. There and elsewhere, and both before and since the Antwerp Congress, there has been a minority which held very different views. Students of ancient art and antiquities had shown that works belonging indisputably to the ancient classical period presented traces of having once been painted with colours. Painted statues were found in Pompeii; others were discovered in Rome, and these examples did not fail to exercise much influence on th opinions of critics. No doubt there was some force in the argument that the painted sculptures of Pompeii dated from a period when art was beginning to decay. It seemed almost incredible to think that in the poorest ages the ancients would cover the beautiful white marble with paint, and this opinion is still predominant. It was only with gold that in certain ornamentation there was any disposition to make an exception, although in the ancient classical period it was not admitted in painting. The sculptured and architectural remains of ancient Athens, however, were at length studied with more attention than was formerly possible, and here again there were found unmistakable traces of ancient colouring. In the case of the sculptures of the Parthenon, the assertion that they had once been coloured was strongly disputed, and was ultimately abandoned. The traces of colours on the metopes of the Temple of Theseus, on the other hand, were not to be denied. Here, then, was an example of colour from the age of Pericles and Phidias. But as to how that ancient temple really appeared with its coloured portions, art-critics were never able to form any adequate or rational idea. Another thing which clearly proved that the white marble theory did not prevail in ancient times was the fact that Phidias notoriously executed some of his greatest works in ivory and gold; and that in the golden drapery of these chryselephantine statues there were, according to ancient written testimony, flowers painted in their proper colours. All these ancient works, however, had been destroyed or lost, and the ancient authors who had seen and described them themselves belonged to a period somewhat later than the strictly classical age of antique art. Such is the uncertain position in which the question of colour in ancient sculptures has long remained, even down to the present day. Sculptors, however, have in many instances been sensible of the æsthetic coldness of the pure white of marble, and there have not been wanting examples of the attempt to impart to it warmer tints. Thus Canova is said to have employed a light yellow in relieving the coldness of some of his marble sculptures, and the sculptor Gibson showed an instance of the application of colour in one of his works in the Great Exhibition of 1851. Though the latter attempt met with a favourable reception, Gibson's example has found scarcely any imitators. The French sculptor, Clesinger, however, at a later date attempted the employment of a little colour in the adornment of his beautiful female busts, besides putting a flower, with its proper colour, in the hair, and adding real gold earrings and necklace. Clesinger's marble busts thus ornamented looked very much like wax dolls. It is, in fact, the weakness of coloured marble that in appearance it too much resembles wax; and about waxwork, however well modelled, there is always something at once rather ridiculous and repellent. In harmony with the realistic spirit of art in the present day there have been other experiments in the application of colour to sculpture. Many of these attempts have led to nothing. The coloured Panathenaic frieze of the Parthenon, by Owen Jones, in the Crystal Palace, is not approved by Continental critics. It is precisely the frieze of the Parthenon which is the subject of the warmest discussion, the opinions on the question whether it was painted or not, and, if painted, what colours were used, being greatly divided. This frieze, the incomparable work of Phidias, represents the Panathenaic festive procession to the deities regarded as the Protectors of Athens, and a large portion of the original work known as the Elgin marbles is in the British Museum. Some additional portions are in Paris and others still at Athens. It was originally fixed round the walls of the Cella, within the double row of columns encircling the Temple. Even under the bright sun of Attica it was, therefore, but scantily lighted. Hence it is inferred that the purely plastic effect could not have been great, and that colour was resorted to to assist it. And this inference or conjecture not only has several ancient authors, but also certain traces still discoverable on the sculptures themselves in its favour. To this subject Herr Cauer, of Kreuznach, has been for a long time devoting his attention, and he has succeeded in making certain important observations which had escaped previous critics. On close examination Herr Cauer discovered unmistakable traces of gilding on the Parthenon reliefs. In some spots the gold is still visible, and there can no longer be any doubt that the frieze was more or less gilded. Whether in the deeper parts of the relief there are traces of colour, as the French investigators Millin and Desbuisson have alleged, Herr Cauer has been unable to ascertain from lack of opportunity for close examination. But he points out that, according to ancient authors, the reliefs were coloured, and it is quite possible that in their original condition they may have shown both gilding and colours at the same time. Herr Cauer proceeded on this hypothesis to certain experiments. A part of the frieze of which he obtained a plaster-of-Paris casting, he completely restored and gilded, and then over the gilding he painted very lightly some coloured ornamentation, so that the metallic lustre of the gilding acted through the colours like light on the higher portions of the relief, while in the deeper parts the shade is strengthened. In accordance with the indications of authentic fragments of the work he coloured the ground blue-black. The colours he employed in his restoration are blue, two shades of red, black, brown, green, and white. The golden ground softens all these colours, and by shining through them so modifies them that the effect is nowhere discordant or inharmonious, nor is the effect

merely naturalistic. The stylistic character of the sculpture is not at all disturbed by these additions, but the different figures and parts of figures come out with greater prominence. Herr Cauer made his first attempts in this style of decoration on some groups of figures, statuettes, and reliefs of his own. Some of these are plaster casts, others are in terra-cotta, others in marble. In some cases the colouring is stronger than in others. What may be the value or success of this new or revived method of decoration only experience can show.

The marble work upon which Herr Cauer has made his experiment in gilding and coloured decoration is a large and beautifully executed head of Christ on the cross. It is a high relief of at least twice life-size in a medallion. Herr Cauer has kept the colours here within very modest bounds. The face shows only the slightest tint. The red of the lips is scarcely visible. The abundant hair and beard are apparently coloured with brownish black only in the deeper parts, and the ground of the deep medallion is darkened, but not, strictly speaking, coloured. The general effect reminds the spectator of certain specimens of the goldsmith's art of the last century, in which different alloys impart a variety of tones to the metal, some lighter, others darker, some inclining to red, others greenish. The most remarkable thing, however, is that in life-like expression this Christ's head has gained enormously from the additions.

With regard to Herr Cauer's restoration of the Parthenon frieze, the effects of light and shade are wonderfully preserved and heightened. Whether in the bright sunshine, or in a subdued light, or in the dusk or dawn, the work is always clear, the separate parts being unusually distinct, and standing out from the background. The brighter the light the greater the effect of the gold; the darker it is the more effective the colours.

Sufficient has been said to show that the experiments of Herr Cauer deserve the attention of all artists and sculptors. After prosecuting his experiments a little further, Herr Cauer purposes sending the works exhibiting the results to Vienna and Berlin, and submitting them to the examination of the critics of those capitals. The results of Herr Cauer's experiments are very different from the coarsely-painted statues of the Middle Ages or of the modern Romanticists, and are likely, if we mistake not, to inaugurate a discussion which will greatly agitate the artistic and learned world of the immediate future.

THE ARMIES OF INDUSTRY AND THE PRINCIPLES THAT REGULATE THE COMMISSARIAT.

A CONTEMPORARY writer, to whom no one, even among those least in accordance with his views, can refuse the admiration due to the expression of pregnant thought in terse and incisive English, has just called attention to certain differences existing between two armies, or divisions of our national forces, of which it would be hard to say which is the most necessary to the safety and welfare of England. It is not our purpose to follow Sir E. Sullivan in his remarks on the effect of certain changes which, as it were under our very eyes, have been effected within the last ten or fifteen years in our army proper, that is to say, our national defensive establishment of land forces; although the matter is one so closely concerning the welfare of every English man, woman, and child that we can do no less than call attention to the letters of this able writer, published, or about to be published, we understand, in a readily accessible form. But it is a remarkable instance of the want of any available index to knowledge to find a writer of such authority understating our railway army by some 66 per cent.

"There are two armies in England," says Sir E. Sullivan, "a military army and an industrial army. We may put each roughly at 100,000 men." But if the writer had consulted so popular a work as "Our Railways," by Joseph Parsloe, he would have found that according to the returns of the Board of Trade, dated Feb. 5, 1875, there were at that time 274,535 persons employed on the railways of England, Scotland, and Ireland. It is one of the great defects in our railway returns that no annual account is rendered of the number of railway servants; a line or two added to the Board of Trade returns would afford a valuable set of statistical facts on this head. The nearest approach that we can make, in the absence of later returns than that in question, is to calculate how many men were employed per mile in 1874, and to apply the same proportion to the increased length of railways now open. On the 16,449 miles of railway open at the end of 1874, the number above cited allows 16·7 persons per mile. At that rate, the number employed, in round figures, on our actual 18,000 miles of railway, will be 300,000 men. The gross working expenditure on the railways of the United Kingdom for 1874 amounted to 32,612,712*l.* If we roughly divide this as half paid for materials, and half for labour, it gives an average of very nearly 60*l.* per head for all the railway servants in that year. The year 1878 is the last for which the analytic returns of the "Index to our Railway System" have been published. The length of line then open was 17,333 miles, which, at 16·7 souls per mile, gives 289,462 men. The total working expenditure for the United Kngdom, for the same year, was 33,189,368*l.*, the half of which, taken as before, comes to 57*l.* per man per year. This gives a reduction in the rate of pay of about 6 per cent.; and in point of fact the working expenses which, in 1874, were 55 per cent. of revenue, had fallen, in 1878, to 53 per cent.; so that, as a rough check, the payments are not very disproportionate to the estimate of the number of men.

We hope that the forthcoming analysis of the census of 1881 will enable us to give some of the salient features of the great army of industry that carries out the designs and orders of the architect. In the meantime it is interesting to note that in another great industry,—that which provides the fodder for the iron horse, without which railways would cease to run,—the change that has taken place is of a different kind, while the actual numbers employed are much larger than on the railways. Taking 1881 as the last year for which we have as yet the returns, the length of railway opened was 18,180 miles, which at our former allowance would employ 303,606 men. The miners employed in that year were 495,477. But the number of miners employed in 1874 was 508,032. And while, in 1881 each miner won 311 tons of coal, in 1874 he only won 249 tons of coal. Those who have given any attention to the course of trade, and the movement of public wealth, as far as they may be gathered from the statistical returns, will be neither puzzled nor surprised at this difference of more than twenty per cent. in the efficiency of the workmen within seven years. Whether we admire it or deplore it, the fact is undeniable. But how would it fare with us if an equally powerful element of caprice, or of whatever we may please to call it, actuated our railway servants? Were such a thing to occur it would take at least three millions of money from dividend to add to expenditure, or *vice versâ*. Now it is true that there has been fluctuation, nor could it be expected to be otherwise. But with the steady industrial railway army this fluctuation of efficiency has been so small, as compared to that among the colliers, that we may well consider that it has not exceeded the bounds of reason and of natural law.

The highest gross return earned at any time since 1854 by the railways of the United Kingdom was in the year 1874, when it amounted to 9·5 per cent. upon capital. There had been a steady rise to that amount since 1867, when the gross revenue stood at 7·86 per cent. on capital, giving a rise of about 8½ per cent. in seven years. Working costs, on the other hand, were at their lowest in 1869, being then 3·69 per cent. upon capital, and rising to 5·13 per cent., or by 36 per cent. in five out of those seven years. These figures are very significant, both to the buyers and the sellers of labour. They show that there are mighty and irresistible forces at work, which regulate the condition and the emolument of the working-man, in close relation to the activity of trade, that is to say, to the general prosperity. They show how hostile to patriotic intelligence are all attempts to advance the supposed interest of one class at the expense of that of another. Capital and industry,—coal and railways,—good dividends and well-spread tables for the family of the workman, are inseparably bound together by natural ties, which it is beyond the power of the pen or of the tongue to loosen, great as may be the mischief produced in attempting to do so.

As to the railway shareholder, he attained his highest prosperity in 1872. Up to that year the rise in earnings had been greater than the rise in expenditure, and the difference between the earnings and the expenditure for that year, or the net profit, amounts to 4·74 per cent. on capital, or four and three-quarters dividend on the 100*l.* We are of opinion that the railway shareholder ought to receive, considering the immense service rendered to the country by his capital, and the many contingencies and risks to which his property is exposed, what the original railway-makers earned and received,—that is to say, ten per cent. In 1843, ten per cent. was paid (with large reserves) on the London and Birmingham Railway shares. We have before this expressed an opinion (especially see vol. xliii., p. 357) of the reason why this fair rate of dividend is not now obtained, and of the mode by which it may even now be secured, or, at all events, approached. The subject is now undergoing investigation before the Select Committee on Canals, and there is good reason to believe that a mass of valuable evidence will thus be secured and thrashed out. Into that we are not now about to enter. Our main object at the present moment is, first, to indicate the magnitude of those interests of which we have been led to speak as industrial armies; secondly, to show how all ranks in those armies are bound together by common, although not always apparently identical, interests; and, thirdly, to show that it is by the direction of his labours into the most productive channel,—that is to say, by the executing of the largest volume of work in the most perfectly economical manner (which does not mean in the most cheese-paring manner), that the welfare of the working-man lies, together with the welfare of the capitalist.

It is for this reason that the cost of transport is so signally a working-man's question, using the word as applicable to the whole army of industry, officers as well as private soldiers. Of some of our necessary products and commodities, the price of transport gives, perhaps, not more than 5 per cent. of the whole market price. But of others, on the contrary, it forms as much as 90 per cent. of the market price. Thus Indian wheat, which is sold in London at 52*s.* per quarter, may be bought on the banks of the Ganges at from 4*s.* to 6*s.* per quarter. The difference is cost of transport, including the dues of the Suez Canal, which amount to 17 per cent. of the whole freight from Calcutta to London. It would be difficult to point to any other matter in which the welfare of the working-man, and the advance of the practical science of the ship-builder and the mechanical engineer, are so closely bound together. Unless the perfection of maritime engineering already attained or approached had brought down the cost of transport for a long voyage to something like two-thirds (per ton per mile) of that allowed by our best found coasting steamers, the wheat of Bengal would rot on the ground rather than be brought to make the loaves of the Lancashire workman. Food however, is only one of the commodities into the market value of which in this country the cost of transport so essentially enters. It is impossible to listen to such evidence as has been already brought before the Committee, so ably presided over by Mr. Salt, M.P., without observing how great a part the transport of building materials forms of both the foreign and the inland transport of this country. The value of wood and timber, hewn, sawn, or split, and mahogany (omitting staves) imported into the United Kingdom in 1881 was 14,400,000*l.* In 1874, which was, as before stated, that of our greatest railway activity (though not that of highest dividend), the import of the same articles amounted to 21,033,000*l.* A very large proportion of this sum must have been paid by the builder. Thus (next, of course, to coal) slates, bricks, stone, and other building materials go far to make up the bulk of our 70 millions, or, including minerals, 235 millions, of tons of inland transport. We are only beginning to realise how essentially a working-man's question is this question of our inland traffic. On the Continent our neighbours have the start of us, in this respect, by six or seven years, and unless we bestir ourselves to master the subject we shall be left behind them in the race for the market.

City and Guilds of London Institute.—The number of candidates who presented themselves for the recent examination in the various branches of technology was 2,397, as against 1,972 in the year 1882, showing an increase of 425.

ARCHITECTURAL DESIGNS BY THE LATE W. BURGES.

AT the time of Mr. Burges's lamented death we expressed our general opinion as to his peculiar powers and the place he held among the eminent architects of his day. It would be superfluous to recapitulate this now, but we not the less see with interest a publication of his leading designs,* under the editorship of Mr. R. P. Pullan. These are got into a volume of moderate size, and form a very picturesque collection of architectural drawings, chiefly in perspective; some of the best have an additional value owing to the fact that they were designs made but not executed, and the author's drawings alone exist to show what he would have done had fate been kinder to him. In some instances we entirely concur in the remark of Mr. Pullan that the designs by Burges which were unsuccessfully submitted in competitions were "uncontrovertedly superior to those selected" for execution; though we also consider that the editor a little overstates, in his preface, Mr. Burges's powers of "adopting Gothic architecture to the requirements of every-day life without altering or degrading its characteristic features." Our impression is that he was too Mediævally-minded in his architecture to be regarded as an essentially practical modern architect; and the editor himself implies this in some of his remarks in reference to the various designs, *e.g.*, in speaking of Cardiff Castle, and the delight which Burges felt in the task of reviving Mediævalism in that way; how he designed a massive portcullis of hard wood, several inches thick, shod with iron spikes, and raised and lowered by machinery, in respect to which Mr. Pullan says, "I can imagine the construction of this portcullis,—perhaps the only one of modern days,—was quite after Burges's own heart, and that he would have spent upon its contrivance more time than many of his contemporaries would have spent on the design of a house." That we can readily imagine; nor are we by any means without sympathy with an archæological interest of such a kind,—the interest of doing over again for ourselves what was done in the Middle Ages, and realising practically what the work was and how it must have seemed to its original artificers. But an architect who would have spent more time over that one thing, a portcullis, for instance, than many men would over a house, could hardly be considered as an essentially modern or practical architect: he was a sentimental architect living in and pleasing himself with the past rather than with the present: and that is what we consider Burges really was,—by preference, at all events. Being so, he was fortunate in obtaining such a commission as the rebuilding of Cardiff Castle, which we can quite understand his thorough enjoyment of, and which, as a piece of Mediæval revivalism, is one of the most successful things ever done. In a certain way, it is almost like a realising of Tennyson's "Palace of Art"; a gorgeous pleasure-house within which the actual outside world of realities might be forgotten. A perspective view of the great staircase is given in this volume; a wonderful composition, at once fanciful in idea and solid in construction; for that quality of massiveness and solidity, belonging so peculiarly to Mediæval building, Burges had certainly assimilated, and nothing that he did was flimsy or deficiency in stability of expression: if anything, he rather perhaps erred in the opposite direction; though that is a kind of error in architecture easily condoned. The fountain at Cardiff Castle, and another fountain given as a frontispiece, and embodying in its sculptures the history of Sabrina, are fine specimens of the manner in which this feeling for massiveness and solidity of character was kept up even in his ornamental details, as well as in architectural design in the larger sense.

Of the drawings for the Law Courts, two plans and two elevations and a perspective view are given in this volume; the plans are unfortunately nearly useless as a record of the author's intentions, as they are so much reduced in photo-lithographing that hardly any of the writing is legible,† and they only serve to show the general arrangement of the mass of the building. The Strand elevation, though in some respects far too "wolfishly" mediæval for a modern building of this class, has the great merit of broad and symmetrical treatment, and is not wantonly cut up into sections. The detailed elevation of a portion of this front, which attracted so much attention and admiration at the time of the competition, is reproduced in this volume on a smaller scale, and still vindicates itself as a remarkably grand and solid piece of architecture of French Gothic type, and shows, perhaps, more of real genius than anything else which that competition evolved. In the perspective view of the Strand front it is observable how Burges, in spite of his Mediævalisms, showed his knowledge of the value of horizontal lines, and of continuous repetition in a great building, by carrying the design of the upper story of the main building across the new Temple Bar arch, which he proposed, so as to bind the whole together. Every one must wish that such a treatment of Temple Bar (proposed also by Street) had been carried out, instead of merely marking the place by a senseless ornament obstructing the centre of the roadway. The wide arch carried right across would have been a very fine architectural feature, and would have kept up the idea of a gateway or entrance to the city, which to the outer eye is now entirely lost, and exists only in tradition and in documents.

In the designs for Cork and Edinburgh cathedrals, Burges kept up that paramount feeling for solidity which runs through all his work, almost to excess; and it must be admitted that in these interiors there is a somewhat ponderous character, nor can we by any means admire the system of roofing employed; the coved wooden ceiling with moulded tie-rods at the springing, acting as bars to the effect of upward perspective of the interior. The exterior design for Edinburgh Cathedral looks very well in the perspective view, and here again, as in the Law Courts, the architect showed that strong continuous horizontal lines might be quite in keeping with thoroughly Mediæval character of general design. We should have liked the Edinburgh design still better if the spires had been stone rather than timber, and the whole would then have been more monumental and homogeneous in character. The question of expense may have had something to do with this, as in the Cork Cathedral he adopted masonry spires. One of the most admirable and satisfactory works illustrated in this volume, however, is one of the smallest, the church at Studley Royal, built for the Marquis of Ripon. In this case, whether from his own choice or from the tastes of his client, Burges adopted a more delicate and refined style of Gothic, having more affinity with English Mediæval work, than was usual with him; and both interior and exterior are remarkable for a blending of grace and elegance with the comparative massiveness of which he never lost sight, although it is, in this design, tempered with other qualities.

Whilst recognising the merit of the firmness and boldness of character in some of the details illustrated, such as the drawings for the emblems of the four Evangelists round the west window at Cork Cathedral (Plate 17), we feel that in some of them the aim at massiveness of character has resulted in want of elegance, and even in clumsiness and disproportion of effect. Take the pulpit of Cork Cathedral, for instance; a ponderous bowl, so to speak, set upon little stunted columns, so disproportioned that their breadth in the drawing seems to exceed their height. This "stumpy-column" Gothic, as one may call it, became fashionable for a time, and probably Burges did much to set the fashion; it is already going out, however. The bishop's throne, designed for the same cathedral, is a far better thing. The lofty canopy is rich and effective, and in this case the low and massive stone base, forming the actual throne, is necessary as a basis for so lofty and airy a superstructure. The pulpit just referred to might, in the same way, appear quite right and suitable in proportion, if it were only the basis for a lofty superstructure; but it is not so, and, as designed, it appears like an unfinished thing, the base without the upper portion. The design for the proposed new reredos for King's College Chapel is a very fine and rich piece of work, sufficiently in keeping with the style of the building, yet not excluding some touches of the artist's own individuality of manner; and a very original and suggestive design for a chimneypiece is given on plate 74. A view of the architect's own house in Melbury-road concludes the series; but the editor gives us to understand that the details and decorations are of such interest that they are reserved for a separate publication. We are aware that Mr. Burges made this residence an opportunity of carrying out many of his favourite ideas in detail, and that its embellishment was an object of the greatest interest to him; but the style of much of the work was not such as would recommend itself strongly for adoption or imitation in modern house-decoration, even to many who were admirers of the architect's genius; and the editor would do wisely to accept a caution against overrating the amount or extent of the interest in Burges's work, which to many people will always seem (though exceedingly clever) odd and eccentric, and somewhat wanting in refinement. The present volume, however, is well worth having, and contains a great deal of interesting and original work.*

* The Architectural Designs of William Burges, A.R.A. Edited by R. P. Pullan, F.R.I.B.A., 15, Buckingham-street, Strand. London: 1883.

† In connexion with this, we may comment on the absurdly illegible character of the titles and lettering generally of the drawings, which are in some cases a complete puzzle to the eye.

THE ROYAL COLLECTIONS OF PICTURES.

"Each heav'nly piece unwearied we compare,
Match Raffaelle's grace with thy loved Guido's air,
Carracci's strength, Correggio's softer line,
Paulo's free stroke, and Titian's warmth divine."
POPE, "*Epistle to Jervas.*"

THE earliest documentary account which we possess of the royal pictures, taken as a collection, is an inventory of date 24th of April, 1542, 34 Henry VIII., and kept at the Record Office. To this "account of the king's money, jewels, plate, utensils, apparel, wardrobe stuffs, goods and chattels, consigned to the care of Sir Anthony Denny at Westminster," there is added a curious and entertaining enumeration of the king's books. From a remoter period, however, royal portraiture had supplied a common theme for the artist's pencil. The portraits, chiefly in the guise of Biblical characters, were delineated on the pages of illuminated manuscripts, or on a larger scale in the shape of mural adornment executed in tempera colours and fresco. Of the latter it would seem that the most ancient of which anything certain can be said is the life-sized figure of King Richard I., upon the Galilee wall of Durham Cathedral, and which we may accept as being coëval with that sovereign. We know that in the following century King Henry III., —no illiberal patron of the arts,—employed both foreign and native talent in beautifying his palaces with Scriptural histories. He commissioned an Englishman, one Edward de Westminster, son to Odo the goldsmith, to paint figures of the Virgin and of himself with his queen, Eleanor of Provence, on the walls of St. Stephen's Chapel at Westminster Palace. Yet of a regal portrait in colour of the thirteenth century only a single credited example is extant. We mean the well-nigh obliterated painting of King Henry III. on the southern wall of the deanery cloister, Windsor. Some would fain recognise in that crowned head, with its darkly-shaded waving hair and prominent eyes, no slight resemblance to his fine bronze effigy, attributed to Torell, in the Chapel of the Kings at Westminster. The seraphim which yet adorn the chief stalls in the Abbey Chapter-house, with the long series of rude Apocalyptic compositions added to the lesser stalls, are due to a conventual artist, brother John de Northampton. By the close of the fifteenth century, other conventual artists had been busily engaged in decorating the choir chapels. In St. Paul's Chapel, for instance, they erected an alabaster statue of the Virgin (like to that which formerly stood in the Chapter-house), and a picture of the dedication of the Minster itself. Over Sœhberht's tomb, in the Sacrarium, they set up certain paintings,—probably those remaining to this day. The authorities have transferred from the Jerusalem Chamber to its original position against the Sacrarium southern wall the exquisite painting of King Richard II. In that we look upon one of the oldest contemporary representations of any English sovereign: "an unquestionable likeness of the fatal and (as believed at the time) unparalleled beauty which turned Richard's feeble brain; . . . . the brow and eyes still to be traced in the descendants of his line; the curling masses of auburn hair, the large heavy eyes, the long thin nose, the short tufted hair under his smooth

* We must add that several of the illustrations given are lithographed, permission being duly given, from our volumes, where alone they were to be found. Some of his earliest writings are also to be found in our pages.

chin, the soft and melancholy expression which suits at once the Richard of history and of Shakspeare."*

> "Was this face the face
> That every day under his household roof
> Did keep ten thousand men? Was this the face
> That, like the sun, did make beholders wink?
> Was this the face that faced so many follies,
> And was at last out-faced by Bolingbroke?"

We see the king in the attitude and dress in which he appeared at the Feast of St. Eadward, or, as has been conjectured, when seated on a lofty throne in Old Palace Yard, before the Hall which he himself rebuilt, he accorded a momentary precedence to the Abbots of Westminster over those of St. Alban's.† Repeated attempts at restoration had almost destroyed all the original work. For a full account of this portrait and its successful cleansing at the hands of Messrs. Richmond, R.A., and Merritt, we refer our readers to Mr. George Scharf's article in the *Fine Arts Quarterly Review*, February, 1867. Another likeness of King Richard is preserved at Wilton House, Lord Pembroke's seat. This is the diptych engraved by Hollar (1639), of the sovereign attended by his patron saints and angels, for which King Charles I. exchanged to Lord and Lady Jennings his own "lymning" by Lemons. To the contemporarary likenesses of King Edward IV., his Queen, and their children in the mutilated window at Canterbury Cathedral we recently adverted.‡

After King Henry VIII.'s death a second inventory was made of his personal estate under a commission dated from Westminster the 8th of September, 1547. This embodies certain additional pictures done, it is highly probable, purposely for that monarch. Describing the whole collection with more particularity, many of its items conclude thus:—"With a curteyne of yellow and white sarconette paned together"; the curtain being placed over the painting for its better preservation. The list of 1547 relates to sixty-eight portraits, a few being of unknown subjects; some Scriptural groups, Holy Families, and the like; classical scenes; terra-cotta pieces coloured to the life, styled "pictures made of earth"; some "descriptions" or combinations of figure-drawing, with perspective and map; and miscellaneous "tables." Of the portraits there are now at Windsor "Phillipp Archduk of Auster," supposed to represent Philip le Bel, father to the Emperor Charles V. (28) §; "Quene Elizabethe," of York, King Henry VII.'s consort (43); "The Countes of Richemonde, Kynge Henrye VII.'s Mother," like to that on a panel at St. John's, Cambridge, and to the later canvas at Knowsley (48); "Henry V.," profile, and "Henry VI.," the well-known painting with the hands clasped, of which replicas belong to the Society of Antiquaries and the National Portrait Trustees (49, 50); "Queen Elizabethe, King Edward's Wiffe," an original of the inferior work at Hampton Court, and "Kynge Edwarde ye IIII," of whom there are two panel likenesses at Windsor (51, 52); "Lewise the Frenche Kynge," Louis XI. (76); "One havinge a longe heare beinge crowned and havinge a roobe like clothe of golde, and the furre being white,"—which, similar to the Westminster painting, Mr. Scharf thinks may possibly be that of King Richard II. now in the Windsor Collection (78); "Philipp, Duke of Burgoyne" (110); "Prince Artherre wearinge like a redde cappe with a broche oppon it and a collor of redde and white rooses," first identified by Mr. Scharf (98) ‖; "Themperouer, his doublet being cutte and a Rosemarye braunche in his hande"; Charles the Great, of whom two other portraits are scheduled, the one "a stayned cloth" that is done on linen in transparent colours (154), and the other (114) very like to that owned by the Society of Antiquaries (99); "Isabell, quene of Castell," inscribed "Le Vayrnne Ysabeau ne Castille" (103); and "Ferdinando, Kynge of Aragon," inscribed "Le Roy Dnne Fernando Dorragon," with which should be compared the painting in the possession of the Society of Antiquaries (135). This last-named portrait, together with Nos. 43, 48, 49, 50, 52, 103, and 135, reappears in the catalogue of King Charles I.'s celebrated collection at Whitehall. That catalogue was drawn up by Van der Doort, who had charge "of all the king's pictures, medals, books, and gems." The original MS., now in the Bodleian, was first printed in 4to. by Bathoe, in 1757, from Vertue's incompleted papers. Of other remarkable examples in the Westminster inventory may be instanced "The Childerne of the Kynge of Denmarke," Christian II., misnamed in Vertue's engraving, "The children of Henry VII." (10); "The Frenche kynge havinge a dublet of crymeson coloure and a goune garnysshed with knottes made like peerles," Francis I.—Lord Dudley has a similar painting life-sized (8); "The Frenche Kynge, the Quene his Wiffe, and the Foole standinge behynde him," resembling that at Longleat, the Marquess of Bath's seat (71); and "The Lady Margaret, the Duches of Savoye," sister to Philip le Bel (18), all of which are preserved at Hampton Court. Also "The Ladye Elizabeth her Grace with a booke in her hande, her gowne like crymeson clothe of golde with workes," a highly interesting work now at St. James's Palace (131); "Kynge Henry theight and Jane, Quene, a table like a booke," of which diptych one half survives in Lord Spencer's beautiful Holbein of Henry VIII. (45)*; "Jacobbe, Kynge of Skottes, with a hawke on his fiste," formerly the property of King Charles I., and now of Sir H. Maxwell, bart., M.P. (134); "The Quene of Hungerye, being Regent of Flanders," Mary of Austria, which Mr. Scharf claims to be identical with that now at Windsor, and there known as the mother of Mary, Queen of Scots; "The Duchyes of Mylanne, a greate table, beinge her whole stature," Christina, niece of Charles V., a fine work by Holbein, now owned by the Duke of Norfolk † (12); and "Kynge Richard the Thirde," framed similarly to Nos. 50 and 52 already mentioned, and supposed original of numerous copies comprising those at Longleat, Arundel, Hatfield, Knowsley, and South Kensington (82). In King Edward VI.'s reign a list was compiled of the collection at St. James's Palace, some of the pictures having been previously scheduled in the Westminster catalogues,—see Harl. MS., 1419, B.

Passing by Paul Hentzner's description of the Royal Collection as shown to him at Whitehall in Queen Elizabeth's reign (and it is to be observed he speaks of none at Windsor), we come to the additions made thereto by King James I., chiefly in the form of portraits from the easels of the Dutch artists, Van Somer and Marc Gheeraedts, and to the art-collections of his two sons. In common with the Stewarts, Prince Henry approved himself a liberal patron and connoisseur. His brother Charles, when a prince, was already distinguished as the possessor of many works of the highest value and merit. In Noel Sainsbury's "Original Papers of Rubens" (1859) is described the shipment to England of the collection of Vincenzo, Duke of Mantua, containing choicest examples of Titian, Giulio Romano, Correggio, Tintoretto, and Raffaelle. Nys, speaking of them in terms of the highest admiration, says that for the Madonna the duke gave a marquisate worth 50,000 scudi, refusing in turn an offer of 25,000 ducatoni from the Duke of Florence.‡ In her "Public Galleries" Mrs. Jameson computes King Charles's collection at 1,387 pictures, nearly 300 of them being masterpieces. The books, gems, miniatures, and medals were deposited in the apartment Inigo Jones had designed for Prince Henry's collection, the cabinet-room (now site of Dover House) where the king was afterwards destined to pass the closing moments of his life. Whereas a few of the pictures remained at the two other royal palaces and the sculpture at Greenwich, the majority were distributed throughout the various rooms and galleries at Whitehall.

This unique collection fell into evil hands under the Commonwealth men. Within seven weeks of the Martyrdom the Parliament decided to sell all the personal property of the Crown; Oliver Cromwell placed a reserved price of 300*l.* upon the Raffaelle cartoons that the king had acquired at the prompting of Rubens. More than one account exists of the sale, and of the prices severally obtained for the pictures. Mazarin, Richelieu, the Duke d'Alva, Philip IV. of Spain, with the Archduke Leopold, were amongst the principal purchasers. Such of the paintings as are now at the Louvre were bought by Louis XIV. from Jabach, a wealthy collector of the time. Another buyer, Gerard Van Reynst, carried his treasures to Holland, where his widow sold them to the States-General, who generously presented them to the king at the Restoration.

For William III.'s new palace Sir Godfrey Kneller painted that famous series which has always been known as the "Hampton Court Beauties." Placed in the First Presence Chamber, they are frequently confounded with a rival set,—in King William's Bedchamber,—sent thither from Windsor. We, therefore, give their subjects in full, as named in Mr. Law's catalogue.* Lady Diana de Vere, Duchess of St. Alban's; Lady Isabella Bennet, Duchess of Grafton; Lady Mary Compton, Countess of Dorset; Lady Middleton; Lady Mary Bentinck, Countess of Essex; Lady Margaret Cecil, Countess of Ranelagh; Carey Fraser, Countess of Peterborough; Miss Pitt, afterwards Mrs. Scroop; and Marie Beatrix of Modena, queen of King James II.† The so-called "Windsor Beauties," which remained at the Castle until about fifty years ago, originally consisted of Frances Stewart, Duchess of Richmond (whose tall and graceful figure yet survives on the reverse of our copper coinage); Barbara, Duchess of Cleveland, the "beautiful fury," appropriately taken in the warlike attributes of Minerva; the Countess of Falmouth (misnamed the Countess of Ossory); Henrietta Boyle, Countess of Rochester; Frances Brooke, afterwards Lady Whitmore, and her sister, Elizabeth Brooke, married at eighteen to Sir John Denham, a widower of seventy-nine; Miss Hamilton, who married Count Grammont; Anne, Countess of Sunderland; Elizabeth, Countess of Northumberland; and Mrs. Middleton.‡ These never belonged to King Charles at all, as is generally supposed, but came to his brother James's hands by the circumstance that the Duchess of York, desiring to possess portraits of the loveliest ladies at court, commanded Sir Peter Lely to begin with her own maids of honour.§ For the collection Lely further painted the reputed Lady Bellasys as St. Katharine; Jane Kelleway (or Princess Mary) as Diana; Anne Hyde, Duchess of York; and Wissing the likenesses of Mrs. Knott, Mrs. Lawson, and Elizabeth Percy, Duchess of Somerset. These are the canvasses alluded to in Pope's familiar couplet. Of the familiar Hampton Court collection, opened to the public by her Majesty, little need be said here,‖ beyond mentioning that in his "Historical Catalogue" (1882) Mr. Law, as we have already indicated, demonstrates how several paintings still retained erroneous titles. With the removal from the King's Gallery of the Raffaelle cartoons to South Kensington the nine works of Mantegna (1485—1492), depicting Cæsar's Triumphs, occupy the post of honour in Wren's "Communication Gallery." They are not cartoons, strictly speaking, or designs for hangings, but "were painted in tempera on twilled linen, with the object of being stretched on frames and affixed to the wall as a frieze." Nys, Charles I.'s agent at Mantua, bought them with some marbles for about 10,500*l.*, in 1628. At the Commonwealth a reserved price of 1,000*l.* was placed upon them, and Cromwell eventually retained them. The three tapestries in the Presence Chamber opening out from Wolsey's Great Hall are in all probability the "Thre pieces of arras of the three fatall Ladyes of Destenye lyned with blewe buckeram" in the inventory of Henry VIII.'s goods at Hampton Court in 1548. They are the third, fourth, and fifth of the set of six in illustration of Petrarch's Triumphs, of which we gave an account in our columns about two months ago.¶ Their de-

* Dean Stanley's "Memorials of Westminster Abbey."

† Confer Riley's preface to Walsingham's "Abbots of St. Alban's"; and Weever. Also, as touching the chair, Mr. Scharf's article cited in the text.

‡ See p. 403, *ante*.

§ The order in the inventory, as set out in a paper read by Mr. George Scharf, F.S.A., at the July Congress, 1866, of the Archæological Institute, to which the present writer is indebted for valuable information concerning the inventory.

‖ See "Archæologia," xxxv. 215.

* Mr. Scharf points out that this is the only consort of the king whose name as *queen* is specified in the inventory. There are portraits of Katherine of Arragon and of Anne Boleyn at Windsor, not contained in these records; the best portraits of Jane Seymour, by Holbein, are now at Woburn Abbey and Vienna.

† See "Archæologia," xl., 110.

‡ Daniel Nys to Endymion Porter (gentleman of the bedchamber to Charles I.),—letter dated Venice, May 12, 1629.

New Guide to Hampton Court Palace, by Ernest Law, B.A., Barrister-at-Law. London: George Bell & Sons. 1883.

† This portrait of Queen Mary has hitherto been supposed to be one of the consort of King William, and by Wissing.

‡ Louise, Duchess of Portsmouth, as Flora, ascribed by some to R. Gasear, by Mr. Law to Varelst, and that which commonly known as Nell Gwynne Mr. Law believes to represent Marie d'Este, and hesitatingly ascribes to Lely, are later additions to the "Windsor Beauties."

§ See Sir Walter Scott's "Memoirs of Count Grammont," edit. 1846, p. 191.

‖ See the article on Hampton Court in the *Builder*, vol. xlii., p. 501.

¶ See p. 491, *ante*.

plorable condition was lately adverted to by Mr. Montague Guest in the House of Commons, but the terms of his question, and the answer he received, leave considerable doubt as to whence funds can be provided for repairing what is Crown property.

Of Vandycks at Windsor there are the Lady Venetia Digby, Charles II. as a boy, in armour, and Charles I., standing, in royal robes. There are also Rembrandt's portrait of his mother, named the Countess Desmond, from Charles I.'s collection; Holbein's Henry VIII., and "The Two Misers," of Quentin Matsys. Kneller painted the Hall ceiling; Thornhill the Staircase and great dome. Few specimens now remain of the fine group of pictures which William III. sent to Kensington, and of which the catalogue of the year 1700 is in the British Museum. Amongst them were Vandyck's Charles I. and his Queen, Charles I. on horseback approaching beneath an archway (possibly identical with that at Hampton Court), "Cupid and Psyche," and the three children of Charles I.; the portraits of King William and Queen Mary in their coronation robes, for which Kneller received knighthood; Domenichino's "St. Agnes"; Tintoretto's grand compositions of "Esther fainting before Ahasuerus," and "Apollo with the Nine Muses" (these two are now at Hampton Court); Guido's "Perseus and Andromeda," and "Venus attired by the Graces"; Holbein's King Edward VI.; and Rubens's "Holy Family, with St. Francis in Adoration." There were subsequently added Holbein's original drawings, which Queen Caroline discovered in a bureau, of the most eminent personages at King Henry VIII.'s Court. Walpole, in his "Anecdotes" (edit. 1762), alludes to the early royal portraits at Kensington, especially to one of Henry IV., in contemporary costume. After King George II.'s death most of these were sent to Windsor, and their place taken by Prince Louis d'Ottingen Wallerstein's Byzantine and old Italian, Flemish, and German paintings, the majority of which present curious illustrations of sacred art, such as triptychs, altar-pieces, and other works of primitive design and elaborate antiquity.

In the state apartments of St. James's Palace is George IV.'s collection, including Haydon's "Mock Election," painted in the King's Bench, Southwark, and bought of him by the king for 500 guineas.* Also several royal portraits, comprising Sir Joshua Reynolds's George III., the Prince of Wales, and the Duke of York; Lawrence's George IV. and the Duke of York; a reputed Holbein, Henry VIII.; Hoppner's Lord Nelson, Earl St. Vincent, and Lord Rodney; G. Jones's battles of Vittoria and Waterloo; the sieges of Tournay and of Lisle; Count la Lippe and the Marquess of Granby, by Sir Joshua; and copies of the "Hampton Court Beauties." To these were recently added the likeness of the Princess Elizabeth in a red dress, painted some time between 1542 and 1547, of which we have spoken above, and that of Henry, Prince of Wales (whole length), in the suit of armour ornamented with golden thistles and roses which is in the guard-chamber at Windsor. Mabuse's much-criticised painting of Adam and Eve has been lately set up in the Prince of Wales's Presence-chamber, Hampton Court. George IV.'s collection at Buckingham Palace (originally at Carlton House) is pre-eminently rich in Dutch and Flemish examples, such as an altar-piece by Dürer, Rembrandt's shipbuilder and his wife bought for 5,000 guineas, and six others; seven by Rubens, the "Marriage of St. Katharine," and four others of Vandyck; fourteen by Teniers the younger, and many others of the two Van der Veldes, Dow, Paul Potter, A. Ostade, Van der Meulen, Wouvermans, and Cuyp. Here also are four Watteaus; Reynolds's "Death of Dido," his "Cymon and Iphigeneia," and his own portrait in spectacles; Wilkie's "Penny Wedding" and "Blind Man's Buff"; a landscape of Gainsborough; together with several royal portraits by Winterhalter, Wilkie, Lawrence, Wright, Gainsborough, Copley, Dance, Ramsay, Kneller, and Lely. In 1857 the collection at Holyrood Palace was enriched, at the instance of Mr. David Laing, with Van Eyck's celebrated diptych of the king and queen of Scotland at devotion attended by patron saints. This most valuable painting is supposed to have been designed for Trinity College Chapel, Edinburgh, and to contain portraits of Sir Edward Bonkil, first provost, and of Queen Mary of Gueldres, in the character of St. Cecilia, foundress of the church. Lent from Hampton Court, Van Eyck's work constituted a chief attraction of the Manchester Exhibition of that year,—a collective display the like of which this country may never be privileged to see again.*

* A like ceremony was observed at the Fleet.

* About twenty years ago some portraits of the Stewarts were sent to Holyrood Palace from Hampton Court.

THE SPACE AT HYDE PARK-CORNER.

As we all along said, the alteration at Hyde Park-corner, as carried out, has brought no amelioration of the block at the foot of Hamilton-place, a fact which seems to have been evident to every one, and has been the subject of comment in numerous serious journals, as well as in *Punch*. The main practical point for which all this expenditure and demolition were undertaken remains therefore untouched; nor have we any great faith in the promise that has been made in Parliament that other steps should be taken to get rid of the block, because we cannot see what can be done now without a subway, and a costly interference with the works already executed, which it is not likely the First Commissioner will be magnanimous enough to assent to. The opportunity for preventing, or rather, getting rid of the block effectually, and for good, was lost when Hamilton-place was made, by not constructing the crossing road on a different level from Piccadilly.

All we can look for now is that something good should be made of the *place*, after all the expense and the pulling about of everything that has gone on. At present a more waste and accidental kind of *place* could not well be imagined. The one good point about it, in the way of appearance, is the view of the park screen in its whole length, as one comes up from Grosvenor-place. That is what has not been seen before, and it is a good effect. For the rest, the open space thus cleared is shapeless, without any decisive point to lead the eye one way or another. It was laid out, as we pointed out from the first, on a very poorly-conceived plan,—a mere surveyor's plan,—and that of the most ordinary kind, leaving shapeless patches between the roadways, without the slightest attempt to arrange the whole so as to produce a satisfactory or symmetrical effect. This plan has been followed to the letter, and the result, so far, is as bad as, or worse than, could have been anticipated; the "high light" of incongruity being furnished by the forlorn figure of the equestrian statue standing on its temporary timber bed on one of the triangles, waiting,—according to report, we hope a false one,—for its removal to the neighbourhood of the Horse Guards.

The present position of the statue, however, suggests a revival of the proposal, which has previously been made in a slightly different form in these columns, viz., that the statue should be set on an appropriately proportioned pedestal in the space in front of Apsley House. The statue of Wellington is connected naturally with the great Duke's former residence; it has stood, though under disadvantageous and mistaken conditions, in that vicinity for many years; dismounted from the arch, it stands in the same neighbourhood now, awaiting its fate. Why go to the expense of dragging it to any distant site which, in regard to association, cannot possibly be so suitable as the present one? We put aside the idea which has recently been mooted of melting it down and making another statue out of the metal. We do not think that will be done; we imagine that general public opinion, as well as that of those who have a most special right to have their feelings consulted in the matter, will be against it; and we do not see sufficient reason for such a course to counter-balance the objections that will probably be made to it. In the first place, the existing work is the Wellington Statue, which has been a London land-mark for many years, and is the actual one put up in honour of the Duke, and some certain respect is due to it on that account; it is not the same as if it were an entirely new work which had proved unsatisfactory, and in regard to which artistic and commercial considerations alone need be taken into account. Secondly, the condemnation passed upon it has been somewhat over-acted. It has long been in a very disadvantageous position for its effect; it is now in an equally disadvantageous position of another kind; any statue of the kind and on that scale would look absurd in the position to which the Wellington Statue is at present reduced. But though much cannot be said for it, we believe that on a proper pedestal and in a good situation it would not look so bad or insignficant as to render it a matter of artistic duty, as some people profess, to melt it down and have another modelled. Nor, unfortunately, can we feel so absolutely sure that we should obtain a very much better one. There would, in the case supposed, almost certainly be a competition, and the results of former sculpture-competitions have not often been such as to make us very sanguine as to the result of a new one. It generally comes out in such cases either that there is no satisfactory design among those submitted, or that the right man is not put in the right place. We are therefore of opinion that the balance of reasons is against destroying the present statue in the hope of producing a better one, and that the existing one should be placed somewhere in the new *place*, near to and in some architectural relation, if possible, to Apsley House.

How really to make anything tolerably effective out of the site it is difficult to see now, inasmuch as the spaces of ground left between the roads are of no definite shape, and are central to nothing. It would have been perfectly possible to have arranged the site so as to have made each of the two larger portions of ground take a symmetrical shape and assume a central relation to Apsley House and to the Hospital respectively; but nothing seems to have been thought of but getting a large amount of road-accommodation and leaving the interspaces to take care of themselves, while the vista up the new line of Constitution-hill through the arch will lead up to nothing, as at present arranged, except an oblique view of one angle of the Hospital. A re-arrangement of the space opposite Apsley House might still be made so as to give something like a symmetrical site for the statue, which could be then placed on a fitting pedestal facing the centre of the mansion; as effective a position for it as can now be found, and certainly the most appropriate. One other capability of the site, as laid out, we may point out, though it is one that is obviously purely accidental, and is traceable to no forethought or consideration in laying out the plan. It will be found that if the centre line of Constitution-hill be produced to the plot of ground opposite the Hospital, it will there meet a centre line produced from the middle entrance of Hyde Park Gate, at right angles to Piccadilly, and that the two lines of sight will meet in the centre of the plot opposite the Hospital. There is thus at least a possibility, by good luck, of giving some point to the site by placing a central object, either a large fountain or a memorial trophy of some kind, in such a position that it will be seen centrally through the arch on coming up Constitution Hill, and will also be seen centrally from the Park through the centre arch of the screen. We do not expect that it is of any use making the suggestion, as the authorities to whom the management of such matters in London is confided appear to be entirely innocent of any idea as to the arrangement of sites for architectural effect, or the placing of objects so as to have any relation to each other. It may, at least, however, be pointed out that, poorly as the site is laid out, accident has left one opportunity for effective treatment in it, if made use of.

PASSAGES IN AN UNSUCCESSFUL CAREER.

II.—MY FIRST COMPETITION.

I COULD never see why the successful people should have all the biographies to themselves. Their lives are, no doubt, often interesting, and deserve a record. But not always so. They are sometimes too unvaryingly prosperous to afford excitement enough to carry us through a perusal of them, and, indeed, it is open to question whether there is not more of interest and of instruction to boot in the lives of the unsuccessful if one could only get at the facts. Certainly there is more of pathos in them. In the struggles of the architect who does not become an R.A., nor even attain to that pale reflex of such a distinction, a P.R.I.B.A.; of the doctor who is not appointed "Physician Extraordinary to the Royal Family"; of the author whose uncounted hours of toil never gain for him the dull ear of the public; of the actor who does not entertain the Heir Apparent; and of the barrister who never had a brief.

Are we to believe that all these are nincompoops because they fail to obtain the prizes in the professions to which they severally belong? I am myself an unsuccessful man, and flout the monstrous imputation. Is it not one of the veriest of commonplaces that some very stupid people are, nevertheless, remarkably successful? Some achieve greatness, no doubt, but others have greatness thrust upon them, and if the stupid may become great,—and we see that they do,—may not the caprice of fortune leave the wise and the worthy unrecognised and unrewarded? How many men are known to have been on the verge of some great discovery which a happier rival has hit upon and become immortal. Are not Wallace and Darwin "*en evidence*"? I do not argue that the really great have no claims to the distinction accorded them, but I do say that others, as wise and capable as they, have failed of a similar recognition through the waywardness of fate, the want of opportunity, and the "cussedness of things in general."

And here I can fancy an objector saying,—But if your unsuccessful people have not strength enough to make themselves heard, who is to know, or care, or, above all, to write anything about them and their doings, however pathetic or interesting they may be? Most true. It is, however, one of their few consolations that they have this matter in their own hands. I am, as I said, one of the vast fraternity of failures, and propose to set out, for the edification of the world at large, a few facts with which they would not otherwise become acquainted. In a previous essay I told the story of my first commission; I will now recount the circumstances attending my first entrance in the arena of a public competition.

A certain well-known charity advertised for designs for a large institution, wherein a number of orphan children should be housed, taught, and trained to various trades. Premiums of 100*l*., 50*l*., and (I think) 25*l*. were offered for the designs selected in order of merit. I determined to "come in as the others do, and try with them the strength of my youth." I had a special incentive to exertion for the improvement of my position. For the discerning reader who has so far followed my artless tale, knowing that my income was slender and precarious, and that my professional prospects were anything but bright, will have no difficulty in divining that I had taken to myself a wife. I was living in a small suburban house, the counterpart of one in which Leigh Hunt (no unfit neighbour) lived; and there in a tight little dining-room, 11 ft. by 9 ft., I spent the long, sultry summer nights at work upon my new scheme. I went about the affair earnestly and methodically, looking up examples of similar buildings. I had a knack of running out perspectives, and could touch them up not ineffectively. Indeed, if the truth must be told, not a few of those highly-seasoned chromo-lithographs of business premises of fictitious extent and magnificence, enlivening our railway stations and public places, owed their splendours to the daring flights of my full, juicy brush. In the case in hand, I went boldly in for colour, and the result was not altogether unsatisfactory. The drawings were duly despatched, the perspective looking gorgeous in its cheap gilt frame. My wife admired the whole thing so much that she could not believe but that it must beat every competitor off the field. I had my own views and awaited the result, *not* calmly.

The designs, some thirty or forty in number, —were publicly exhibited in a room not a hundred miles from the spot where this narrative will probably be printed. This very journal, commenting on the show, began by saying that conspicuous above them all for merit was,—oh, rapture!—my own design.

Oh, ye critics. Do you know the power you wield? The throb of pleasure which vibrates through the whole being of ingenuous youth at your lightest word of praise or encouragement; or the blank despair with which your censure covers him as with a pall. If you do know this, pray "do your spiriting gently." And if you do not know it, take the information from one who has experienced both the pleasures and the pains which wait upon your oracular utterances; but who is now without illusions, and "neither fears your favours nor your hate."

I hastened to the place of exhibition, and one swift glance around showed me my own drawing closing a long vista of rival works. I darted furtive looks at it, pretending all the while to the keenest interest in neighbouring plans. I watched for the impression it made upon "the public." But the "public" was, I thought, represented by competitors like myself, whose strange demeanour I saw reflected in my own.

In a few days I received a letter requiring my attendance before the committee. This filled my mind with all sorts of apprehensions. I was all trepidation. What could they want? Was it to hand over the hundred pounds straight away with a complimentary speech from the chairman, and a request that I would put the working drawings in hand without loss of time? Delicious dream. It turned out that my design was selected, but not as yet *placed*. A little difficulty as to the estimate had arisen. And here a word on that subject may, perhaps, not be amiss.

As a rule, the requirements of those who organise such competitions cannot be met for the sum which it is stipulated shall not be exceeded. There are two courses open to the competitor. He may make his design as inexpensive as possible, and shirking the subject of cost, leave it to be inferred that the imposed limit has not been exceeded. Or he may make an honest estimate, and state it honestly.

Adopting the latter course, I have, in one instance, been informed that my design was unanimously considered the best, but that by the admitted excess over the stipulated sum, I had put myself out of court. In the competition I am reviewing, I knew that the accommodation could not, under the most favourable circumstances, be provided for the sum laid down, so I simply kept silence on the point.

The committee comprised some shrewd men of business, who soon forced me to an admission on the subject, and, dismissing me with every courtesy, promised a further communication.

It was not long in coming. I was apprised that my design was placed second on the list, and I duly received a cheque for 50*l*. I well remember that in cashing it I chose to take sovereigns for the whole,—that I spread them out on the table before my wife, and bathed my hands in the precious metal.

I should have had no cause to complain of the result if the adopted design had been less costly than mine; but it was more costly, and so it proved. Owing, however, to the peculiar constitution of the charity, and to particulars upon which I need not enlarge, there were personal considerations which told against my being employed as its architect, and in favour of my rival. I had afterwards the dissatisfaction of learning that my plans were really placed first, in spite of their cost; but that they were reduced to the second place on the considerations above alluded to, and quite apart from the merits of the design.

When a boy, I invested a shilling in a raffle for an American clock (strange ambition!), and won it. I sold it in the room for 16*s*., and invested them all in raffles, and came empty away. I do not think the shilling was badly laid out. I often recur to the circumstance and wonder how many "premiums" have excited sanguine youth to embark on further competitions,—with the result of my raffle.

The passion for competitions has grown since the time of which I write, and it threatens to become universal. There are few offices which do not show their piles of dusty stretchers,—

"Confusions of a wasted youth,"—

the graves of buried hopes. For my part, I have but seldom entered the lists since, and I have had some few successes of an unimportant kind. Before concluding this part of my most veracious history, I wish to put it on record that, so far as my experience goes, there is more honesty in the conduct of competitions than they are generally credited with. In my own case, where success has followed my endeavours, it has most certainly not been secured by any "indirect crooked means."

London Sanitary Protection Association.

At a meeting of the Council of this Association, held at 1, Adam-street, his Grace the Duke of Argyll was unanimously elected president in place of Professor Huxley, who resigns the office of president, but retains his seat at the Board, and the Hon. and Rev. C. Carr Glyn, vicar of Kensington, was unanimously elected a member of the Council. We are informed that the Association continues to progress.

RESTORATION OF THE "SALLE DU JEU DE PAUME," AT VERSAILLES.

ON Wednesday last, the 20th of June, the ninety-fourth anniversary of the famous oath of the *Jeu de Paume*, Monsieur Jules Ferry, Président du Conseil, was to inaugurate, with appropriate solemnity, the opening of the new Museum of the French Revolution, installed in the celebrated "Tennis Court" (*Salle du Jeu de Paume*), restored to its original appearance by Monsieur Edmond Guillaume, first prizeman of Rome and architect to the Château de Versailles.

This famous room was constructed in 1686 by the heirs of Jean Bazin, Master Tennis-player to the king, upon ground contiguous to the Hôtel de Lorge, and situated at the corner of the street of old Versailles and street of the *Jeu de Paume*. By the advice of his physician, Fagou, Louis XIV. often came with the gentlemen of his household to have a game there. In the reign of Louis XV. the *Salle* was not much used, but came into vogue again during the reign of Louis XVI., the Comte d'Artois and the Duke de Chartres being passionately attached to the game. The room was entered by two doors of oak: one in the street of old Versailles was attained by three stone steps, and surmounted by a sculptured sun with beams. According to custom, the walls were painted black, so that the white balls might be the more easily discerned, and a double net ran all round the apartment, one as high as the waist, to preserve the spectators, and another as high as the windows, to preserve the glass. The ceiling was painted blue and studded with *fleurs-de-lys* in gold.

At the meeting of the States General at Versailles, May 5th, 1789, and which was held in the *Salon des Menus*, called *Salle des Trois Ordres*, the disunion, after five weeks of deliberation, between the king and the Deputies reached such a point that the Court party urged the king to dissolve the States General. The king would not consent to this, but announced a meeting of the Privy Council, and had the doors of the *Salle* guarded by soldiers under pretext of preparations to be made. On the 20th of June, Bailly, president of the Third Estate, on presenting himself found the doors closed. The Deputies then assembled in groups; some wished to hold their meeting in the open air, some on the Place d'Armes; some suggested it should be under the very windows of the king. At last Bailly proposed they should repair to the Tennis-court, and there, shut in merely by those bare and sombre walls, without furniture, without seats, they took a solemn oath, which was the tocsin of the great French Revolution, not to separate till they had given a Constitution to France.* The oath was subscribed to by 635 deputies. The next day the doors were shut against Bailly, and the Comte d'Artois and his courtiers retook possession of the *Salle*.

From 1789 events and transformations succeeded each other rapidly. In the *Salle*, the 20th of June, 1790, a society of patriots calling themselves *Société du Serment du Jeu de Paume* obtained consent from the National Assembly to insert into the wall opposite the entrance and *vis-à-vis* to the Bureau on which the oath was taken, a bronze tablet bearing an inscription of the words of the said oath, "We swear to never separate, and to meet together everywhere that circumstances exact, until the Constitution of the kingdom is established on a solid and firm basis." This tablet was walled in with stones taken from the Bastille, and brought from Paris by the society. The following year another tablet was let in,—'They swore it, and they accomplished their oath"; and, at the same time, the "Society of Friends of the Constitution" gave the painter David an order to paint a large picture representing the scene of the taking the oath in the *Salle du Jeu de Paume*,—a picture which was never finished, but of which the sketch was exhibited in the Academy of that year, and now adorns the walls of the Louvre.

In 1792 and 1793 the Convention were too occupied in Paris to think of the anniversary of June 20th, 1789, and the promoters of the Revolution had not only been surpassed, but a number of them had themselves lost their heads on the scaffold. But in 1794 a decree of the Convention declared the old *Salle du Jeu de Paume* part of the "national property," and ordered that the *Salle* should be preserved and kept

* *Vide* "Histoire de France," by Duruy.

up at the expense of the State and turned into a sort of museum destined to remind the people of many of the events of which it had been the theatre. The *coup d'état* of the 18th Brumaire and the proclamation of the Empire hindered this decree, naturally, from being carried out, and the *Salle* was shut up for some time. In 1803 it was given as an *atelier* to the painter Gros, who painted in it his great subject, "Bonaparte visiting the Pest-stricken at Jaffa," exhibited at the French Academy, 1804.

At the Restoration, the *Salle* became the workshop for the costumes and decorations of the theatre of the palace; and, moreover, the bronze tablet, with the inscription of the oath, was turned with its face to the wall. Then came the Monarchy of July, which turned the tablet back again to its original position, and gave the *Salle* to Horace Vernet, then coming back from Africa; and it is there that he painted the "Taking of the Smala of Abd-el-Kader" and the "Battle of Isly."

Some days after the Revolution of 1848 a banquet was given in this *Salle* under the presidency of M. Landrin; and it is curious that Horace Vernet, the *protégé* of the fallen king, was at it, though it is true he declared he was only there as the "inhabitant of the *Salle*." The following year, in the month of August, 1849, a grand banquet was given at the Clôture in this same room to the members of the Peace Congress, Richard Cobden, Victor Hugo, Émile de Girardin, L'Abbé du Guerry, Le Pasteur Coquerel, &c.

The Second Empire tried to restore the celebrated *Salle* to its original destination. The game of tennis, for the officers on service, was instituted, but it did not take, and the place was shut up.

The Third Republic now opens it in accordance with the wishes of the Convention as a Museum of the French Revolution; but it would not be safe to assert that this will be its last transformation.

The general aspect of the *Salle* is the same as it originally was, except that the walls are grey instead of black. A covered gallery has been kept on each side of the entrance-door, and the nets over the windows and on the ground have been retained. In the middle of the wall, and just above the bronze tablet placed there in 1790, a sort of stone pediment has been raised, surmounted by a gilt bronze cock, and supported by two columns in marble. The rays of the sun underneath the feet of the bird are symbolical, it appears, of the aurora of the French Revolution.

The second tablet, placed in 1791, having been lost, it has been replaced by a new one, framed in marble, like the first.

Before this pediment there is a large statue, in marble, of Bailly, by M. Réné de St. Marceaux. This statue is to be surrounded by twenty busts, representing the principal actors in the events of the day of June 20th, 1789. On each side of the wall are painted the names of the 635 signers of the oath. The wall on the extreme left is reserved for a great work of M. Olivier Merson, reproducing, painted in camaieu, the picture by David. On the other side of the room, and exactly opposite to where this picture will be, the following inscriptions are to be seen on the wall: first of all, the vote of the National Convention, "Versailles a bien mérité de la Patrie"; then the decree of the 24th of March, 1848, by Ledru Rollin, then Minister of the Interior: —

"March 24, 1848.

The Minister of the Interior.—Considering that the Historical Monuments the State undertakes to keep up ought to comprise not only those precious in respect to their execution, or to the history of the arts in France, but also those which glorious *souvenirs* recommend to the respect of the people:

Considering, then, that the *Salle du Jeu de Paume* of Versailles is the spot where, for the first time, the solemnity of the national will was manifested:

It is decreed,

The *Salle du Jeu de Paume* is classed amongst the Historical Monuments."

And immediately below it:—

"The 20th June, 1883.—The wish of the National Convention has been accomplished. A museum of the French Revolution has been inaugurated in the house of the *Jeu de Paume*."

On each side of the decree of Ledru Rollin are some verses, in wreaths of oak-leaves, by André Chenier, the poet.

There are ten large glass cases in the middle of the *Salle* destined to receive all the *souvenirs* belonging to Versailles and to the French Revolution. A few are already placed in them. One is the speech (printed on satin) the king made on the day of the opening of the States General, some engravings of the time, portraits, and manuscripts.

Outside, and above the principal entrance, one reads, engraved in gold letters on black marble, an inscription composed in the year 7, by the National Institute, on the demand of the Minister of the Interior, François de Neufchâteau.

In this *Salle* of the *Jeu de Paume*, 20th June, 1789, says one of the Paris papers, from which we have culled portions of this account, the Deputies of the people, driven from their ordinary place of meeting, swore not to separate till they had given a Constitution to France, and they kept their word. The restoration of this historical monument has been carried out with simplicity and taste. But it was unnecessary to inscribe the names of the 635 deputies, and recall the comparatively peaceful opening of the First Republic. A great number of the men whose names are painted on the walls, though united for a day, sent each other mutually to the scaffold later on.

LONDON'S MEDIÆVAL FISHMARKETS.

AT the close of a summer day in the year 1414 a Shipman, who bestrode a sorry nag, was making his way from Colchester to London. The sun was setting as the traveller emerged from the great forest of Essex, glad to have escaped the tusks of the wild boars and the fangs of the wolves, and passed under the walls of the White House, the Wan Stede, built by the monks of Westminster in the days of Saxon Ælfric. Crossing the river Lea by the bridge which Queen Matilda had built out of her piety and her pity for the fate of the many travellers that had been drowned at the dangerous Old Ford, he passed through Mile End Green, where, within his recollection, the men of Kent and Essex, and some of the perfidious persons of the city, made an evil compact with the king, and, headed by Wat Tyler, marched into the City to plunder and slay, and reached the "Blue Boar," just outside the gate of Aldgate, when the taverner was closing his doors; for the bell-ringer of the ancient Church of St. Martin-le-Grand, who was the time-keeper of the City, had struck the first note of the curfew, and the law of the first Edward decreed that at every parish church curfew be rung at the same hour as at St. Martin's-le-Grand, so that they begin together and end together; and then all the gates are to be shut as well as taverns, and no one is then to go about the streets or ways. So the Church of the Holy Trinity inside the walls took up the note on the bell, good, entire, and well sounding, which had been made twenty years ago by Richard de Wymbissh, potter and citizen of London, at the order of Sir Ralph, Prior of the Church, its weight being 2,820 lb., and as nearly in tune as possible with the old bell out of which it was cast. The bell of St. Botolph, whose tall tower overlooked the Blue Boar, took up the note from that of the Holy Trinity, and from its belfry, in which curfew had been rung since the days of Norman William, sent the warning clang far away across the fens of Essex.

Early on the following morning the Shipman rode through the gate of Aldgate and cast a loving look at the structure as he passed onward to the Lang Bourne,* for the sake of an old acquaintance who had been his fellow pilgrim to the shrine of Holy St. Thomas of Canterbury, Dan Chaucer the poet, to whom, forty years before, the Mayor and Aldermen of London granted the whole of the dwelling-house above the gate of Aldgate, with the rooms built over and a certain cellar beneath the gate on the south side, for the whole life of him, and it was not lawful for him to let the rooms, house, or cellar to any one; but, in time of defence of the city, the mayor and aldermen, and their successors, could enter the rooms and dispose of them as seemed expedient. In seven years after this grant the gate was battered down by an infuriated rout that was dispersed to the winds on the following day by the dagger of Sir William Walworth, mayor and stockfish salesman in Bridge-street Ward.

Crossing the Bourne our traveller made his way through the vegetable market in Grass-church-street and descended Fish-street-hill, glancing on his way at the great house, for the most part built of stone, which pertained for some time to Edward the Black Prince, who was lodged there. He beheld with horror the row of whitened skulls transfixed with spears that crowded the parapet of the gate of London Bridge. Among these were the skulls of the four knights who, at the instigation of Richard II., murdered the Duke of Gloucester; but the Mayor of London, scorning the displeasure of the king, had the assassins dragged through the streets and their heads struck off on a fishmonger's stall in Cheapside.

Passing under the archway, he proceeded along the bridge until he reached the Chapel of St. Thomas of Canterbury, on the south side of the centre of the bridge. He cares not to enter and look on the five great windows, each of which contained three divisions of glass, nor on the tomb of Peter of Colechurch, the architect of the chapel and the bridge. The epitaph would have puzzled him, for "he had but little Latin in his mawe." * So on he went until he crossed the bridge and drew rein in the court-yard of the "Tabard by the Bell," in Southwark, where he hoped to find Harry Baily still serving his lodgers with victuals of the best, although age would doubtless have altered his appearance. Thirty years had passed away since the Shipman lodged at the "Tabard," previously to setting forth on that never-to-be-forgotten pilgrimage, when Harry Baily was their leader, and the judge and reporter of the tales they told by the way. The quondam brother pilgrims recognised each other, and presently the "Cook of London," another brother pilgrim who had retired from business, joined them. After drinking friendship in a cup of the Tabard's best ale, it being Friday Harry must needs cross over to the fish-markets in the City in order to cater for his guests: so the three went together. As they cross the bridge, mine host tells the Shipman how fourteen years ago the sweet poet Dan Chaucer had died "in great anguish" and in the fulness of years at his cottage in the garden of the Chapel of St. Mary, Westminster, which he leased from the Abbot at a yearly rental of 53s. 4d.†

Crossing the bridge they ascended Bridge-street, or, as some called it, New Fish-street, and others Fish-street-hill. Here Baily pointed out the shop that had once belonged to Andrew Horn, dead many years ago, a famous fishmonger, but still more famous as a lawyer, for he compiled the "Mirror of Justice" and the "Liber Horn," still preserved among the City treasures at the Guildhall, and presented them, with other learned books, to the Chamber of the Guildhall. But let Harry Baily speak for himself. "There," he said, pointing to the south-east corner of Crooked-lane, "is the shop and house of a worthy fishmonger of whom we have all heard, Mayor Walworthe, who, in his youth, had been apprentice to John Lovekyn, mayor and fishmonger, the builder of the house and shop, and when good Sir William died, his 'prentice, William Askham, succeeded to the business, and also in due time became mayor. I know the premises well. They consist of a kitchen with a wall adjoining, standing about midway between Thames-street and the river; a void plot of ground more southward used as a wharf which reaches to the corner of the wall of the tower, built by Sir William, shortly before his death, in which there is a privy; that room or gallery stretching into the street and partly upheld by a 12 ft. stone wall; and the house and loft north-west of the tower belong to the premises. The square tower on the right-hand side of Crooked-lane is that of the Church of St. Michael, as it has been re-edificed by Mayors Lovekyn and Walworthe. I have been told that the old church was very small, and had been erected as an oratory for the market folks." The three pass up to the top of Fish-street-hill, and the cook, taking his leave, hurries back to the "Tabard" to prepare a *blanc manger* against the return of his companions. But before he crosses the bridge, he must to the market in Gracechurch-street to purchase vegetables and

* Fenchurch-street.

* "Mr. Brayley, in his 'London,' written about seven years since, wrote that if 'due care be taken when the old bridge is pulled down, the bones and ashes of its venerable architect may still be found,' and true enough the bones of Peter were found on removing the pier about a fortnight since." —*Times*, Jan. 14, 1832.

† No two authorities are agreed as to the figure which should be employed as a multiplier in order to bring the moneys of this period up to their equivalent value in the money of the present day. It probably lies between 12 and 15.

to Billingsgate for fruit and firewood. Harry Baily resumes his discourse, "Turn round and behold the river covered with all manner of craft laden with divers kinds of fish from divers places, from Norway and the Baltic, from Heligoland and Scotland, and from Brittany and the western sea. You see they are discharging their cargoes on the wharf underneath the Bridge Chapel as the law commands; nay more, it is forbidden that any fishmonger shall buy fresh fish before mass has been celebrated at the chapel on the bridge or at the Church of St. Magnus. There are river and pontage dues, and the bailiff of the market exacts custom in kind according to the vessel and the species of fish it carries: such as, a mackerel boat shall give twenty-six mackerel; the first vessel that comes from Gernemue * with herrings, and that owes full custom, shall give 200 herrings. From a cart that brings salmon the bailiff shall take the second best and for the cart twopence. One particular fish, and a royal dainty it is, is specially cared for, because no one shall conceal or harbour lampreys of Nantes upon their arrival with a stranger, but the strangers who so bring them shall sell them by the wall of the church in front of us, St. Margaret's.† Nor shall any one buy them for resale before the fourth day after their arrival. Nor shall any stranger sell them by retail after that time except to men of repute and great lords, and that by the dozen or half-dozen, and not in a smaller quantity."

"Although many fish are brought to this market by sea a great number come by land. They are brought in panniers, borne by horses, from the river Lea and from the fishings on the Thames between Putney and Barnet, where many fine salmon and sturgeon, and even porpoises, which are esteemed a great delicacy, are caught. I can remember that three-and-twenty years ago a strange fish came forth of the sea, and played himself in the Thames at London, beside the bridge, and, being perceived by many of the citizens, was pursued and taken with difficulty. I saw it afterwards being sold in this market. A fishmonger's table or stall is 4 ft. 6 in. and two thumbs' breadth in length, and two of them had to be placed lengthways to hold it. Its length was 10 ft., and I was told it was a dolphin."

"Turn your eyes towards the stairs on the left of the bridge and you will notice three shops with galleries; these are held by two persons carrying on the trade of glovers; opposite to them two other shops with galleries; indeed, you will find that our carpenters‡ never erect, unless for some special person or purpose, houses that consist of more than a ground floor, with a sollar or gallery, as we call a projecting room, above."

Harry Baily and the Shipman take their way by the Wall brook, and, passing along it, enter the Stocks Market, so called, as some report, from the stocks for the punishment of evil-doers which stood in the open space there; but others say from the stocks or pens in which the butchers had exposed their cattle for sale in this very ancient market-place, which, standing in the centre of the City, had been a place for buying and selling even before the days of Saxon Athelstane.

After inspecting the Market House of the Stocks Market, in which there is a great noise of dealers and buyers, Harry Baily points out three mansions on the borders of the market, one of them the property of the Lovekins already spoken of. "About the time that Lovekin's house was erected," continues Harry Baily, "Simon de Canterbury, carpenter, contracted to make at his own proper charges down to the locks for William de Hanigton, the skinner, a hall and room with a chimney,§ and a larder between them, and one sollar over the room and larder, one oriole‖ at the end of the hall beyond the high bench, two enclosures as cellars beneath the hall, a stable with a sollar, and a garret above the sollar, a sewer with two pipes, and many other smaller details. What little I have had to do with builders has cost me much. I will show you the accounts when we get home, however. I remember I paid a tiler 14d. for two days' wages, and to his man 10d., with 2d. for drink allowance. I laid out a like sum on a carpenter and his man for two days, and a similar amount on a dauber * and his man."

Passing through the Poultry they stand to admire the great conduit of sweet water conveyed by pipes of lead, partly underground, from the Ty Bourne at Paddington,† not built, as has been said, in 1285, for on the 20th of January, 1278, one William le Panner, a skinner, was found dead in the market of West Chepe, near the great conduit, as may be read in the "Coroner's Roll." "This conduit is strictly guarded by a keeper appointed by the Mayor and Aldermen, who binds himself by his oath that he will well and trustily, with the greatest diligence, cause the conduit in Chepe to be kept so that neither brewers nor fishmongers shall waste the waters thereof; nor will he sell the water thereof to any one on peril of losing his freedom. There were great doings round this conduit a hundred years ago when a son was born to Queen Isabel. All London kept holiday, all were dressed in their best; the conduit in Chepe ran with nothing but wine, and on the next Sunday the fishmongers of London were costumed very richly, and they caused a boat to be fitted out in the guise of a great ship, with all manner of tackle that belongs to a ship, and it sailed through Chepe as far as Westminster, where the fishmongers came well mounted and presented the same to the Queen; and on the same day the Queen took her route for Canterbury on pilgrimage thither; whereupon the fishmongers all thus costumed escorted her though the City. There is a great concourse round the conduit, for every man who brings for sale Thames fish taken to the east of London Bridge shall stand in Cornhill and nowhere else to sell them, and those bringing fish taken to the west of the bridge shall stand in Chepe, near to the conduit; and no huckster who carries oysters, mussels, salt fish, and other victuals in the City to sell, shall stand in any street or lane of the City, but shall always be moving about from street to street, and from lane to lane, and those who may lawfully stand to sell here in Chepe or Cornhill, or otherwhere in the City, shall stand midway between the kennels of the streets so as to be a nuisance to no one." Then spoke the shipman,—"Mine host, you remember what Dan Chaucer said of me:—

> 'Hardy he was and wise, I undertake,
> With many a tempest had his beard been shake,
> He knew well all the havens as they were
> From Gothland to Cape de Finisterre,
> And every creek in Brittany and Spain.
> His ship had for her name the *Magdelaine*.'

Yes, the *Magdelaine*, and I have run into many ports, but I have never seen so many kinds of fish or such vast quantities. Surely there must be much waste?" "Nay, friend Shipman; for the law will not that any dealer keep back his fish from market until it grows stale. I warrant the fishmongers are strictly looked after. All manner of fish that comes into the City, and is enclosed in baskets, dorsers, or hampers, must be as good below as it is above, or better; and each person must see to his basket that so it is, and he who shall sell otherwise shall lose the fish. Each of these baskets shall contain the bulk of a bushel of oats. Andrew Horn, of whom I have already spoken, narrowly escaped the punishment of having his baskets publicly burnt in Chepe. As for stinking fish! Why, it is but thirty years ago when Reynald atte Chaumbre maliciously brought, in a certain vessel to the City, 7,000 herrings and 800 mackerel, corrupt and unwholesome for man, and it was adjudged by the mayor and aldermen that Reynald should have the punishment of the pillory for six market days, there to remain for one hour each day, and that the same herrings and mackerel should be burnt beneath him, as is the custom of the City in like cases; and, I remember, just about the same time John Welburgham, who kept a fried-fish shop in Bread-street, was put into the pillory, and his stock of fish burnt under him, for having sold two pieces of cooked fish,—conger eel,—rotten and stinking, and unwholesome for man, to four countrymen, who went to his house to dine. The stinking fish was taken to the Guildhall, and a jury of cooks, good men and true, was sworn in to smell the same. Yes, friend Shipman; so strictly are the fishmongers dealt with, that they are not allowed to water the fish on their stalls more than twice. But time will not tarry for us. I fear that before we cross the bridge the refectory bell of the priory of St. Mary Ovaries, where worthy Master John Gower, a dear friend of our friend Dan Chaucer, lies buried,—rest his soul!—shall have rung the hour of prime, and my guests will be clamorous for my appearance at the head of the table. It may be that the worthy priest John Lydgate, who wrote the merry ballad of 'Lackpenny,' is one of the company. So let us hasten home. Some other day we shall pay a visit to Old Fish-street and the Fishmongers' Hall in Thames-street."

The two companions cross the bridge, and when the hour of prime clashes and clangs from the many steeples the vision of four hundred and sixty years passes into nothingness, leaving behind only the musty muniments of the City, the fame of a brave mayor, and the imperishable creations of Geoffrey Chaucer.

* Yarmouth.

† Stood on the site now occupied by the Monument.

‡ Builders, as the houses, with few exceptions, were built entirely of timber.

§ Perhaps the earliest mention of a chimney in domestic architecture.

‖ Probably a recess with a bay window.

* A layer on to a framework of a mixture of straw and mud.

† The water was conveyed from Paddington to the reservoir at St. James's-hill, now Constitution-hill; from thence to the Mews at Charing cross, and on through the Strand and Fleet-street to Chepe.

VISIT OF THE SOCIETY OF ENGINEERS TO NOTTINGHAM.

AT the invitation of Mr. M. Ogle Tarbotton, M. Inst. C.E., Borough Engineer of Nottingham, and of the Mayor of that town, the Council of the Society of Engineers visited Nottingham recently, and were most hospitably entertained, and conducted over the several extensive waterworks and gas-works in and near the town, the Wollaton collieries, and the lace-manufactory of Sir James Oldknow. Other visits had been arranged by Mr. Tarbotton, but, although the visitors arrived in Nottingham on Wednesday evening, and did not return until Saturday, time did not permit of the visits to the new sewage farm and the Radford Gas Works. On Thursday morning the party drove to the new pumping-station, at a place known as Papplewick, about two miles south-east from Newstead Abbey. Here works are in an advanced stage for a very large addition to the water supply of Nottingham. New wells have been sunk into the new red sandstone, about half-way between the water-bearing and water-holding valleys of the river Leen and the Dover Beck, with the object of obtaining about 4,000,000 gallons per day, instead of 1,000,000, as at present obtained by the temporary pumping-engine at this place. This pumping-station, like the others owned by the Nottingham Corporation, is being very tastefully laid out under Mr. Tarbotton, and the most is made of reservoirs and shrubbery to give the works the appearance of a mansion and grounds. From Papplewick the visitors drove to the Bestwood pumping-station, where they saw a pair of the finest rotative beam-engines in the country. Only one engine works at one time, each engine making twelve and a half strokes per minute, and pumping 90,000 gallons of water per hour from a depth of about 200 ft., and forcing it 90 ft. In the fine building containing the engines the Mayor of Nottingham, Mr. L. Lindley, entertained the visitors at lunch, when complimentary speeches were made by Mr. Jabez Church, M. Inst. C.E., the President, Mr. Alderman Gripper, and the Mayor. The Basford Gas Works were next visited, and here particular attention was paid to the great extensions now being carried out to meet the demands of the very large area included in the district of 139 square miles supplied. Special attention was directed to a pair of large gas-holders, erected and nearly completed by Messrs. S. Cutler & Son, of London, which are 180 ft. in diameter, and have a capacity of 1,806,000 cubic feet. One retort-house in these works represents the production of 3,000,000 cubic feet per day, and the extensions now in progress will make the Nottingham Gas Works' capacity of supply one of the greatest in the kingdom. Like the water-works, the gas-works are in the hands of the Corporation.

At about five o'clock the Council of the Society of Engineers and some friends dined with the members of the Chesterfield and Derbyshire Institute of Engineers, who were meeting in Nottingham at the time, Mr. Jabez Church, in the unavoidable absence of Lord Edward Cavendish, M.P., taking the chair. In the later part of the evening the Council were entertained at a *soirée* at the residence of Mr. Tarbotton. On Friday the Wollaton Colliery was visited, under the guidance of Sir James Oldknow, by whom the visitors were afterwards entertained at lunch. The ride through Wollaton Park was very much enjoyed, and the colliery and pit works were inspected, and very favourably criticised. The lace-factory of Sir

James Oldknow was next visited, and here the proprietor described the essential features with the clearness of one who has played an important part in the invention of lace-machinery. After taking tea at Sir James's residence, the Castle Museum was visited, and in the evening a dinner was given by the Council of the Society, to which Sir James Oldknow, the Mayor, and others were invited.

The following members of Council, &c., attended the visit:—Mr. Jabez Church, M.Inst. C.E., F.G.S., president; Messrs. Arthur Rigg, C.E., and Charles Gandon, M. Inst. C.E., vice-presidents; Messrs. Robt. Berridge, F.S.I., F.R.G.S.; A. F. Phillips, M. Inst. C.E.; A. T. Walmisley, Assoc. M. Inst. C.E.; John Waddington, Assoc. Inst. C.E.; T. H. Hovenden, F.S.I., members of the Council; Messrs. W. Macgeorge, R. P. Spice, M. Inst. C.E., and Chas. Horsley, Assoc. M. Inst. C.E., F.G.S., past-presidents; Mr. Alfred Williams, hon. secretary and treasurer; Mr. Bartholomew Reed, secretary; and Mr. Samuel Cutler, Assoc. M. Inst. C.E., M.S.E.

DISCOVERY OF A COPTIC CHURCH OF THE FIFTH CENTURY.

ON the site of Thebes in Egypt, Professor Maspero, the well-known French Egyptologist, who, since the death of Mariette Bey, has been director of the Museum at Bulak, has discovered the remains of an interesting Coptic Christian church of the fifth century, with a number of ancient inscriptions. The discovery was made in the course of removing from a tomb an ancient sarcophagus of limestone, which was itself covered with inscriptions. At one corner of the tomb M. Maspero observed a Coptic inscription on the wall, and found that a quantity of black earth beneath was loose. On removing this a passage was discovered, and after three days spent in excavations the end of the passage was reached, and was found to lead into a subterranean Coptic Church, to the floor of which the explorer descended by five steps. The ground he found covered with flag-stones, while the walls of the underground church are completely lined with white stone tablets, filled with inscriptions, in red ink or paint, for the most part in an excellent state of preservation. Immediately to the left of the entrance stands a pillar completely covered with an inscription, consisting of the conclusion of a sermon or oration against the Monophysites. It is in the Theban Coptic dialect. Among the other inscriptions are the explanations of Cyril of Alexandria, in reference to the different natures of Christ, the Trinity, and so forth. The interior walls of this remarkable ecclesiastical structure are entirely covered with inscriptions, chiefly containing invocations to the various saints, and in the Coptic, the Greek, and the Syriac languages.

EXCAVATIONS.

Fiesole.—According to the *Opinione*, the latest excavations at Fiesole, near Florence, have been attended with much success. Amongst the most important remains discovered is a well-preserved statue of Isis. It is of excellent workmanship, and was found in the ruins of an ancient temple. Not far from it the excavators dug up the lower half of a statue of Osiris. Both these pieces of sculpture belong to the second century of the Christian Era.

Rhodes.—The *Revue Archéologique* states that an Austrian scholar has discovered in the island of Rhodes a well-preserved mausoleum, similar in its architectural details to the celebrated mausoleum of Halicarnassus, of which latter the sculptures are in the British Museum. The reliefs which are found on the structure at Rhodes are said to bear a great resemblance to the frieze discovered in the ruins of Pergamos. Some of our German contemporaries, however, question the accuracy of the entire story. They suspect that the French authority has been misled, and that the name of Rhodes has crept in through some confusion in place of Gyol Bashi, in Lydia, the scene of the recent remarkable discovery of ancient remains.

Society of Arts.—The Annual *Conversazione* of the Society of Arts will be held this year at the Fisheries Exhibition, on the 11th July. Their Royal Highnesses the Prince and Princess of Wales are expected to attend.

THE NEW CHURCH AT AUTEUIL, NEAR PARIS.

AUTEUIL, a suburb of Paris, having largely increased, the old picturesque chapel which has long served its inhabitants became insufficient for the purpose, and a new chapel, just now completed, has been erected, from the designs of M. Vaudremer, architect. Placed on the summit of the hill of Auteuil, it is seen by all who traverse the Seine, and forms a charming feature in the landscape. The style adopted is that of the twelfth century, and those who know the Department of the Charente or the recently published "Sharpe Memorial," will have no difficulty in discovering the source of the architect's inspiration.

A FEW HOURS AT ROMSEY.

THE architectural student cannot do better than spend a long day in this quiet little Hampshire town, pleasantly situated as it is in the picturesque valley of the Test, where the clear waters, dear to all lovers of the angle, widen towards their goal in the broad expanse of the Southampton river. The point of attraction for every visitor is, of course, the Abbey church, which is seen from all the country round, and which affords matter for careful study for both the archæologist and the artist. The history of the fabric, and of the destroyed conventual establishment attached to it, once renowned as a seminary for the instruction of the great ones of the land, is somewhat obscure. The oldest part of the present structure dates from about A.D. 1150. It is cruciform in plan, with a low central tower, and has apsidal side chapels. The Lady-chapel originally projected 60 ft. to the east of the choir, and also had an apsidal termination. That portion of the building gave place to an Early English square-ended Lady-chapel, and this in turn has been destroyed. The windows, however, were preserved, and, as may be seen in the sketch, were inserted in the east gable of the choir, and in the filling of the Norman arches which led from the retro-choir to the Lady-chapel.

At the date of the erection of the Early English Lady-chapel, the western bays of the nave were built upon the Norman foundations, and using for the piers bases of the same design as the Norman piles. The remaining details are of purely Early English character. The triforium closely resembles that at Salisbury, and may have been designed by the same hand. At the same time the Norman clearstory was raised, and modified by the introduction of Early English details of extreme delicacy and beauty.

The whole western wall is Early English, and its features cannot fail to strongly impress the student. A triplet of lancet lights, of magnificent proportions and of simple and refined details, fills the west gable of the nave. A single cinquefoil in the tympanum, when seen from the interior, shines like a star in the dusky height. The central light is 5 ft. 7 in. wide and 37 ft. high, and its beauty is but poorly suggested in the hasty sketch given to illustrate it. The north transept is wholly of Norman work, and of a most noble proportion, —as fine, indeed, as any example in the kingdom.

The prevailing characteristic of the whole structure is the combination of the breadth and vigour of the ordinary Transition Norman with a grace and loftiness usually associated with work in the succeeding styles. The slight sketch of the interior looking across from the south aisle into the north transept will give some idea of its general character, and the lofty proportion not always found with detail purely Norman.

The little sketch (*a*) shows the,—now closed, —entrance to the Lady-chapel, with the Early English windows, and some indications of fifteenth century frescos on the walls. There are several such traces of colour visible, and some pictures on panel which have been preserved, and are, however, more valuable historically than artistically. The church is not rich in chantries, tombs, brasses, &c., but as an instance of the utmost grace of proportion, combined with great breadth and power of general treatment, is almost unique. A few late windows and doors have been inserted, but they are insignificant in size and do not mar the beauty of the whole. The sketches here given were taken on a wet day,—wet without intermission,—and the points of view were chosen solely with an eye to their affording shelter for the sketcher. They will, however, show at least that there is plenty to employ the student's pen, and we cannot wish the earnest student a happier employment.

There are no other Mediæval remains in the town to divide his attention; but it will be worth his while to climb the hill west of the town and enjoy the spreading prospect, the old abbey, ashen grey, the ruddy town clustering round it, the silver streak of river winding through the meadows, dotted with cattle, the busy mill with its musical rush of water, and groups of poplars breaking the "rounding grey" with their long vertical lines tapering skywards.

Before leaving the tourist should take a peep at "Broadlands," of historic interest as the home of Palmerston, from the bridge. The house is of the ordinary Palladian type, but it is embosomed in noble trees, has a wide stretch of park before it, the broad and clear Test hurrying and flashing past with its ceaseless murmur.

The reader will thank us for pointing out a modern building which is worth his attention,—the national schools,—built by Mr. Cowper-Temple from designs by Mr. Eden Nesfield. A slight outline of its main features is here presented; the detail, not given, is, as may be supposed, both original and good. The interior of the school is especially fine; walls, 2 ft. 3 in. (unusually) thick, give an effect as welcome as it is rare in such structures. The same architect has built the lodges which guard the "Broadlands" property, and all are charming. If the tourist has time to spare and is in search of the picturesque, he has Mottisfont on the one hand with its ancient heronry, one of the few remaining in the kingdom, and on the other the New Forest, with its exhaustless beauties. Beechen glades, reaches of brown heather and golden gorse fringed by a purple horizon.

It is only fair to say, in conclusion, that the Abbey church is well cared for. Much in the way of conservation remains to be done, and it is announced that funds are sorely needed. The roofs and such points have been all attended to, and the fabric is wind and weather proof, and it is evident that no pains have been spared to protect the building from the ravages of Time. When it is added that what has been already done has been done under the several directions of Mr. Ferrey and Mr. Christian, that all has been judiciously and well performed "goes without saying."

COTTAGE HOSPITAL, ST. PAUL'S CRAY, KENT.

THIS building, which we illustrate, is in course of erection at St. Paul's Cray, Kent, on a pretty site, an acre and a quarter in extent, fronting the main road from St. Mary Cray to Bexley, well elevated on a dry soil and having a view across the Cray Valley.

It is being built by voluntary contributions for the benefit of Chislehurst, Sidcup, Orpington, The Crays, and adjacent parishes.

Mr. St. Pierre Harris, architect, of Basinghall-street, and Orpington, has been entrusted with the preparation of the plans and the superintendence of the works, kindly assisted, as regards the internal arrangements, by Dr. C. H. Allfrey, M.D., who has from the beginning taken a great interest in the matter.

The sketch shows a building of a simple but appropriate character, consisting of ground and first floors, the external walls being faced with red bricks, with Lascelles's red concrete dressings, string-courses, &c., and built "hollow"; this form of wall being considered the best for protection against the driving rains, and for internal warmth and comfort.

The building being of two floors, and having a westerly aspect, both the male and female principal wards have been placed on the sunny side, one above the other. The following is the accommodation provided on the ground-floor, entrance-lobby, and hall (paved with tiles of a simple pattern), male ward for five beds, well ventilated and heated by an open fireplace, with an inlet for warm fresh air. Earth-closet and bath-room, within easy access of the ward, but built out from the main building, and separated from the same by a cross-ventilated lobby. Day-room for convalescents, with a good view from the windows, and a glass door opening out on to a verandah.

Matron's sitting-room; operating-room, well lighted and fitted with a dispensing-chest. Committee and medical officer's room. Kitchen, conveniently placed, with skylight in the roof for light and ventilation. Scullery, pantry, stores, and small cellar. On the first floor, female ward with similar accommodation as the male ward. Nurse's bedroom adjoining. Two wards for the treatment of serious cases of operation. Separation ward for any suspected or doubtful case. Servants' bedroom, linen closets, &c.

The builder is Mr. Otway, of Chislehurst, whose contract for the completion of the works is 2,162*l.*; Mr. Petty being the architect's clerk of the works.

SUNDAY SCHOOL MEMORIAL HALL, LEICESTER.

THIS building is a local memorial of the centenary celebrated last year of the establishment of Sunday Schools in England. It is being erected under the directions of the Leicester and Leicestershire Sunday School Union, and is intended to form the head-quarters of that body. The ground-floor contains a suite of class or committee rooms, and the upper floor a hall for public meetings and conferences, together with rooms to be used as retiring-rooms and for serving refreshments to social gatherings.

The materials for the walling are local red brick, with freestone dressings.

The architect is Mr. Tait, and the contractors are Messrs. Holmes, Chambers, and Norman, & Underwood, all of Leicester.

NEW BREWERY AT BURTON-ON-TRENT.

WE illustrate in our present number a new brewery at Burton-on-Trent, for the trustees of the late Mr. Peter Walker, as carried out from the designs and under the superintendence of Messrs. Scamell & Colyer, brewers' consulting engineers and architects, 18, Great George-street, Westminster, S.W., and give such information as will make the illustration useful. It is built in red brick with stone cornice, mouldings, and string courses. The panels in the walls under the windows are filled in with Brown's patent tiles, specially designed and ornamented with hops and foliage. The roofs are framed in iron and covered with Welsh slates, the brewery-house portion having glazed dormers and lantern, surmounted by ornamental iron cresting and finials. The tun-room roofs are also surmounted by long glazed ventilators, worked by simultaneous opening gear, and the ventilation is further assisted by cast-iron hit-and-miss ventilators built in the walls and treated as panels. The brewers' room is conveniently placed upon the mash-tun floor. The cellar, racking, and union floors are laid with asphalte. The brewery and pump-room floors and boiler-house are laid with granolithic cement paving. The chimney-shaft is 120 ft. high, circular, and stands on an octagon base with stone plinth, &c. The cap is in iron and stone. The copper and boiler-house is separated from the main building, and is covered with an iron roof in which ample provision is made for ventilation by means of a large glazed lantern. The cooperage and scalding-sheds are of ample dimensions, and are situated some distance from the other buildings. The roofs are of iron, and the floors are laid with granolithic cement paving. The stables and cart-sheds are placed some distance from the brewery, and have accommodation for the requisite number of horses and carts. The area of the land is ten acres, and it is inclosed with a brick wall worked in panels; gateway entrances are provided from Clarence-street and New-street. The offices afford accommodation for the staff. An abundant supply of water is obtained from a large well on the spot. A siding from the Midland Railway runs into the premises, with lines at both sides of the buildings, and branches to the cooperage and to the maltings, to be added hereafter.

The malt, hops, coals, &c., will be delivered in trucks direct to the required spot. The grains and spent hops will be taken away in the railway trucks. The beer will be loaded from the front dock, which is level with the racking-floors, direct into the trucks, and the empty casks will be delivered in a similar manner on the lines at the cooperage and washing-sheds. The general level of the ground has been raised about 2 ft. 6 in. to keep the brewery and yard above the flood-line in case of any high tides.

The plant is arranged as follows:—Cast iron cold, and wrought iron hot, liquor backs, fixed at the top of the building. The malt and hops are pulled up to the stores by a separate steam hoisting engine fixed at the loophole. The malt rolls are placed upon the first floor; the ground malt is taken up to the grist case by an elevator enclosed in an iron casing. The grist case is of wrought iron, the two mash-tuns are of cast iron, fitted with internal mashing-machines, and a Steele's machine serving the two tuns. The two coppers are open, heated by fire, and are of large capacity. There are two wrought-iron hop backs; the hops are raised to the coppers by steam power; the wort is pumped up from the hop backs on the ground-floor by two sets of lift-pumps to the coolers fixed at the top of the building. The refrigerator is Morton's patent, and has a capacity equal to fifty barrels per hour. The fermenting tuns are of wood, fitted with attemperators and parachutes. The yeast-backs and receivers are of slate, fitted with attemperators. The union casks are provided with every modern appliance. Attemperators are fitted to each cask, and also to the yeast-receivers. The racking backs are of slate; twelve or more casks can be racked at one time from each back. The main engine for driving the mash-tuns and malt rolls and grist elevators is placed on the ground-floor close to its work. Two large boilers supply all the steam to the brewery, and a separate one is fixed in the scalding-shed.

The hops are pressed by hydraulic power; the pumps are worked off the shafting. The yeast-press is S. H. Johnson's (of Stratford) patent hydraulic press, driven by its own engine. The grains are taken through valves in the bottom of the mash-tuns, and carried away by an endless-band conveyor to the grains-tank situated outside the building.

The casks, when filled in the racking-floor, are lowered into the cellar by self-acting machines, and the full casks are raised from the cellar and delivered to the racking-floor by an endless chain lift, driven by a separate engine. All the boilers, hot-liquor backs, and other vessels, with the steam-pipes, are covered with Leroy's patent composition to prevent condensation, &c. The rain-water is stored in a large tank under ground, and will be used to feed the boilers, thus securing pure and suitable water and preventing incrustation inside. The cooperage is fitted with the usual appliances for repairing, &c. The scalding-shed is supplied with separate cold and hot liquor backs, heated by steam coils, and with Messrs. H. Pontifex & Son's patent cask-washers. The empty casks are delivered direct by the railway trucks into the cooperage. Great attention is said to have been paid to the system of drainage, and also to the proper ventilation and trapping of the drains. The whole forms a complete 50-quarter brewery, and is fitted with every modern improvement.

The quantity of earth used to raise the level of ground, and which has been taken on the spot, is about 8,000 tons.

In addition to the large shallow well, another has been sunk, a 6-in. bore hole, 120 ft. deep. A separate steam-pump raises all the water, and is quite independent of the run of the machinery.

The contractors for the work were:—Building, Messrs. Lowe & Son, Burton; iron work, girders, &c., Messrs. Eastwood & Swingler, Derby; boilers, Messrs. Thornewill & Wareham, Burton; millwright work, Messrs. G. Waller & Co., London; coppers, pipes, and fittings, Messrs. Bindley & Briggs, Burton; slate mason's work, Messrs. Ashton & Green, London; back-maker, Messrs. Wilson & Co., Frome; refrigerators, Messrs. Morton & Co., Burton. The asphalte floors were laid by Claridge's Patent Seyssel Asphalte Co., London; and the granolithic paving was by Messrs. Stuart & Co., London.

The brewery, we may add, commenced work on May 15th.

The Mersey Railway.—The reports received from the Birkenhead works of the Mersey Tunnel, where the Beaumont boring machine is in operation, are stated to be most encouraging. The heading is, we are told, being driven forward at the rate of 27½ lineal yards per week, and the rock continues homogeneous.

THE DUTCH METHOD OF BONDING BRICKWORK.

As regards the two best-known modes of bonding bricks together in walls, it is remarkable that, while the one we call "Flemish" has nothing to do with Flanders, that which we call "English" only belongs to England in common with other brick-building countries. Each kind has its varieties,—thus, in English bond we sometimes put from three to five courses of stretchers to one of headers, and on the Continent there are different modes of increasing the proportion of stretchers in Flemish bond. Both these devices have the effect of increasing the tie in the direction of the length of the wall, and also of producing a smoother surface, by decreasing the number of joints. These are, indeed, the characteristics of Flemish, as compared with English, bond.

Now, there is in common use in Holland an interesting and little-known variety of English bond, that is much more cunningly contrived than those named. It has for its object a more perfect lap of the bricks in the direction of the length of the wall, as well as a more regular and better appearance of the wall-face. It will be seen from the illustration that this variation is produced by simply introducing a header as the second brick in one-half of the courses of stretchers, so as to throw the centres of the stretchers in those courses over the joints between the stretchers in the courses that are alternate with them.

As regards construction, in common English and Flemish bonds, no greater tie in the direction of the length of wall is obtained than the 2¼-in. which one brick laps over another. If, therefore, a fracture takes place, the crack runs down the wall, following the joints, with only that small deviation from a perpendicular line; but, by the Dutch method, a crack would have to follow the course shown by the thickened joints at A, or else break through the bricks. Clearly, therefore, we have here some additional strength, the lap between the courses of stretchers being as much as 4½ in.

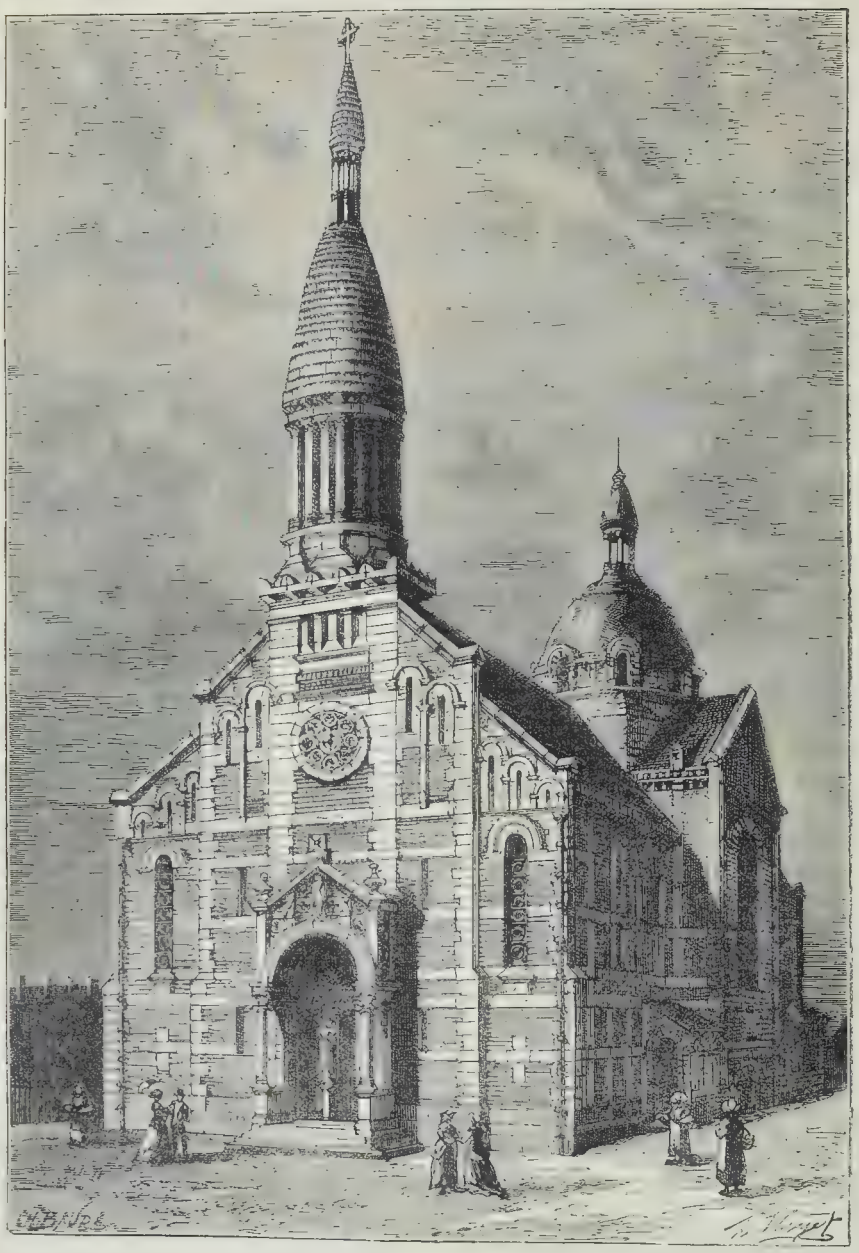
As regards appearance, the effect is at first sight hardly distinguishable from Flemish bond, for the joints are more evenly spread over the wall, so that all the real advantage of that bond is obtained. But, should the mortar differ much in colour from the bricks, a very curious effect is produced. When viewed from a little distance the joints seem to arrange themselves in diagonal lines, crossing each other like fine network, as shown at B, in the form of the St. Andrew's cross. In a new building of thick bricks this may even be noticed from a passing train, but it is hardly observable when the bricks are thin. In the illustration I have used a three-quarter brick at the end of each course of stretchers,—a neater but less economical mode of getting bond preferred by the Dutch to our plan of using a half-bat, as a closer, in the courses of headers.

I do not remember noticing this kind of bond in old work except in Holland, where it ranges from the end of the sixteenth century to the present day. Nor do I know that our engineers have adopted it, though it is used in railway works in Belgium, and I think, also, in the North of France. I have not found it in any English book on brickwork, but it is noticed, with illustrations, by Daniel Ramée in 'L'Architecture et Construction Pratique," where he calls it "*liaison en croix, ou liaison cruciforme, ou en losange*,"—names taken from an accidental effect of no importance to the work. He says, "good bricklayers build in the cruciform bond, indifferent ones content themselves with the common sort," which, in his engraving, he makes Flemish.

Upon the whole, this variety seems worth knowing, though we may doubt that many of our bricklayers will give themselves the extra trouble required to work the alternate courses, and to ensure that the perpends are "carefully regarded."

THOS. BLASHILL.

Fall of Coping.—Late on Friday night, the 15th inst., as Mr. Bernard Charles Molloy, member for King's County, was passing through Leicester-square, on his way to his chambers in the Temple, a heavy coping-stone fell from one of the buildings in course of erection, cutting him severely about the head. He was at once conveyed to the Charing-cross Hospital, where his wounds were dressed, and he was subsequently removed to his chambers, where he now lies.



THE NEW CHURCH OF AUTEUIL, NEAR PARIS.—M. VAUDREMER, ARCHITECT.



Looking into N Transept



From the North East



The National School W. Eden Nesfield Archt



The Western Gable

Sketches at Bonsey The Abbey Church and National Schools 2 May 883.

Whiteman & Bass Photo Litho 236 High Holborn

Wyman & Sons Printers London



J. Tait Architect.

Sunday School Memorial Hall Leicester.



COTTAGE · HOSPITAL · AT · ST PAULS · CRAY.

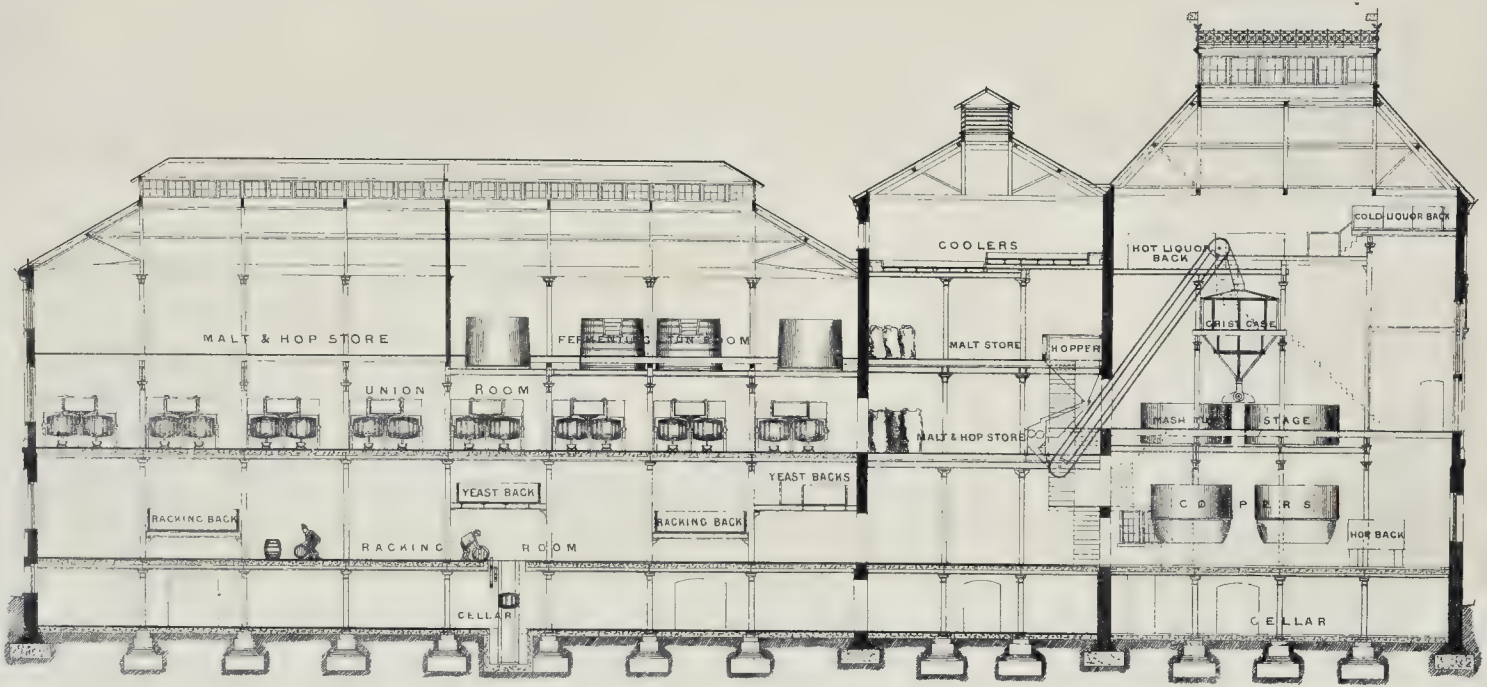
MR ST PIERRE HARRIS. A.R.I.B.A. ARCHT
1. BASINGHALL ST. E.C.
& ORPINGTON.

Whiteman & Bass *Photo Litho* 236 H.Gt. Holborn

Wyman & Sons Printers C.t Queen St.



NEW BREWERY AT BURTON-ON-TRENT.—Messrs. Scamell & Colyer, Architects.



LONGITUDINAL SECTION.

Whiteman & Sons, Photo. 236 High Holborn

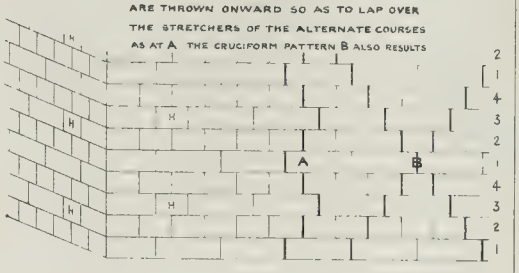
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NEW BREWERY, BURTON-ON-TRENT.

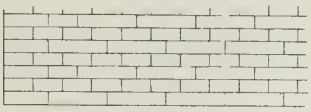
THE DUTCH METHOD OF BONDING BRICKWORK

BY INTRODUCING THE HEADERS H·H IN ALTERNATE STRETCHING COURSES.

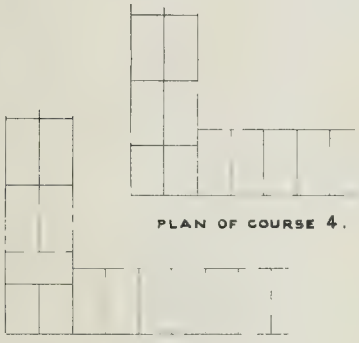
NOTE. THE STRETCHERS IN THOSE COURSES WHERE THE HEADERS H, H ARE INTRODUCED ARE THROWN ONWARD SO AS TO LAP OVER THE STRETCHERS OF THE ALTERNATE COURSES AS AT A. THE CRUCIFORM PATTERN B ALSO RESULTS



ELEVATION (IN ENGLISH BRICKS)
FOR ALL THICKNESSES OF WALL IF ¾ BATS ARE USED TO FORM BOND

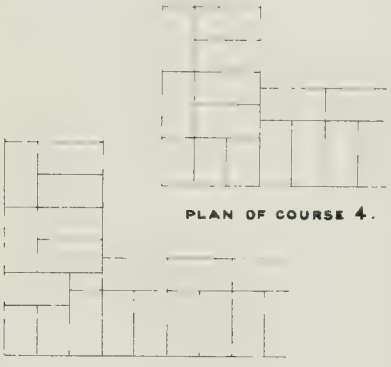


ELEVATION (IN COMMON DUTCH BRICKS).



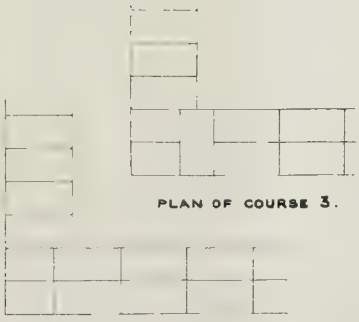
PLAN OF COURSE 4.

PLAN OF COURSE 2.



PLAN OF COURSE 4.

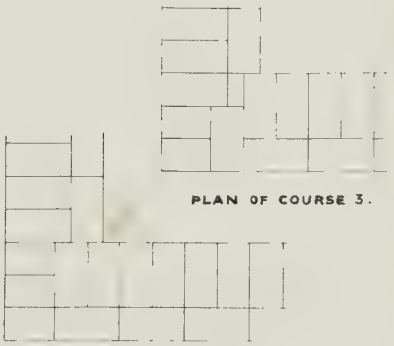
PLAN OF COURSE 2.



PLAN OF COURSE 3.

PLAN OF COURSE 1.

9-INCH WORK.



PLAN OF COURSE 3.

PLAN OF COURSE 1.

14-INCH WORK.

SCALE

12" 6' 0 1 2 3 4 FEET

Thos. P. Blashill
Architect

Whiteman & Bass Photo Litho 236 High Holborn

Wyman & Sons Printers Finsbury

THE CALAMITY AT SUNDERLAND.

ONE of the direst disasters of modern times was that which occurred on Saturday evening last in Sunderland, whereby no fewer than 182 children, of ages ranging from four or five to thirteen years, were killed,—some of them being suffocated and others trampled or squeezed to death. The simple narration of the details of the disaster by the daily journals of London and the provinces, without any attempt at what is sometimes called "piling-up the agony,"—for which, indeed, there is no scope in this case, the plain unvarnished tale of facts being of itself sufficiently terrible,—has sent a thrill of horror through the country, coupled with a feeling of deep sympathy with the parents and other relatives of the poor children who met with so sad a fate. The disaster has brought sorrow into many a workman's home, into many a family circle; in at least one case it has bereft parents of all their children. In many instances two or three children have been snatched away; in some cases the *only* child has been sacrificed. The fact that the poor children met with so cruel a fate while in the pursuit of pleasure lends additional sadness to the affair.

But it is incumbent upon us to do more than express our sympathy with the bereaved. The question we ask ourselves is, What are the lessons taught by this calamity? We hardly know whether, with the details yet before us, we can answer this question satisfactorily. It is very possible that grave responsibility for the disaster rests somewhere, though we may not be able to precisely locate it, even were we at liberty to do so in a case which is *sub judice*. As is usual (and perhaps natural) on such occasions, there have been some hasty and rather incoherent cries for vengeance upon somebody or other, and, as a matter of course, it has been assumed by some that the architect of the building is partially, if not chiefly, to blame for the disaster. So far as we have the facts before us, there does not seem to be any substantial ground for such an imputation. By some writers the whole of the blame has been cast upon the people who brought the children together without, it is alleged, providing adequate supervision and control by adult attendants. Whether the building possesses defects of planning which contributed to the accident, and, if so, whether those defects are attributable to the architect who erected the building, or are due to alterations subsequently carried out, and whether the managers of the entertainment are blameworthy, are questions upon which the coroners' inquiries may, it is to be hoped, throw a distinct light.

What were the circumstances attending this terrible event? Briefly stated, they were these:—A professor of conjuring or magic had invited the school children of the town to attend his entertainment on Saturday afternoon, at a merely nominal charge for admission, and an additional inducement was held out to them by the promise of a distribution of toys. The entertainment was given in the Victoria Hall, which is stated to be the largest building in the town, and which was erected about twelve years ago from plans prepared by Mr. G. G. Hoskins, architect, of Darlington. We published some brief particulars of the building at the time of its opening in January, 1872.* The building is capable of accommodating about 3,000 persons, and so far as the auditorium is concerned, it is arranged theatre-fashion, having an area capable of seating 1,100 persons, a "dress circle" or lower gallery, seating 800; and, above this, an upper gallery, seating 1,100. It is stated that on the occasion of the entertainment on Saturday last, this upper gallery contained 1,400 or 1,500 children, the area containing about the same number, there being, however, only a few in the "dress circle" or lower gallery. The poor children to the number of nearly 200 whose lives were lost formed a portion of the audience in the upper gallery. This gallery, it seems, is approached by flights of steps about 8 ft. wide,† broken by landings and passages of the same width, none of the steps being of the description technically known as "winders" (*i.e.*, wedge-shaped, with the "tread" broad at one end and tapering off to nothing at the other,—a description of step which should never be used in any public building). It is not a "winding staircase," as stated in some of the journals. It seems to be clear that the stairs, where they occur, are in straight flights, although there are more or less acute turns in the *route*, such turns, however, being made at the points of junction between stairs and corridors, and not on the stairs themselves. Without entering into further details at this point, we come to the cause of the accident. The entertainment had drawn to a close, and a large number of the children in the upper gallery, seeing that the distribution of toys was about to commence in the area, and anxious, it is supposed, to get their share, rushed to the exit from the gallery, ran down the upper flight of steps, twenty-one in number, which brought them to a corridor 16 ft. 9 in. long, and in the mean of the same width as the stairs; traversing this corridor, they rushed down a second flight of steps, fourteen in number, and giving on to a landing; here, however, the first-comers found their further progress barred by a door, which, according to some accounts, is made to open both ways, but which, when the disaster was discovered, was found to be fixed (by a bolt shooting down into a socket in the floor) in a position diagonally across the corridor or landing, so as to be only open to the extent of about 22 in.,—a position in which it is stated to have been fixed in order that the children might pass in one by one, pay their money, and ascend to the gallery. This arrangement, however convenient it may be for enabling an audience to be admitted one by one where only one money-taker or check-taker is in charge of an entrance, is obviously a very dangerous one, especially if, as seems to be the fact in this case, the door be left fastened athwart the corridor and left unattended. The onward and downward rush of a throng of eager and excited children, who pass uninterruptedly down staircases and corridors 8 ft. wide, is suddenly checked, and before the first-comers even can pass through the narrow opening of 22 in. left by the nearly closed door, they are jammed together so tightly as to be unable to move, and the landing rapidly becomes choked up with layer upon layer of dead and dying children, those behind, all unaware of their impending fate, continuing to press forward and downward, only to be driven on to the heap of their dead and dying playmates. Nothing more terrible can be imagined than the death struggles of these poor children, and, as we have said, a heavy responsibility attaches to somebody. The poor victims' cries were a long time in attracting attention, no doubt owing to the noise made by the other children in the building. At last it is discovered (apparently only casually) what has happened and is happening, and then, one or two men, with presence of mind, manage to turn the stream of young and eager life which is flowing on to destruction. When the extent of the calamity is realised, every one is horror-stricken.

Why, it has been asked on all hands, was the door on the landing left fastened and unattended?* And why were so many poor children brought together without a few adults being stationed with them to maintain discipline? Why was there no one stationed at the exit of the gallery to restrain the children from leaving? Every one who has had any experience in dealing with large bodies of children (especially when they are drawn together, as in this case, almost promiscuously) will admit the paramount necessity of such precautions. How much more serious might the disaster have been in this case, under the same conditions, had there been a cry of "Fire!" or any other cause of panic? At Sunderland there was no panic, only a rush of children eager to get their share in a distribution of toys.

The disaster brings to our recollection the terrible "accident," if such it can be called, which took place in the Colosseum Theatre, Liverpool, on the 11th of October, 1878,* when thirty-seven lives were lost, mostly those of young men. A cry of "Fire" was raised, and there was a rush outwards towards the main entrance of the building. The passages and stairs were badly planned, and converged upon one another in a sort of lobby, the way through which was impeded by a post or barrier. In our volume for 1878, pp. 1197-98, we published a plan of the scene of this disaster, together with a report thereon, made for the information of the Lord Chamberlain by Mr. Thomas Verity. The coroner's jury in this case returned a verdict of some length, in which they expressed their belief "that the principal cause of the numerous deaths was the barricade at the bottom of the gallery stairs being fixed and the exit door fastened." They also suggested that "the services of a policeman, if required by the proprietors of places of amusement, should be granted." If the lessons of Liverpool had been acted upon in Sunderland, we should not have had to chronicle the terrible event which will make Saturday, the 16th of June, 1883, a day of sad memory in many humble homes.

SIR, With respect to this terrible disaster permit me, as the architect of the building, to say that the "fatal door" on the first half space landing of the gallery stairs was not fixed by or under my directions, neither did it form any part of my plans, it having been added subsequently to my connexion with the work. I saw the door yesterday for the first time. I further beg to say that the stairs are not "spiral" (as stated in several of the metropolitan and provincial daily newspapers), as the accompanying plans and section will show, and the light is so ample as to allow of the staircase being photographed yesterday; but you will be able to form your own opinion on this point from the plans and sections before referred to.

G. G. HOSKINS.

IT is difficult to avoid the error of extreme condemnation of the cause of these recurring disasters in public buildings and other places of general resort. The old, old story is told; a door is kept deliberately shut, locked, and bolted, at exactly that particular period of time when it ought to be wide open, and secured from accidental shutting.

Persons specially appointed to see that oil-lamps are kept burning in passages, stairways, &c. (and so provide against the sudden extinction of gas), and to keep free the means of egress, are found, nine cases out of ten, absent from their duties or grossly neglectful thereof, or else they lose all presence of mind on an occasion of sudden disaster.

Iron shutters, which should descend at a given moment, and thus cut off communication, are found unworkable on a supreme emergency, mainly, if not completely, owing to sheer inattention on the part of those responsible for the safe-working of such mechanism.

Large tanks of water, provided to flood any portion of a building on fire, when the crisis arrives are discovered to be half, if not wholly, empty. Public buildings are permitted to remain in their present condition,—a condition which, from the point of view of diabolical death-traps, is simply perfection itself.

Architects, surveyors, and public authorities appear to be but sluggishly awakening to the necessity of "doing something" to provide against the awful contingencies of fire and tumultuous crowding in narrow spaces. Horace philosophically states the case,—"*Quid quisque vitet, nunquam homini satis cautum est in horas.*"

FRANK MOORE.

The New Church of St. Anne's, Netherthorpe, Sheffield, has been consecrated by the Archbishop of York. The church, which will cost 5,000*l.* is in the Perpendicular style of architecture, and consists of a nave, two aisles with porches at the western ends, chancel, vestry, and organ-chamber. The materials used in construction are red brick with stone dressings. The face of the chancel walls is plastered and finished with very simple colour decoration, while in the centre of the reredos is a painting of the "Last Supper," by Mr. Powell, of Leeds. The church will be heated by Mr. W. Truswell's (Sheffield) patent low pressure steam apparatus. Mr. J. D. Webster is the architect, and Mr. Fidler, of Eckington, contractor.

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* See *Builder*, vol. xxx., p. 49.

† Twice as wide as such stairs should be, unless provided with a central handrail.

* It is right to say here that since this was written conflicting statements have been published as to the position of this door and its guardianship. Mr. Fey, the entertainer, states that he ascended the gallery staircase after the children were admitted, and that he is positive that the door was not left bolted. A boy named Wilson states that the door was not bolted at the time the first of the down-coming children reached it, but that one of Mr. Fey's assistants, stationed there to distribute the toys, bolted the door in its fatal position in order to check the rush of the children. We understand that the man denies this, and it is suggested that the door may have become partially closed by the excited movements of the children, during which the end of the bolt dragged the ground, dropping into the socket when the door had moved far enough on its hinges. The point will, it is to be hoped, be elucidated at the inquest. It seems that the toy-distributor, when he saw what was happening, tried to release the bolt and open the door, but finding himself unable to do this, he at once ran for assistance.

* See *Builder*, vol. xxxvi., pp. 1099, 1159, 1197.

ART AND SANITATION IN HOUSES AND HOSPITALS.

IN the discussion which followed the reading of Professor Hayter Lewis's paper,* at the Parkes Museum, on "The Employment of Artistic Materials in the Architecture of Houses and Hospitals,"

Mr. Rogers Field said he cordially agreed with Professor Hayter Lewis's suggestion that the water-cisterns of our houses should be placed in more prominent positions than was at present the case; at any rate, they ought to be in easily accessible situations, where they could be readily inspected by the master or mistress. Nothing had struck him more forcibly in the course of his practice than the utter disregard of this requirement in most houses. As a rule, the cistern was placed in any dark and out-of-the-way corner, and very often it was extremely difficult of access, even to the plumber. Where a cistern was so improperly located it was impossible to inspect it, and of course exceedingly difficult to clean out, and people had to trust to the conscientiousness of the workman whom they employed to clean it. In many cases where complaints had been made of bad water, he had found the fault to lie in the cistern or means of storage, and not in the quality of the supply. People in looking out for a house should never, if they valued their health, take one where the cistern was not easily to be got at, inspected, and cleaned. As a matter-of-fact many householders were quite unaware of the position of their cisterns; if they were to examine into this matter large numbers of them would be perfectly astonished at the perversity of ingenuity which builders resorted to in order to make the water-cistern as inaccessible as possible. On another point he fully agreed with the lecturer, viz., as to the importance of making the walls and other parts of hospitals of such materials and of such form as not to collect or retain dust. At the time of the International Medical Congress, a few years ago, he was going over one of our English hospitals with Dr. Billing, the Surgeon-General of the Health Department of the United States Army, when they saw a cupboard fixed in such a position as to afford lodgment for dust. Dr. Billing said that he always made it a point, when inspecting a hospital under the control of his department, to wear white kid gloves, and then to touch the walls and other surfaces with them. If dust had been allowed to accumulate the result was at once made apparent by the soiled appearance of the gloves.

Mr. J. C. Bloomfield said he trusted that the Parkes Museum would not entirely confine itself, as the lecturer had apparently done, to the making healthy of the nicely-decorated houses of the rich. It had a great field before it in the improvement of the dwellings of the poorer classes. As an Irishman, he had been recently turning his attention to the state of the dwellings of the agricultural classes, and had had something to say on the subject before a Royal Commission. What was the state of things that prevailed even with regard to the more recently-built and better class of farm-houses,—say, in county Fermanagh? What was the roof-covering of these houses? Simply clay with the sod on it, perhaps full of all sorts of filth. Under such a roof the farmer stored his milk and made his butter. The rough stone walls were put together with what was called mortar, which was a mixture composed of a considerable amount of mud, some sand, and very little lime. For the floor the naked soil was left. Need he say any more to show the insanitary nature of such dwellings? He was talking not of the poorest class of hovels, but of some of the better class of farm-houses. He trusted that one outcome of the labours of the founders of the Museum would be that increased attention would be paid to sanitary matters in Ireland.

Dr. G. V. Poore, in proposing a vote of thanks to the chairman (Sir Joseph Fayrer, K.C.S.I.), said that there were one or two points as to which he wished to say a word or two. It seemed to him to be a fault, common to hospitals and houses alike, that too many ledges and high shelves were left for the collection of dust. Over-mantels, cupboards, book-cases, and articles of furniture were made with flat tops, often at such a height from the floor that their condition as to dust could not readily be seen by the mistress, and their cleansing was, therefore, dependent upon the housemaid, who was not always sufficiently enterprising to mount a pair of steps and remove the dust that accumulated in such places. He was strongly inclined to advocate the making of the tops of all such fixtures or pieces of furniture with a downward and outward slope, so that they would not only afford less scope for the lodgment of dust, but would always be visible from below. Professor Lewis's lecture had been interesting because it had drawn prominent attention to many of the principal objects in the Museum, and explained their uses. It was to be regretted that the Board of Management of the Middlesex Hospital, hard by, were not a more wealthy body, and that they had not the advantage of hearing the lecture before putting up the unsightly structure which now disfigured the courtyard in front of the hospital. That structure was certainly the reverse of æsthetic, and it would be detrimental to many afflicted patients if Professor Lewis were correct in his views as to the intimate connexion subsisting between health and beauty of surroundings. With regard to Mr. Bloomfield's remarks as to the work of the Parkes Museum, the main object of the Museum was undoubtedly to benefit the poor, but the Council were convinced that they could only be taught from above. When the upper classes began generally to understand and put in practice the laws of health as affecting dwellings, the middle class would follow, and finally the poor would understand those laws. The Council would be only too glad to make the Museum at once available for the education of the poor in sanitary matters.

Mr. R. B. Grantham, in seconding the motion, said he heartily agreed with what the lecturer had said as to matters of water-supply, to the adequate provision and storage of which in isolated houses, such as country mansions, he (the speaker) had devoted considerable attention. This was a point of great moment, not only on sanitary grounds, but as a means of protection from fire. The great advantages of the use of concrete and other materials had been clearly shown by the lecturer. A house might be properly constructed and decorated on sanitary and artistic principles, and at little, if any, cost over that of a badly-built and ill-decorated house.

Sir Joseph Fayrer (who had previously put from the chair a vote thanks to the lecturer, which was accorded by acclamation), in acknowledging the vote of thanks now tendered to him, and closing the discussion, said it had given him great pleasure to listen to Professor Lewis's lecture, which dealt with a subject of much interest. Dr. Poore had explained that the object of the Museum was to instruct the people as to the laws of health, to impress upon them the need of pure water and plenty of it, fresh air, and personal cleanliness. It was not only the poor who needed such instruction; it was still necessary in all ranks of life,—from the occupant of a palace to the tenant of the mud hut which had been so graphically described by the gentleman from Ireland. The question of house sanitation had excited more attention lately than it had received for some years, but not nearly so much as it deserved. The Council of the Parkes Museum hoped and believed that that institution, and the lectures which would be given there, would do much to increase public knowledge on the subject. Professor Lewis, as an architect of distinction, was eminently qualified to speak upon the subject which he had taken as the title of his lecture, for an architect was not the mere builder of a house or a palace, but was an artist as well, thus combining the æsthetic with the utilitarian. He (the Chairman) was very pleased to hear the lecturer draw attention to the necessity of improving the means of domestic water storage, both in filters and in cisterns. There was great need for improvement in the directions indicated. He should have liked to hear the lecturer's views as to the best means of improving our theatres, the condition of most of which, in point of ventilation, was simply lamentable. Their construction was for the most part very bad, and they were exceedingly liable to take fire, in spite of the existence of cyanite, iron doors, &c. It was only on the occurrence of some dreadful calamity, such as those of Vienna and Nice, that public attention was roused to the importance of the subject. With regard to hospitals, much had been done of late years to improve their sanitary condition, but very much yet remained to do. He was very glad that Professor Lewis had pleaded for some amount of simple and cheerful decoration in our hospitals and infirmaries, for the pleasantness of a patient's surroundings often exercised a remarkably beneficial effect upon his mind, and thus assisted in no small degree towards his rapid recovery.

* Printed by us last week (see p. 865).

THE INFLUENCE OF NATURAL FORMS ON ARCHITECTURE.*

NATURE has not only been the parent of our constructive and decorative art, but has fixed the sites for our ancient cities and highways. She pointed out a commanding site for a fortress or castle to defend the surrounding district. Man has taken the most easy and accessible path from the valley to arrive at the elevation. In course of time dwellings were erected on the sides of those paths, which thus became the ancient highways. And again the spiritual advisers of our forefathers would look around on Nature for a spot suitable for devotion in some lovely valley or charming elevation, surrounded with all nature's bounties, and there erect our ancient building for devotion and education, and thus form another centre. Also the majestic river or sheltered spot on our coast has pointed out a site for the dwellings of men suited for their labour and enterprise: thus another centre. The more we study nature the more we see her influence. She is not contracted, but casts abroad her gifts for those who seek for them. Her great principles must stand for all ages. The way we clothe them is only the fashion of the hour, so let us respect the thoughts of others and have reverence for the works of our forefathers.

There is one of nature's laws that we are very careless about, the neglect of which is causing the destruction of our stone buildings. Nature forms the stone in beds; we reverse this and make the bed the exposed face. The weather acting upon this affects the face and its beds shell off. Nature speaks very loudly to us in the appearance of our buildings. I trust we will listen to her, give attention, and stay this destruction. There is a bright future in store. Our nation is having a higher art education, and our art-workers are a more cultured people. Rapid strides have been made during the last twenty-five years. Our street architecture is more varied in design, with honest construction and decorative tone. One of our greatest living authors and art thinkers has said (I refer to Mr. Ruskin), "Do honest work, let her principles be seen. If you wish for grace and form go to the grasses, watch the opening bud and developing flower. There is nothing in life, so there is nothing in lifelessness, that has not a lesson for you to study." This is the source from which we realise pleasure in the works that have come down to us from what are called the Dark Ages. Would to Heaven we had some of their workers amongst us in this nineteenth century to stimulate us with their devotion and love for the art! It is with loving devotion that we discover her charms, examine her details, and understand her laws, thus bringing us into close sympathy with her; which, if we can realise and portray, is the secret of our art. It speaks to humanity, cheers her in desponding moments, and elevates the thoughts; no discordant sound is heard, all is beautiful and in harmony. If it influences us in our art it will help us in our contact with man to look with a smile of sympathy on his efforts, and not with a frown of discord. We all love sympathy; it cheers us in the anxious hours of toil, and leads us to lift our souls in gratitude to the loving hand that gave us these glorious works and endowed us with reason to analyse them.

Whatever may be our differences of opinion as to construction or decoration, I think we all try to do our utmost, so that buildings entrusted to us will speak with joyous language to a passing world, and be of such stability that when England as a nation shall not be known, when her banner as mistress of the seas is given to another, her colonies have released themselves from her grasp, and England shall be known only as a name belonging to the past, her buildings of the nineteenth century will be standing, models of the admiration of the now infant empires, and cause them to love and honour the name of Britain. But long may she continue in power, and use it with wisdom for the benefit of the civilised and uncivilised world.

* From a paper by Mr. W. Glover, read at the last quarterly meeting of the Northern Architectural Association.

PROPOSED BRITISH SCHOOL OF ARCHÆOLOGY AND ART AT ATHENS.

THE annual meeting of the Hellenic Society was held at 22, Albemarle-street on the 14th inst., Prof. C. T. Newton, C.B., vice-president, in the chair. The annual report of the Council was read and adopted. The balance-sheet showed a working balance of about 650*l*., but it was pointed out that this did not leave much surplus, after the publication of the journal and the payment of current expenses, to devote to other objects contemplated by the society's constitution. The number of members and subscribers now amounted to 568, which was satisfactory in so short a period as four years, but if the number were raised, as it easily might be, to 1,000, the society would be in a position to do far more useful work. The council called the special attention of members to the project for establishing a British school of archæological and classical study at Athens. On this subject, after some preliminary remarks from the chairman, Professor Jebb made a statement to the meeting of the position and prospects of the scheme, which he had introduced to the public in a recent article in the *Fortnightly Review*. The editor of that magazine, Mr. T. H. S. Escott, had taken up the idea warmly, and through his help adherents of the highest eminence had been gained for the project. The Prince of Wales and the Duke of Albany had promised support, and so had the Chancellors of the two Universities, the President of the Royal Academy, the President of the Society of Antiquaries, the Bishop of Durham, and others. A circular would shortly be issued defining the lines on which the scheme would be based, and inviting not pecuniary aid, but adhesion. After this had had time to take effect a meeting would be held in London, probably in July, which would be made as representative as possible. At this meeting a general committee would be appointed, and also an executive committee, which would be charged with the duty of drawing up a scheme in detail. On this committee it was proposed that the Hellenic Society, the Dilettanti Society, the Society of Antiquaries, the Universities of Oxford and Cambridge, and other important bodies should be represented by delegates.

COMPETITIONS.

The Leeman Memorial, York.—Saturday last was the day appointed as the last on which models for the proposed statue in memory of the late Mr. George Leeman could be received. The artists who are competing are Mr. Geo. Halse, London; Mr. W. D. Keyworth, London and Hull; Messrs. W. & T. Wills, London; and Mr. Geo. Milburn, York. On Monday last a meeting of the committee was held for the purpose of inspecting the models and considering the estimates.

Harrogate.—A new Presbyterian church is about to be erected at Harrogate, Yorkshire. Designs having been invited in competition, that of Mr. W. Lister Newcombe, F.R.I.B.A., was selected, and building operations will shortly be commenced. The same architect's designs have also been adopted, after competition, for extensive co-operative store buildings to be erected at West Pelton, county Durham.

THE GAS INSTITUTE.

THE Gas Institute commenced its twentieth annual meeting on Tuesday in last week, in Sheffield, a town exceedingly suitable for the gathering, lying, as it does, in the very heart of the great Midland coalfield. The president, Mr. R. O. Paterson, Associate-M. Inst. C.E., of Cheltenham, delivering his inaugural address in Firth College, referred to the competition between gas and the electric light, and believed that the future would bring far severer trials for gas than anything it had yet experienced, and that the surmounting of them might not be so triumphant unless means were adopted to ensure success. In the face of the mighty cry, "The greatest good for the greatest number," no property was quite safe now-a-days; least of all gas property. The claims of vested interests were no longer sacred. The Electric Lighting Act might be instanced as a striking example of the spirit of the times. Suppliers of gas did not lay claim to a monopoly of light, but speaking for gas companies, they had invested their capital on the authority of Parliament under conditions which made it impossible for them ever to be able to realise it again, and it could not be considered satisfactory that the security under which they embarked upon business should be gravely discounted by Parliament without any equivalent or compensation whatever. The president referred to the many useful inventions respecting gas manufacture and supply which had been brought to light during the past year. The great merit of gas was that it was the light of the million. The gas manufacturers awaited the attack of the electricians, and when they did come the latter must be prepared to meet a well-equipped and stubborn foe. The gas interest would not yield one inch. If the electricians sought for it they might find a place for themselves. He wished them no ill, for he considered that gas must ever remain the best and cheapest light for the homes of England.

FOREIGN EXHIBITIONS AND CONGRESSES.

Portugal.—A great exhibition of agricultural products, implements, and machinery will be opened in Lisbon on the 2nd of September next. The enterprise is under the patronage of the King of Portugal. On the Continent, particularly in France and Belgium, manufacturers of agricultural machinery and implements appear to be taking much more interest in this Exhibition than is shown by English houses. The agents of the Thetis Company in Bordeaux, Havre, Antwerp, and other places announce that all articles intended for the "Commission exécutive de l'Exposition à Lisbonne" should be sent through them, they having been appointed as official forwarding agents to the Exhibition.

Copenhagen.—This year's International Congress of "Americanists" will meet at Copenhagen from the 21st to the 24th of August. The association meets every other year, every time in a different city, and this meeting will be the fifth since the Society was started. The object of the Association is the prosecution of research in the archæology and antiquities, the history, anthropology, ethnography, and languages of North and South America before the discovery of the continent by Europeans. The general secretary for the present year is Mr. W. A. Carstensen, of Copenhagen, with whom all persons desirous of taking part in the next Congress are invited to communicate.

Germany. — The German Anthropological Society, whose labours have already shed much light on the history and habits of the earliest inhabitants of Central Europe, will hold its next meeting at Treves on the 8th, 9th, and 10th of August next.

Berlin.—The exhibition of works of modern Italian and Spanish artists at the Winter Garden in Berlin is spoken of in very high terms by the critics of the German capital. The catalogue embraces 800 numbers, of which 300 are paintings, 200 water-colours, sixty pieces of sculpture and bronzes, and the remainder, about 250, objects of art industry. The subjects of the majority of the paintings are *genre*, few being devoted to history. Most of the sculptures are works of great beauty, and this is also true of all the objects of art industry, particularly of the ebony furniture adorned with ivory. The entire exhibition is insured for the sum of one and a half million marks. The objects lent by the Royal Museum of Florence are treasures of the greatest value. Many years ago Napoleon III. endeavoured to obtain them by purchase for France, but failed to induce the owners to part with them. Among them is the model of a door in the Vatican beautifully executed in variegated marble, valued at 35,000 marks; also a marble table-top of extraordinary beauty and brilliancy of colours.

Iceland.—At Reykjavik, the capital of Iceland, there will be this summer an exhibition of articles exclusively of native Icelandic manufacture.

Stratford-on-Avon and its Sewage.—The Stratford Town Council, at a special meeting on the 20th inst., sanctioned a combined scheme of water supply and sewage disposal prepared by Mr. Pritchard, civil engineer, at a total estimated cost of 23,500*l*. The whole of the town sewage is at the present time being discharged into the River Avon, and the Corporation have been threatened with injunctions.

A PRE-HISTORIC CEMETERY.

REMAINS of a pre-historic civilisation on the American continent are constantly being discovered. One of the latest of these finds is a cemetery of about 100 acres in area, situated two miles from Mandan, near the confluence of the rivers Hart and Missouri. The graves here are filled with the bones of a race of men who were of giant stature, like the Patagonians. The spot lies due east of Fort Lincoln-road, and is covered with the graves of animals as well as of human beings, promiscuously mingled together. Some of the mounds are 8 ft. to 10 ft. high, and several tombs are more than 100 ft. in length. In addition to the bones of animals and men there are found in them fragments of earthenware vessels and vases of many coloured stone, particularly agate. The earthenware vessels are formed of a black material, and are as light as wood. The style in which they are executed betrays a people which had, obviously, attained a considerable degree of civilisation. It is inferred from various indications that the spot where this cemetery lies had been the scene of a great battle, in which some thousands of men had fallen. This interesting pre-historic place of burial, however, has by no means yet been thoroughly investigated. Only a few of the mounds and graves have so far been opened. Five miles above Mandan, on the opposite side of the Missouri, there is another similar cemetery which remains still entirely unexplored. Amongst the native Indians of the district the tradition is current that these tombs belonged to a race of men who occupied that region in times anterior to the appearance of the red man there.

THE LATE EARL OF CRAWFORD AND BALCARRES AND THE DUNECHT OUTRAGE.

ORDERS have been received from the Balcarres family by a firm in Aberdeen to prepare an elaborate granite monument, to be raised to the memory of the late Earl of Crawford and Balcarres, upon the spot where his remains lay during the fourteen months that elapsed between the desecration of the vault at Dunecht and the discovery of the body. It will take the form of a large cross, and is to be executed by the express wish of the Dowager-Countess. The spot where it will be erected is an old waterway, at the edge of one of the woods on the estate, and within sight of the mansion of Dunecht. In connexion with the outrage it may be mentioned that there are three claimants for the reward offered by the Government and the Earl of Crawford for the discovery of the perpetrators of the outrage, and the Home Secretary has appointed one of the Scotch sheriffs to adjudicate upon their claims, but it is stated that only half the reward will be granted, as only one of the guilty parties has yet been brought to justice.

LARGE SALES OF WEST END AND OTHER PROPERTY.

AN unusually large amount of West-end and other property in the Metropolis was disposed of last week at the Auction Mart. Messrs. Chinnock, Galsworthy, & Co. sold Nos. 40 and 50, Grosvenor Gardens, held on lease for seventy-two years, at a ground-rent of 50*l*. per annum, for 16,600*l*.; also Nos. 36 and 38 in the same gardens, held on lease for seventy-two years, at a ground-rent of 62*l*. 12*s*., for 16,000*l*. An improved ground-rent in the same locality of 190*l*. per annum, term seventy-two years' lease, sold for 4,470*l*.

Messrs. Newbon & Harding offered for sale several lots of property in Fulham. A freehold residence, called the Holcrofts, together with four villa residences and eight acres of land, were sold for 16,000*l*. Colehill Cottage adjoining, with two acres of land, also freehold, was sold for 3,140*l*.; and Holcrofts Priory and Holcrofts Abbey realised 920*l*.

Messrs. Baker & Sons offered for sale forty-three acres of freehold building land at Ealing, known as Brent Side Farm. There was a close competition for the property, which was sold for 7,400*l*.

Messrs. Fox & Bousfield submitted to competition a building estate at Norwood, of 102 acres in extent. The property was formerly known as Biggen's Farm, but has more recently been designated Beulah Park. The property was

described as on the direct line of the Croydon and London extension of the Oxted and Groombridge Railway, the Bill which has just passed the House of Commons, and that there will be a station on the property. The particulars stated that the estate contained an inexhaustible supply of the finest brick earth and pottery clay, capable of being successfully worked, without injury to the estate in the progress of building. After an animated competition the property was sold for 28,000*l.*

THE WIMBLEDON PARK ESTATE SALE.

THE announcement of the sale of the Wimbledon Park Estate, comprising 450 acres, in twenty-seven lots, varying from 10 to 90 acres in each lot, brought together a large company at the Auction Mart, a few days ago.

Mr. Galsworthy, of the firm of Messrs. Chinnock, Galsworthy, & Chinnock, conducted the sale, and in opening it pointed out that the extension of the District Railway from Putney, —called the Wimbledon and West Metropolitan Junction Railway,—passed directly through the estate, which would materially increase its value, by opening it out for building upon. In illustration of this he said that since the passing of the Railway Act upwards of 200 acres of the estate had been disposed of. In further proof of the greatly increased value given to land at the west end of the metropolis and the district around, he stated that whereas before the opening of the railway to Fulham land in that locality was only worth 800*l.* an acre, it was now worth 3,000*l.* an acre, and it was only reasonable to conclude that when the railway, shortly to be constructed through this estate was completed and opened, there would be a corresponding increase in the value of the land. He estimated its present value at from 1,000*l.* to 1,200*l.* an acre, observing that sales had already been effected at that rate.

The sale then proceeded, the first lot offered containing 15 acres 3 roods, which was withdrawn at 6,500*l.*, or about 400*l.* an acre. The other lots were offered in succession; but, with the exception of five lots, all were withdrawn at prices varying from 400*l.* to 900*l.* per acre.

The five lots sold consisted of one containing 6a. 3r. 16p., which realised 2,200*l.*; also one containing two acres and a half, on which there is a dairy farm, comprising an old farm-house, and numerous outbuildings. It was sold for 2,600*l.* Another plot, containing four acres, realised 1,750*l.*; and two small plots, the one containing three-quarters of an acre, and the other half an acre, were sold for 750*l.* and 540*l.*, the total proceeds of the lots actually sold during the day being 7,840*l.*

ARTISANS' DWELLINGS IN THE CITY OF YORK.

ON the 12th inst. the Lord Mayor of York opened some blocks of improved dwellings for the working classes of York. The buildings are situate at the back of the large house, Hawarden-place, St. Andrewgate, and opposite the Church of England schools, Bedern. Some time ago a strong desire was expressed in the city, on the part of many of the wealthier citizens, for the erection of improved artisans' dwellings, and a meeting was called by Mr. Alderman Rowntree, then Lord Mayor, to consider the question of forming a company. Mr Ernest, the owner of the new buildings, had, previously to this meeting, submitted plans to the Urban Sanitary Committee, which were sanctioned by that body. The back block of buildings is approached by Hawarden-place, and stands in a spacious concreted yard. It is five stories high, and contains thirty rooms, divided into twenty tenements of ten single rooms, and ten with two rooms each, well fitted with pantries and cupboards. The entrance passage is 4 ft. 6 in. wide, the floor is laid with cement and tiles, and each corridor is of a corresponding width and the same material. The stairs are of stone, with a 6-in. rise, and 3 ft. wide, completely fireproof. On each landing, away from the rooms, are the water-closets, also water supply, sink, and a dust-shoot. Gas is laid for each landing; every living-room is also provided with gasfittings, but it is optional with the tenant as to whether he will use the gas. Each tenant using the gas will have his own meter. The whole of the upper floors are deadened by a counter-floor of thick composition, so that the tenants may not be disturbed by noises from either above or below. The front block of Ebor Buildings is considerably larger than the other. It has a common brick front, relieved by pressed brick arches, and black and red bands or string-courses along the front. There are fifty rooms in this house, consisting of twenty tenements. Twelve tenements have a living-room and bedroom, and eight have a living-room and two bedrooms, and there is also a shop. The entrance passage is 5 ft. wide, with a door at the end leading into the spacious yard beyond. The stairs are 4 ft. wide, and the corridors correspond with the passage below in breadth and length. The floors are concrete, arched, and finished with cement and tiles. There are the same conveniences as described in the back block with regard to closets, water, sinks, dust-shoots, &c. The rooms in this house are more commodious than in the back one, measuring about 13 ft. 6 in. by 12 ft. and 13 ft. 6 in. by 9 ft. The sound is deadened by the same means as in the other building, and gas is laid to each tenement.

The next feature both of interest and importance to a family is to know that no washing need be done at home, as ample washhouses are provided, fitted with boilers, washtubs, &c. Clothes-lines and props are found by the proprietor, and regulations are made as to washing and drying to prevent confusion. Mr. Ernest has also provided for the social and intellectual wellbeing of all who become occupants of his buildings. He has enlarged the dining-room of the house in Hawarden-place, and assigned it to the tenants as a reading-room, and for the delivery of lectures and occasional entertainments. This is capable of holding over 100 persons. The position of the buildings is a good one, being in the centre of the city.

Mr. Goodwill prepared the plans; and the contractors were:—Mr. G. Spence, Layerthorpe, brickwork and cementing; Mr. W. Harrison, Aldwark, joiner's work; Mr. C. Kilvington, Monk Bridge, mason; Mr. M. Croft, Lendal, plasterer; Messrs. Dodgson, Bishophill, slating; Mr. R. Pearson, Goodramgate, painting; Mr. Moyser, Monkgate, plumbing; Mr. A. Richardson, Monkgate, whitesmith.

WORK AT LINCOLN CATHEDRAL.

LINCOLN CATHEDRAL has just undergone a very striking improvement. The earth which had accumulated around the base of the western façade has been removed, and the area in front has been lowered to the depth of 3 ft. or 4 ft. The shafts and mouldings and arches previously sprang at once from the ground without any apparent structural connexion. Now the disclosure of the original Norman plinth, hidden for centuries, gives unity to the whole structure, and adds greatly to its dignity. A plan is under consideration for continuing the work along the southern flank of the cathedral, now buried many feet by the accumulated soil, and lowering the public road which runs round the building. The scheme has been warmly taken up by the leading nobility and gentry of the diocese.

BANBRIDGE, COUNTY DOWN.

SEAPATRICK parish church, at Banbridge, of which the Ven. Dr. Stewart is rector, was reopened on the 13th inst., after enlargement and renovation. The architect was Mr. Thomas Drew, R.H.A., architect, of St. Stephen's Green, Dublin. The work embraces raising the nave, and putting in a clearstory and new roof, a new north aisle, an organ-chamber, &c. The chancel has been treated in a very elaborate manner. Ths walls at the east end and sides are panelled with coloured marbles, and diaper work in alabaster. The altar-steps are of white marble. The organ is thoughtfully arranged upon a low stone screen facing, and corbelling out into the chancel. The new organ itself has a compass from C C to G (fifty-six notes), and the pedal organ C C C to F (thirty notes). There are three composition pedals to the great, and the same number to the swell, organ. The instrument is by Messrs. P. Connacher & Co., of Huddersfield; the encaustic tiles are by Messrs. Craven, Dunnil, & Co.; the altar-rails and the lectern are of brass, supplied by Messrs. Riddel & Co., Belfast. All the chancel furniture, and the stalls, prayer-desk, altar-table, &c., are of massive and ornate character, constructed entirely of English oak, and handsomely carved. They have been made by Mr. Harry Hems.

The general contractors were Messrs. Dixon & Co., of Belfast. Over 3,000*l.* has been spent.

ART EXHIBITIONS.

York.—The Yorkshire Fine Art and Industrial Institution has opened its summer exhibition, which contains several interesting paintings by well-known artists, and loan collections from South Kensington Museum and elsewhere. The exhibition was opened on the 12th inst. by the Lord Mayor.

Brighton.—The Spring Exhibition of pictures at Brighton has just been opened at the Royal Pavilion,—somewhat later than usual, owing to the renovation of the gallery and other causes. This exhibition is confined to water-colour drawings, the autumn exhibition opened in September last having consisted exclusively of oil paintings. The catalogue contains 588 entries, —a number up to the average, while the character of the exhibition as a whole seems to be fairly good. Mr. W. F. Stocks, Mr. C. Gregory, Mr. G. Du Maurier, Miss Clara Montalba, Mr. John Burbidge, Mr. L. Hunt, Mr. T. R. Tayler, and other well-known artists, send works in reinforcement of those exhibited by local contributors.

SANITARY NOTES.

Hygiene and Education.—It is announced that the Council of the Ascham Society have received a letter from the Science and Art Department stating that the Lords of the Committee of Council on Education, having had under consideration the resolution of the Ascham Society urging that hygiene should be added to the list of sciences in which grants are made by the Department, have sanctioned the addition of this subject, and that a syllabus will shortly be issued to science schools and classes.

Regulation of Dairies and Cow-sheds.—It is proposed, in a Bill introduced on behalf of the Government by the Lord-President of the Council, to transfer certain powers now vested in the Privy Council with regard to dairies, cow-sheds, and milk-shops to the Local Government Board. These powers include those of making orders (1) for the registration with the local authority of all persons carrying on the trade of cowkeepers, dairymen, or purveyors of milk; (2) for the inspection of cattle in dairies and for regulating the lighting, ventilation, &c., of dairies and cowsheds; (3) for securing the cleanliness of milkshops and milk-vessels; (4) for prescribing precautions against infection or contamination; and (5) for authorising a local authority to make regulations for these purposes. The local authority in question is to be the urban or rural sanitary authority, except in the metropolis, where it is to be the Corporation or the Board of Works. The Bill provides that any officer of a local authority may enter any land, or dairy, or other building for the purpose of ascertaining whether an order under the Act is complied with or not. If a local authority fail to enforce any order in force in their district, the Local Government Board can empower some person to enforce it and determine his remuneration for this. But the expense so incurred is to be paid by the local authority. Where, however, a dairy or cow-shed is declared to be in an area infected with cattle plague, &c., the orders of the Privy Council are still to prevail. There is, moreover, a saving clause for the operation of the Privy Council's Dairies Order of July, 1879. Seeing that the health of the community so largely depends upon the supply of uncontaminated milk, and remembering the capacity of that fluid for absorbing unwholesome effluvia, it is certainly advisable to provide and maintain an efficient sanitary supervision of dairies and milk-shops. A case that came within our knowledge a few years ago was that of a milk-shop in one of the main thoroughfares of the metropolis. The shop itself was clean and bright, and was dignified with the name of "dairy," but the proprietor was either so ignorant or so careless of his customers' welfare that in the back room opening out of the shop his children were being nursed through the measles!

The Sewerage of Brighton.—The Borough Surveyor of Brighton has reported to the Works Committee of the Town Council with reference to the recommendations of Sir Joseph Bazalgette, C.B., as to the sewerage of the borough; that the recommendations so far as they relate to matters under the control of the Town Council have been carried out, and that some other alterations to the sewers in points of detail have also been effected. Mr. Councillor

Mainwaring has given notice that he will move "That the Sewers Board be requested to inform the Town Council whether they have carried out any, and if so, which of the recommendations contained in the report of Sir Joseph Bazalgette relating to matters under their control, and whether the Board propose to take any measures with respect to such of those recommendations as have not yet been acted upon."

THE MENCE SMITH TRAVELLING STUDENTSHIP FOR 1883.

THIS Studentship, of the value of 50*l.*, and offered by the Painters Company of London, for the encouragement of the study of coloured decoration, has just been awarded to Mr. C. Almquist, a student of the West London School of Art, Great Titchfield-street. He will go to Italy for a couple of months, for the purpose of studying the best examples of mural decoration. This studentship owes its existence to the generosity of Mr. George Mence Smith, a liveryman of the Painters Company. The competition is confined solely among the students of the above-named school.

CONGRESS OF FRENCH ARCHITECTS.

THE Congress initiated by the Central Society of Architects was opened on the 11th of June, under the presidency of M. Questel, member of the Institute, and lasted several days. Several reports and papers were read, and visits were paid to several buildings, notably the New Post-office, now in progress, and the prison at Mauterre, but our correspondents do not lead us to believe that the results will seriously advantage either architecture or architects.

THE LATE JAMES MOUNTFORD ALLEN.

THIS gentleman was the son of the Rev. John Allen, Vicar of Bleddington, in Gloucestershire, formerly Head Master of Crewkerne Grammar School, in Somerset; he was born at Crewkerne on the 14th of August, 1809, and died some short time ago.

At the age of sixteen he left Crewkerne for Exeter to study architecture under Mr. Cornish, where he remained till he was 21; he then came to London and worked for some time in Mr. Fowler's office, and settled down into general practice until he was 47; when circumstances having called him to Crewkerne again, he determined to settle there as a church architect, and from that time until shortly before his death he carried on there a very extensive practice, and was much and deservedly liked and respected.

The following list of churches, rectories, and schools, either new or restored, which passed through his hands, in addition to gentlemen's residences, will show that his work was admired and appreciated. The little church at Cricket Malherbie is much admired, and the reredos at Chardstock is well-known, and has been reproduced in more than one other church in the neighbourhood.

Churches.—All Saints, Thelwell, Cheshire; Christchurch, Crewkerne; Cricket Malherbie, near Ilminster; Chardstock, near Chard; Corscombe, near Beaminster; Ilton, near Ilminster; Closworth, near Yeovil; Holcombe; Barrington; West Knoyle, near Gillingham; Broad-Windsor, near Crewkerne; Dunnington, near Crewkerne; Pitminster, near Taunton; West Cokor, near Crewkerne; Middle Chinnock, and others.

Schools and Rectories.—National Schools, Ilminster; Industrial School, Chardstock; Oratory Schools, Bath; National Schools, Shepton Beauchamp; National Schools, Beaminster; Board Schools, Ilminster; Endowed Schools, Ilminster; National and Infant Schools, Crewkerne; besides those of Yarcombe, Curry Rivel, Combe St. Nicholas, Chard, and Clapton; and the Rectories and Vicarages of Hensbridge, Crewkerne, Stepney, and Barnton, in Cheshire.

THE GERMAN PARLIAMENT HOUSE.

A SPECIAL committee charged with superintending the project for a new House for the German Imperial Parliament, has decided that Herr Wallot, the architect, whose design,—after some modifications,—has been selected for realisation, shall be engaged as architect to carry on the new building. The period for which he is engaged is nine years, and the committee recommends the House to vote a total sum of 360,000 marks (18,000*l.*) as his salary, being at the rate of 2,000*l.* a year for the period of his engagement.

MORE LIGHT FOR DARK PASSAGES.

A CORRESPONDENT, "A Householder," writes as follows:—I have noticed in public buildings how dark the passages are to what they are in the large City offices built for letting. This may be seen any day by a visit to the New Law Courts (particularly the Bell-yard side), to the New General Post-office Building (first floor). The doors are all solid, instead of having the upper panels made of opaque glass, which gives light through to the passage, and on which the numbers of the rooms and the names of the occupier or the description of the office can be painted. It would be very useful if the plan of glass panels to the doors were in many cases adopted in private houses to light dark passages or the back parts of rooms. The glass to be used could be fluted, fancy, or stained, and a curtain could be drawn at any time, if desired. The expense of the alteration would not be great, and gas would be saved. The effect of the alteration could be seen before-hand by opening the doors where light was required and noticing the difference of light in the room or passage to what it was when the doors were shut.

J. R.

A TRADE UNIONIST'S VIEW.

SIR,—Permit me to make a few remarks on two letters which appeared in your recent issue. "A Plumber" states that elderly men (though well able and competent to work) are, at the present time, often unable to obtain employment through employers preferring young men to those who may have grey heads. That statement is only too true. He suggests, therefore, that to remedy the existing evil a fund shall be formed (by employers of labour and others) to pension such aged men as require and are entitled to it. I, as a trade unionist, contend that such a fund is already established for those who wish to avail themselves of it. Let all workmen join their various trade societies, and they will find that each succeeding year, in bringing old age nearer, also brings with it the right to enjoy the superannuation which, in their prosperity, they have paid for as a provision for the winter of life. Again, trade unionists do not age so fast as non-unionists, for the following reasons:—First, because, as mental worry tends largely to break up our bodily health, we have a great advantage over non-unionists by knowing that we are not only provided for in old age, but also if we should by any chance fall out of employment. Another correspondent speaks of the difficulty of getting put on at some firms without knowing or treating the foreman. In that case also we have the advantage, because instead of each man selfishly considering himself alone, we each and all look for work for each other, even to the extent of walking long distances after our day's work is done to let our fellow-members know of a job. Those of our fellow-workmen who will consider our cause in an impartial and fair spirit will, I feel sure, come to the conclusion that the simplest remedy for the evils complained of by your correspondents is to join a trade society.

HARRY WARNER.

BEANFEASTS.

SIR,—As this is the time when workmen call upon the manufacturers and tradesmen their masters deal with to solicit contributions towards their beanfeasts, will you allow me to give these men a bit of advice through your columns, viz., that, instead of collecting money for eating and drinking purposes, they should endeavour to establish a fund in order that when a death occurs among their fellow-workmen, some provision may be found for the widows and orphans?

From this date I have determined to refuse contributing, unless my suggestion is adopted; and I think that if all firms do the same it will conduce to the benefit of the workmen's families.

P. E. CHAPPUIS.

HOUSING THE POOR.

SIR,—Having read a great many valuable suggestions in your *Builder*, will you kindly spare a few lines for a poor forty-eight years' resident in this grand city of ours? I think you might head it "A Noble City Scheme," that is, if the Corporation would build on a spot they cleared more than three years ago (and where I, with many hundreds more, could get my living), a pile of workmen's dwellings, so that say 300 poor citizens could have only one good-sized room to live in, at about 4*s.* per week, which I had for 3*s.* 6*d.* before they were pulled down in Harrow-alley. I think, sir, some of the rich City merchants would spare a few hundreds for such a noble purpose. They can find money for railway schemes or anything but housing the poor. I for one have been nearly ruined through the improvements, having to pay double the rent, and the lodging not so convenient. Trusting, dear sir, you will spare a few words for a hardworking tailor, in your good style of putting it, hundreds will bless you.

R. WILLIAMS.

STATUES.

Lord Frederick Cavendish.—The model for a bronze statue of Lord Frederick Cavendish, which is to be placed in front of the new town-hall in Barrow-in-Furness, has been finished by the sculptor, Mr. A. Bruce Joy. The figure, which is nearly 11 ft. in height, represents Lord Frederick with the left hand resting on the hip, standing in an attitude he frequently assumed in talking with friends. To overcome the stiffiness of modern costume the artist has represented him as in an Inverness cape he used to wear. It is thrown open in front, and hangs negligently from the shoulders.

Mr. John Vaughan.—Mr. George Lawson, the sculptor, has just completed the model of the statue of Mr. John Vaughan, which, when cast in bronze, is intended to be set up in the town of Middlesbrough, which owes so much to Mr. Vaughan's energy and zeal. The statue is beyond life-size, being 8 ft. 6 in. high, or with the plinth on which it stands, 9 ft. The right leg is slightly in advance of the left, the foot resting firmly; the hands are crossed, the right hand firmly grasping the left wrist, over which arm in turn a loose overcoat is thrown. The pedestal on which the statue will be placed is to be made of ironstone, the discovery of which by Mr. Vaughan made the Cleveland trade and made Middlesbrough. The four sides are to be adorned with bronze reliefs, one representing an ironstone mine at Eston-hill, another a blast-furnace, the third a rolling-mill, and the fourth a general view of railways and shipping. The model is to be sent forthwith to the foundry, where three months will be occupied in the preparation of the mould and the core, and in the casting. During this interval the reliefs for the pedestal will be finished, and by the middle of October it is expected that the completed statue will be ready for unveiling.

Mr. J. S. Wright.—Mr. Bright last week unveiled a statue of Mr. John Skirrow Wright, a prominent citizen of Birmingham, who died a year or two ago. Mr. Williamson is the sculptor. The statue is of white marble, and of heroic size.

MONUMENTS.

Auber.—A marble statue of the celebrated French musician, Daniel François Esprit Auber, who was born at Caen, in Normandy, in 1782, and who died in Paris in the year 1870, was unveiled last week in the city of his birth. The sculptor is said to have produced an excellent and characteristic likeness of the popular composer of "Fra Diavolo."

The Brothers Grimm.—Hardly had the inauguration of the monuments to Alexander and Wilhelm von Humboldt been performed, before the proposal to erect statues to another remarkable pair of German *savans*, the brothers Jacob and Wilhelm Grimm, was started by several citizens of Hanau, the city in which the two philologists were born. The date of Jacob, the elder brother's, birth was January 4, 1785; Wilhelm being born a year later. It is proposed to celebrate the hundredth anniversary of the birth of the former by unveiling monuments to the two brothers in a central spot in Hanau. The burial-place of the two Grimms is the St. Matthew's cemetery at Berlin.

Voss.—A monument to the great German classical scholar, Johann Heinrich Voss, has been erected at Euten, his birthplace, and will be unveiled on the 6th prox., being the anniversary of his birth.

Proposal to Widen London Bridge.—Notice has been given that at the next meeting of the Common Council, Mr. Washington Lyon will move,—"That, with a view to afford increased accommodation for vehicular traffic on the approach to London Bridge, at the Southwark end, it be referred to the Bridge House Estates Committee to consider the advisability of narrowing the existing steps to the river, and setting back the footways, adding the space thus gained to the roadway to form extra lay-byes for heavy traffic."

MESSRS. SPOTTISWOODE'S NEW BUILDINGS IN ST. BRIDE STREET.

MESSRS. SPOTTISWOODE, well known as the Queen's printers, are making an extensive addition to their already large premises in and around New-street-square, by the erection of new buildings in St. Bride-street, opposite the desolation known as Farringdon Market. The buildings have a frontage to St. Bride-street, 106 ft. in length, extending northwards from the corner of Little New-street, and are 50 ft. in depth, being connected at the rear with the present business premises. The St. Bride-street elevation is of an ornamental character. It contains five lofty floors from the ground line, and has an extreme height of 80 ft. The ground-floor part of the frontage is in Corsehill stone, and has seven deeply-recessed arched windows, with a central staircase, and also an arched gateway leading into a court-yard. This gateway is about 10 ft. in width, the walls being faced with white enamelled brick. Immediately above the ground-floor windows and entrance is a deep cornice, also in Corsehill stone. The upper portion of the elevation is in red pressed brick, specially made for the building, the key-stones of the windows being in Corsehill stone. Above the third floor is the main cornice, the elevation up to this point being 53 ft. in height, and to the top of the fourth floor, and a balustrade, 64 ft. The elevation is surmounted by nine gables, the central gable bringing the elevation up to a height of 80 ft., whilst the four gables on each side of it are 74 ft. above the ground line. The ground-floor,—12 ft. in height,—will to some extent be devoted to the warehouse department. The first floor, which is 13 ft. high, will contain a machine-room, whilst the upper floors will be appropriated to the compositors' and other departments. The building throughout is being erected in the most substantial manner. All the floors and bulkheads are fireproof, each floor having 12 in. of concrete resting on massive ironwork. The doors communicating with the several rooms on each floor are also of iron, with iron staircases throughout. The basement will be fitted up as cooking-kitchens for those in Messrs. Spottiswoode's employ.

Mr. Henry Dawson, of Finsbury-pavement, is the architect, and Messrs. Ashby & Horner are the contractors. Mr. H. Knight superintends the building as clerk of works. The estimated cost of the building when completed is about 30,000*l.*

BUILDING PATENT RECORD.*

APPLICATIONS FOR LETTERS PATENT.

2,881. H. H. Leigh, London. Fire-grates. (Com. by Société des Foyers Économiques. Goujet et Cie., Paris.) June 9, 1883.

2,886. S. C. Davidson, Belfast. Stoves or air-heating apparatus. June 9, 1883.

2,898. S. Chandler and J. Chandler, London. Water-waste preventers. June 11, 1883.

2,899. H. P. Boulnois and W. Hilder, Portsmouth. Drain-pipes and their junctions. June 11, 1883.

2,921. C. Major, Bridgwater. Roofing-tiles. June 12, 1883.

2,929. F. Piercy, London. Water-closets. June 12, 1883.

2,932. J. W. Holland, London. Cowls, exhausters, &c., for chimneys. June 12, 1883.

2,943. W. P. Thompson, Liverpool. Clamping apparatus for builders' scaffolding. (Com. by C. Mansion, Paris.) June 13, 1883.

2,967. J. E. Manock, Heywood. Stench-traps. June 14, 1883.

2,969. R. McCombie and W. Seaman, London. Water-closet basins. June 14, 1883.

NOTICE TO PROCEED

has been given by the following applicants on the date named:—

June 12, 1883.

651. H. C. Symons, London. Apparatus for raising, lowering, &c., weights. Applicable to water-closet levers, window-blinds, &c. Feb. 6, 1883.

684. J. C. Stidder, London. Apparatus for supplying, flushing, &c., arrangements for sanitary and sewerage purposes. Feb. 7, 1883.

814. J. Kaye, London. Locks and latches. Feb. 14, 1883.

889. T. Fletcher, Warrington. Cooking-stoves. Feb. 17, 1883.

1,064. W. Brierley, Halifax. Apparatus for heating air for warming buildings, &c. (Com. by R. Tungler, Goerlitz, Prussia.) Feb. 27, 1883.

1,502. W. P. Buchan, Glasgow. Ventilating. March 22, 1883.

1,955. E. V. Bailey, Birmingham. Manufacture of door furniture. April 18, 1883.

June 15, 1883.

762. A. Codd, London. Apparatus for flushing urinals, &c. Feb. 12, 1883.

812. H. Thompson, London. Construction of domestic stoves and grates. Feb. 14, 1883.

ABRIDGMENTS OF SPECIFICATIONS,

Published during the Week ending June 16, 1883.

4,600. W. R. Lake, London. Device for suspending pictures, &c. (Com. by H. R. Heyl, Philadelphia, U.S.A.) Sept. 27, 1882. Price 6d.

A plate of a friable material has a hook or stud with a bifurcated end which projects from the front face of the support, the back of which is covered by adhesive material.

4,743. H. Hancock, London. Fastenings for doors and window-sashes. Oct. 5, 1882. Price 2d.

A spring bolt slides in a socket on the sash or door, and has a handle by which it can be pulled back. (*Pro. Pro.*)

4,995. T. Kay, Stockport. Apparatus for warming and heating rooms, &c. Oct. 20, 1882. Price 6d.

A hollow metallic globe is so arranged above a gas or other flame as to radiate the heat downwards into the room, &c.

5,027. G. A. Biddis, Newbury. Apparatus for regulating the supply of water to water-closets, &c. Oct. 21, 1882. Price 2d.

A vessel is supported in a tank upon an horizontal axis, and the pull from the handle capsizes this vessel and empties it of its contents. (*Pro. Pro.*)

5,041. E. Green, Halifax. Sewage trap or gully. Oct. 23, 1882. Price 6d.

Two traps are placed in an outer casing, to which is fitted an hinged grate for purposes of access. The outlet of the trap is connected with the sewer by a socket-pipe with a rounded end.

5,100. H. M. Tarrant, London. Appliances for securing, &c., window-curtains. Oct. 26, 1882. Price 2d.

This consists of means for securing the rod on which the curtain is stretched at the desired height. (*Pro. Pro.*)

5,106. W. H. Lindsay, London. Window-sashes. Oct. 26, 1882. Price 6d.

The sash-bars are made of iron of a T section, and union pieces of iron are employed to lock the bars together where they meet.

PROVINCIAL NEWS.

Peterborough.—On the 21st ult. the new buildings in Crown-street, Peterborough, erected under Deacon's School scheme, were inaugurated by the Bishop of Peterborough. The architect, Mr. J. R. Naylor, formerly of Peterborough and now of Derby, has made good use of the site and means placed at his disposal. The style adopted is necessarily plain, on account of the limited funds in the hands of the governors for building purposes, so that the architect has depended for effect more on the use of good material than on ornamental detail. The buildings comprise a master's house and school for a hundred boys, with the necessary playgrounds and offices. The accommodation in the house includes dining-room, drawing-room, study, kitchen, scullery, larder, lavatory, and seven bedrooms. The study can either be used from the school porch or the master's house. It also admits of perfect supervision of the playground. The school premises are entered by a spacious lobby, with corridor for hats and coats. The large schoolroom is capable of seating 110 boys, and has two class-rooms adjoining, each seated for forty boys, one of which is arranged with a north light, to be used for drawing lessons. Provision has been made for adding three extra class-rooms as they may be found necessary. The schools and corridors are all heated by hot water. The master's house is placed in the left front corner of the site, and has a separate access away from the school. The total cost of the buildings when complete will be about 2,500*l.* The contractors were Messrs. Rands & Son, of Peterborough and Wisbech. The desks for the boys were obtained from Messrs. Redmayne & May, Sheffield.

Liverpool.—Eberle's Grand Hotel was opened for business on the 12th inst. The chief entrance, which faces the south-west end of Lime-street, and is directly opposite the London and North-Western Railway Station, is richly decorated. The walls of the vestibule are hung with old-gold Spanish leather-paper, of the richest kind. The coffee-room is lofty and well lighted, and upholstered throughout in dark oak and crimson velvet. The ladies' coffee-room, adjoining, is richly furnished, as is also the tea-room. The smoking and billiard rooms are decorated alike in amber, ruby, and dark oak. Like all the other apartments of this building, the smoking-room,—which, by-the-bye, is 80 ft. long and correspondingly lofty,—is lighted with the electric light. Ascending the grand staircase, the visitor arrives at the Oriental divan. The suite of state-rooms comes next, and comprises dining-room, dressing-room, and bedroom, upholstered in American walnut, rich Spanish mahogany, and terra-cotta-coloured morocco leather. The large private dining-room at the end of the corridor is handsomely furnished in black and gold and rich deep red. The second, third, fourth, and fifth floors are nearly all furnished in ash in various patterns, and designed by the firm of Gillow & Co., of London, who have been concerned in the embellishments of the more important portions of the hotel. Another special feature of this establishment is its winter garden and elaborate ferneries, which have been designed by Mr. Stirling, of the Liverpool Horticultural Society. Messrs. Holmes & Vaudry, of Dale-street, are the engineers and electricians to whom the electric lighting has been entrusted. Mr. Henry Sumner, of Liverpool, is the architect who has had the work of the vast alterations under his care. Mr. East has represented Messrs. Gillow & Co., in whose hands the decorating of the hotel has been placed.

Royston.—Messrs. Fordham, Gibson, & Co.'s new bank, situate in the centre of High-street, was opened for business on the 1st inst.. The building, which is of fine red brick, with stone facings, has been erected by Mr. T. L. Gimson, builder, of Royston; Mr. E. Burgess, of Great James-street, London, is the architect. The workmen employed upon the new building were entertained at a dinner given by Messrs. Fordham, Gibson, & Co., Mr. Walter Beale, the firm's managing clerk, occupying the chair.

CHURCH-BUILDING NEWS.

Reading.—On the 6th inst. the new church of St. Luke, Redlands, Reading, was consecrated by the Bishop of Oxford. It is situated at the upper end of the Donnington-road, and has been erected to meet the spiritual needs of a rapidly increasing neighbourhood, the large district known as the Redlands Estate being now covered with cottages, and thickly populated by mechanics and others employed at the Biscuit Factory and other works in the town. The church, which will seat 530 persons, consists of nave and north and south aisles separated by arcades supported on columns of Coombe Down stone, the spandrels being filled in with yellow malm bricks. The chancel is fitted with sedilia, piscina, and credence shelf, and with choir seats; and is paved with Godwin's "ancient make" tiles. There are north and south transepts, over the former being the organ-chamber, and over the latter a gallery. There are also choir and clergy vestries. The main roof is constructed on the hammer-beam principle, and is entirely framed and put together without the use of iron, every part being secured by stout oak pins. The knees and wall pieces rest on strong corbels of Doulting stone. The chancel roof, the end of which is a dodecagonal apse, is similarly framed, but without hammer-beams, the thrust being thrown on to corbels considerably below the plate level by wall pieces and ribs, which form an arch beneath the collar. The building is constructed of red brick, relieved with grey Doulting stone which is only used for weatherings of buttresses, sills, copings, &c. All the gangways are paved with Edwards's Ruabon tiles, this work, and the paving of the chancel, being entrusted to Messrs. Warmsley & Co., of Reading. The church is 115 ft. long from east to west, the chancel being 36 ft. by 20 ft., and the transepts being 17 ft. from east to west, and 14 ft. wide. The transepts are floored at a height of 11 ft. 6 in. from the level of the nave; on these floors will be placed the organ. The sacrarium is six steps above the nave, and the Holy Table is on a foot

* Compiled by Hart & Co., Patent Agents, 186, Fleet-street.

pace, in all 3 ft. 6 in. above the nave. The clergy vestry is 21 ft. long by 12 ft. wide. The nave is 79 ft. long by 27 ft. wide, with a lofty clearstory. Its aisles are the same length and 8 ft. 4 in. wide. The chancel is 50 ft. high to the apex of the roof, and the nave 55 ft. The aisles, which are lean-to and buttressed, are 21 ft. to the apex of roof, and 12 ft. to the wall-plates. At the west end there is a Galilee porch embracing the whole width of the nave and its aisles, and the same width and height as the latter. There are north and south doors to this porch. The windows are lancet-shape and of two orders, glazed with cathedral glass in quarries and squares. The bases, shafts, and caps of the arcades are of Bath stone. The arches, which are of three orders, are of red brick, with a label mould of the same material. The windows of the chancel, seven in number, are 15 ft. high and 3 ft. wide. The windows of the clearstory and aisles are arranged as couplets, the former being 7 ft. 6 in. high by 2 ft. 6 in. wide, and the latter 5 ft. 3 in. by 2 ft. wide. The west window is a triplet, the centre light being 19 ft. high by 3 ft. 3 in. wide, and the side-lights 13 ft. 6 in. high by 2 ft. 9 in. wide. The east gable of the nave is surmounted by a simple bell-gable, which rises 17 ft. above the nave roof. The seats are open-framed, and are fixed on wooden floors. The chancel is fitted with stalls for the choir and a prayer-desk on each side. The pulpit is of fine wainscot oak, and has been richly carved by Mr. W. Polley, of Coggeshall, Essex; it stands upon a moulded base of Doulting stone. The font (also of Doulting stone) is octagonal, the sides of the bowl being enriched with quatrefoil panels supported on a central shaft and four Cornish granite columns. The seats are made of selected pitch-pine, varnished. Thirty-two iron casements have been fitted to the aisles and clearstory windows (the latter being opened and shut by a continuous apparatus); these, as well as the other ironwork, being made by Mr. Barford, of Maidenhead. Further ventilation is provided by several upright flues, constructed in the brickwork under the aisle windows, communicating at the base with the outer air, and closed inside with brass valves fitted to the window seats. The heating has been carried out by the London Warming and Ventilating Company. The contract price for the church and fittings was 6,627*l.*, and other expenses (amounting to 950*l.*) brought the total cost up to 7,577*l.* Mr. J. Piers St. Aubyn, of the Temple, London, was the architect, the contractor being Mr. John Bottrill, of King's-road, Reading, and Mr. Robert Williams was the clerk of works. It may be added that Sunday-school buildings are in course of erection on land on the north side of the church, and will accommodate 150 boys and 150 girls, the cost being estimated at about 1,800*l.* The same architect and builder are engaged.

Clopton.—The parish church of Clopton was re-opened on the 5th inst., after restoration. The church, which is dedicated to St. Mary, stands upon rising ground from the road, and its well-proportioned tower is a conspicuous landmark from the surrounding hills. It has many architectural features of considerable interest, some of which date as far back as the thirteenth century. Until recent years it has been much neglected, and many parts have been allowed to run to decay. This was especially noticeable in the oak timbers of the nave, roof, and other portions of the building. About the commencement of the present century the Mediæval chancel was bodily removed, and a new chancel of no architectural pretensions whatever was erected in its stead, partly on the old and original foundations, the broken fragments of freestone work and rubble walling being utilised. At the same period that this chancel was destroyed a new brick staircase to the tower was erected, but this, under the present restoration, has been removed. Originally the nave was seated with the old-fashioned and uncomfortable high-backed pews or boxes, and, indeed, the whole of the internal fittings were most inconveniently arranged. The pews have been entirely removed, and the church is now temporarily seated with chairs. The old open-timber roof spanning the nave has been thoroughly cleaned and restored with new oak where found necessary. The boarding and slates on the back of the rafters have been taken off and made good with new materials where found defective. All the old stonework in the windows has been restored and cleaned internally, and new windows have been inserted at the west end and the south-east angle of the nave. These openings were previously filled with wooden "churchwarden" frames, but now all the windows are filled with glazed cathedral glass in lead lights. This portion of the work has been executed by Mr. T. C. R. King, of Norwich. All the old floor has been removed, the passages have been paved with tiles, and the space reserved for the seating laid with wooden blocks. At a future date it is hoped sufficient funds will be forthcoming to provide open benches in place of the chairs which now occupy the nave. At the east end the modern chancel has been pulled down, and entirely re-built on the foundations of the structure of the Middle Ages. It is about 8 ft. longer than the chancel which it replaces. The old flints have been used, with new Ancaster stone for the freestone work. The roof is of English oak, open timbered. The old tiles have been used in the exterior roof. Amongst the additional works to be provided in the future is a new vestry on the north side of the chancel, where an organ-chamber has been provided. The tower has undergone only partial restoration, but it is hoped that eventually the belfry windows will be renovated with new stone work and oak louvre boards to keep out the weather. At no distant time a pulpit will be placed at the north-east corner of the nave. About 1,000*l.* had already been spent, and to complete the entire scheme from 350*l.* to 400*l.* more will have to be expended. The architect is Mr. Herbert J Green, of Norwich. Mr. Tooley, of Ipswich, was the contractor.

Bladon.—The parish church of St. Martin, Bladon, near Woodstock, is about to be restored, under the direction of Mr. A. W. Blomfield, M.A. An estimate for the proposed work has been obtained from Mr. Grove, builder, of Milton-under-Wychwood. The cost of the work will be about 2,000*l.*

Bispham.—The ancient parish church of All Hallows, Bispham, Fleetwood, is being rebuilt from the plans of Mr. John Lowe, of Manchester, at a cost of about 3,000*l.* The structure, which was in existence in 1296, was restored in 1859.

Stoke Newington.—On the 16th inst. Mr. W. A. Tyssen-Amherst, M.P., laid the foundation-stone of a new church, to be dedicated to St. Andrew, in Bethune-road, Stoke Newington. In the parish of St. Mary, Stoke Newington, there has been during the past few years an enormous increase in house-building, the residents consisting mostly of the middle class, and St. Andrew's is but one of several churches which have sprung up in the neighbourhood. Services have been held for the last two or three years in a temporary building in the Manor-road, but as the St. Andrew's district now contains a population of 3,000, a permanent church has become necessary. The new building, of which Mr. A. W. Blomfield is the architect, will seat 930 people, and consist of a tower, nave, aisles, transepts, chancel, and two vestries. It will cost 11,000*l.*, or, excluding the tower, 9,000*l.* Mr. Tyssen-Amherst, who is the lord of the manor, and the Ecclesiastical Commissioners have between them found the site for the new church and vicarage.

Bury.—The new Church of St. Mark, Bury, Lancashire, which has been in course of erection since October 7th last, when the foundation-stone was laid by the Rev. Canon Hornby, rector of Bury, is now nearing completion, and will be ready for consecration early in the autumn. The church will contain upwards of 600 sittings. The entire structure consists of nave, north and south aisles, chancel, organ-chamber, and vestry, the latter being sufficiently large to admit of being used for parochial meetings, &c. The architects are Mr. J. W. Connon and Mr. James Demaine.

Hollingworth.—The Church of St. Mary, Hollingworth, in the parish of Tintwistle, Cheshire, which was opened in 1864, and which is known to many as "the Shilling Church," from the fact that it was built principally by shilling subscriptions obtained by Mrs. Page, wife of the late Rev. J. A. Page, M.A., the well-known secretary of the Bible Society, was re-opened on Sunday last, after having undergone thorough renovation and repair, the execution of which has occupied six weeks. The decorative part of the work has been carried out by Mr. George Dawson, painter and decorator, of Mottram-in-Longdendale. The walls of the nave have been painted throughout, and are relieved by two bands of stencil work running round the building. The chancel has been more elaborately ornamented, and the reredos has been thoroughly renewed. The whole of the aisles have been tiled by Messrs. William Dale & Sons, of Manchester.

Dawley.—On the 11th inst. the parish church of Dawley, Salop, was re-opened, after restoration by Mr. T. H. Fleeming, architect, of Wolverhampton.—On the same day the Countess of Dartmouth laid the foundation-stone of a new mission-room at Malin's Lee, which forms a portion of the civil parish of Dawley. The building is estimated to cost 420*l.*

DISSENTING CHURCH-BUILDING NEWS.

Hanley.—On the 21st inst. the new Congregational church at Hanley, erected at a cost of about 12,000*l.*, was opened. The new buildings have been carried out from the designs and under the superintendence of Messrs. William Sugden & Son, architects, of Leek, whose plans were selected unanimously by the committee in a competition limited to Messrs. Sugden, Mr. John Sulman, of London, and Mr. Ellison, of Liverpool. The High-street façade has as its central feature a tower of massive proportions, with octagonal stair turret with crocketed dome, and with the belfry stage enriched by traceried openings. From the battlemented parapet of the tower rises a peaked tiled roof, with dormer gablets, to a height of about 150 ft. from the street. A stone spire was avoided, owing to the nature of the ground, the neighbourhood being largely mined. To the right of the tower is the gable of the lecture-hall, adorned by a traceried window of seven lights, flanked by traceried buttresses. To the right of the lecture-hall gable is its entrance-porch, forming also the girls' entrance to the school; and to the left, at the foot of the tower, is a carved porch, the main entrance to the chapel. The front gable-end of the chapel, which lies just to the left of the tower, takes an octagonal apsidal form, and has a battlemented parapet in front of a gable panelled by tracery. This octagon has decorated angle-buttresses, and a traceried window inserted in each face, that to the centre bay being about 30 ft. in height and 12 ft. in width. The front is completed by a south porch, with a doorway and window with moulded and carved tracery, terminating by a parapet and leads under the gable of the south staircase, which is embellished by a large rose-window. All the intricate stonework of the front is executed in red Hollington stone, except some of the more exposed parts, where the adamantine Roche stone (millstone grit) from the Leek district is used. The walls of this front are faced externally with specially-made local thin red bricks, and the roofs are covered with brown Broseley tiles. The tracery of the side windows, including the fine transept lights, is of red terra cotta. The following is a summary of the accommodation provided:—Chapel, with north and south transepts and galleries on three sides, containing 1,000 sittings; extreme length, including rostrum apse, 84 ft.; width, 48 ft.; width across transepts, 69 ft.; height in centre, 42 ft. Lecture-hall, containing 200 sittings; length, 43 ft., width, 29 ft., height, 23 ft. Organ-chambers to chapel and to lecture-hall. Tower and entrance-porches and two main staircases, one descending to the school floor; narthex, 24 ft. long and 8 ft. wide, with double-swing glass-doors. Entrance-porch to lecture-hall and for girls' approach to school. Boys' porch and two porches for the class-rooms, minor staircase for minister and choir, minister's vestry, 16 ft. by 12 ft., with lavatory, &c.; deacons' vestry, 20 ft. by 12 ft.; large school-room, 55 ft. long, 44 ft. wide, 28 ft. high, with clearstory; library, 21 ft. by 17 ft.; infants' schoolroom, equal to about 33 ft. by 16 ft.; mothers' meeting-room, 20 ft. by 17 ft.; eight boys' class-rooms, each 12 ft. by 10 ft. 6 in.; five girls' class-rooms, each about 13 ft. by 9 ft. 6 in.; one young women's class-room, 25 ft. by 13 ft., and two smaller ones; young men's class-rooms, tea-room, scullery, heating-apparatus, vaults, lavatories (separate for boys and girls), ample corridors, &c. The warming-apparatus has been provided by Messrs. Haden & Son, on the low-pressure hot-water system; and for ventilation fresh air is admitted at numerous points through upright shafts, with filtering media for the arrest of fog and smoke. The contractor for the erection of the buildings was Mr. Samuel Warburton, of Harpurhey, Manchester. His sub-contractors were:—For the terra-cotta work, Mr. Jabez Thompson, Northwich; for the carving, Messrs.

Bonehill, Manchester; for the stained-glass work, Messrs. R. B. Edmundson & Son, of Manchester; and for the gasfittings, Messrs. Thomas Brawn & Co., of Birmingham. Mr. Thomas Heywood discharged the duties of general foreman of the works.

Upper Tooting.—On the 13th inst. the foundation stone of a new Congregational Baptist Chapel at Upper Tooting was laid. The building is situate in Trinity-road. The internal width is 33 ft. 6 in., and the length 77 ft., exclusive of the entrance vestibule and lobbies. The end of the church is formed into a semi-apse, affording lobbies, lavatory, &c., to vestries. A side entrance, giving access to gallery stairs, is placed at one angle of the front, and over this it is proposed to erect a small tower and spire, the total height of which will be about 68 ft. from the ground. The church will provide sitting accommodation for 400 persons on the ground floor. About 80 to 100 additional sittings can be obtained when the gallery, for which provision is made in the front of the building, has been erected. The interior is divided into six bays, with two lancet windows in each bay. The roof is open timbered, with hammer-beam trusses. The style is early English of a simple type. The architect is Mr. T. Heygate Vernon, of 21, Abingdon-street, Westminster, whose design was selected in competition. The building is being carried on by Mr. W. Johnson, of Wandsworth-common, Mr. Woolfall being honorary clerk of the works.

STAINED GLASS.

Swinton.—A window in the chapel of Swinton Industrial School has just been filled with stained glass as a memorial of the late chaplain, the Rev. John Robinson. The central figure is a representation of our Blessed Lord in the act of receiving children, a boy and a girl, at His right and left, and an infant in front, with a likeness of the Saviour as a child surmounting the group. The appropriate text from Proverbs iv. 11, appears below:—"I have taught thee in the way of wisdom: I have led thee in right paths." The work has been executed by Messrs. Lavers, Barraud, & Westlake, of London, from a design prepared by Mr. Westlake, the same firm having already placed the large window over the altar, the cost of which was borne by Mr. H. Charlewood, the chairman of the visiting committee.

Leek.—A window, in commemoration of the services of the Rev. Benjamin Pidcock, for forty years vicar of the parish of Leek, and now rector of Easton, near Winchester, has been unveiled. The window, which was designed and made by Messrs. Mayer & Co., of Munich, at a cost of about 100*l.*, contains three principal lights, which are illustrative of the adoration of the Magi and the shepherds at the birth of Christ.

BAD CONSTRUCTION.

At West Ham, George Hamlin, a builder, appeared to two summonses charging him with unlawfully constructing the walls of certain dwelling-houses in Vicarage-lane, West Ham, the same not being properly bonded and soldly put together with mortar, and contrary to the by-laws of the West Ham Local Board.

Thomas Henry Raiman, a building inspector of the local Board, said that several walls were built of "bats" (broken bricks), and that the mortar was indifferent, a quantity of mould being in it. A notice was sent to the defendant, and on the following day witness found that the greater portion of two of the walls complained of had been taken down, but Mr. Hamlin had not entirely removed the bad work. Witness again called, and found that some further work had been done; but the bricks were not laid level, and in some places there was no attempt to bond at all, while the bricks were bad. The mortar was better, but not such as it should be. One of the "footings" of the chimney,—the broad base on which the stone should rest,—was out of place, and, when spoken to, the foreman said some one must have stepped on it. The work was being done from the early morning till late at night, and it required extraordinary vigilance on the part of the witness, who visited the premises sometimes thrice a day.

Mr. Phillips said both cases were proved, and he imposed a fine in each of 2*l.* and 9*s.* 2*d.* cost.

Mr. Layard said to save time he would tell the defendant he would receive a notice under the 55th by-law of the Board calling on him to amend these walls. If he continued to build after that he would do so at his own risk, for the Board would not have the buildings, and would pull them down.

Miscellanea.

A Large Clock has just been erected in Fulwood Church, Sheffield, by Messrs. John Smith & Sons, Midland Clock Works, Derby. It strikes the hours, chimes the quarters, and shows time on a 5-ft. dial, which is illuminated at night.

The Strawberry-hill Estate.—On the 15th inst. the announcement of the sale of the historical Strawberry-hill Estate, at Twickenham, for a long period of years the residence of Horace Walpole, and subsequently of Frances Countess Waldegrave, attracted a large company to the Auction Mart. The property offered was divided into nine lots, the first and principal lot submitted being the well-known Strawberry-hill and grounds, occupying an area of a little more than 33 acres. Mr. Bull, of the firm of Messrs. Ventom, Bull, & Co., who officiated as auctioneer, mentioned that Walpole expended upwards of 55,000*l.* upon the mansion, while, when it came into the possession of the Countess of Waldegrave, she expended a further sum of between 60,000*l.* and 100,000*l.* in constructing a magnificent new wing and other additions to the building. He added that the land alone, which had a frontage of 5,000 ft., was, at the least estimate, worth 5*l.* a foot, and that amounted to 25,000*l.* In reply to the question why such a magnificent estate should be sold, he said that Lord Carlingford, as the executor under the Countess of Waldegrave's will, considered it his duty to dispose of the property for many reasons, one of these reasons being his desire to pay off the charges on the estate. Biddings were then invited, when the first offer was 20,000*l.*, and the highest bid being 25,000*l.*, the auctioneer observed that, as it was much below his reserve, he must withdraw the property. Various other lots were offered, and the total proceeds of those portions of the estate sold during the day amounted to 8,775*l.* Some account of the place and its historical and other associations will be found in two recent volumes of the *Builder*, viz.,—xli., p. 199, and xlii., p. 783.

Association of Municipal and Sanitary Engineers.—The annual meeting of this Association will be held at Oxford, on Thursday, Friday, and Saturday, the 28th, 29th, and 30th of June. This Association, a section of which visited Oxford in 1876, is now entering on the eleventh year of its existence, and numbers upwards of 200 members, nearly the whole of whom hold offices under the various Corporations and Local Boards of the country; and we learn that Mr. W. H. White, Engineer to the Oxford Local Board, who has served the office as Vice-President during the past year, has been chosen a President for the ensuing year. The programme of the meeting will, after the report of the Council and other business of the Association has been disposed of, probably comprise an address by the President, in which will be described the Sewage Pumping Station and Farm, the widening of Magdalen Bridge, the Tramways, and other works. Also papers descriptive of the Reading Drainage Works, Abingdon Waterworks, Electric Lighting, &c. The works in and near Oxford will be visited, and discussions taken on the various papers. The Mayor has granted the use of the Council Chamber for the reading of the papers and discussions.

Proposed Primitive Methodist Sunday School, Halifax.—This school, which is now in course of erection, is situated in St. James-road, Halifax. The fronts are of dressed ashlar and common hammer-dressed wallstones; at the corner adjoining the present chapel is a turret. The building measures 64 ft. 6 in. by 44 ft. In the basement will be provided large kitchen with hot-water apparatus, hoist, and other conveniences. On the ground floor a commodious lecture-room, library, and five good class-rooms. On the first floor an assembly-room, lofty and well lighted, with gallery and rostrum, secretary's office, and infants' class-room. The internal fittings are all to be executed in pitch pine. The principal entrance is approached by an iron verandah; communication is also provided into the present old chapel.

The Parkes Museum.—Mr. Mark H. Judge, A.R.I.B.A., has resigned his position of Secretary and Curator of the Parkes Museum. At a special meeting of the Council on Friday last (June 15), Captain Douglas Galton, C.B., in the chair, Mr. Judge's letter of resignation was read, and the following resolution was unanimously passed:—"The Council learn with great regret that Mr. Judge is compelled by his professional engagements to retire from the position of Secretary and Curator of the Parkes Museum. In accepting Mr. Judge's resignation the Council desire to place on record their high appreciation of the services which he has rendered to the Museum."

Bristol and Clifton Junior Architects Society.—A general meeting of the members of the Bristol and Clifton Junior Architects' Society was held at the Bristol School of Art on Tuesday evening, the vice-president (Mr. J. C. Moncrieff) occupying the chair. In his opening remarks, the Chairman said that some time since he had the pleasure of presiding at a meeting at which it was proposed to reorganise the society. Considerable delay had, however, occurred through the society wishing to re-establish themselves as an architectural body in connexion with the Academy and possess the rights of the original society. It had been found necessary to hold several interviews with the president of the Academy on the subject, and he had expressed a wish to re-establish the society with its sister art under the old regulations. The honorary secretary, Mr. W. E. Hill, stated that the president had very kindly consented to act again as president for the ensuing year. The chairman proposed, and Mr. Cridland seconded, the adoption of a programme of visits for the sketching season, and the same was carried. It was mentioned that the president, Mr. Chas. F. Hansom, architect, had kindly consented to distribute the prizes won in the annual competition.

The Sanitary Condition of Whitechapel. Mr. Bryce asked the Secretary of State for the Home Department whether his attention had been called to the two last reports presented to the Whitechapel District Board of Works by the medical officer of health on the sanitary condition of the Whitechapel district, in which he condemned as unsanitary and ill-arranged several new buildings recently erected in that district, and expressed the opinion that amendments in the existing Building Acts were urgently required; and, whether, if sufficient powers to prevent the erection or order the closing of unsanitary dwellings were not now possessed by local authorities, he would undertake to bring in a Bill to amend the Building Acts in this important particular, by investing the proper local authorities with such powers. Sir W. Harcourt replied that he should be glad to bring in Bills upon this and many other subjects, but there was no time for them.

Royal Commission on Technical Instruction.—The members of the Royal Commission, now engaged in making inquiries into the educational and industrial requirements in Ireland, met in the rooms of the Royal Dublin Society, Kildare-street, Dublin, on Monday morning, June 4th, and proceeded at once to take the evidence of the Rt. Hon. the Lord Mayor, Mr. Dawson, M.P. They continued their sittings during the four following days. The chairman, Mr. B. Samuelson, M.P., accompanied by Mr. Woodall, M.P., and Mr. Redgrave, the secretary, will take important evidence in Cork, whilst Dr. Roscoe, Mr. Slagg, M.P., and Mr. Philip Magnus are visiting Belfast with the intention of inquiring into the application of technical instruction to the important and increasing industries of the North of Ireland.

A Lady Surveyor.—Miss F. R. Wilkinson, a lady student in the Landscape Division of the Crystal Palace Company's School for the Improvement of Estates, has just been appointed a member of Council of the Kyrle Society, with the view to her specially advising in matters connected with the laying out and improvement of churchyards, gardens, squares, &c.

Ventnor.—The fine five-light east window of the chapel of the Royal National Hospital for Consumption, Ventnor, has just been filled with representations, in stained glass, of the Agony in the Garden, Christ bearing the Cross, the Crucifixion, Resurrection, and Ascension. The artists are Messrs. Mayer & Co.

Bell-Founding in Dublin.—A large bell for the Catholic church of Monkstown, county Dublin, has just been cast by Mr. John Murphy, of Thomas-street. The bell is 32 cwt. in weight, and is in note C. Mr. Murphy has also been engaged quite recently in the construction of a bell for the Cork Exhibition.

Arbroath Masons. The operative masons having applied for an increase of wages, the employers have agreed to give an advance of ½d. an hour, making the rate of wages 6½d. per hour. The increased rate takes immediate effect.

Redmile Church, Nottingham, has just been re-opened, after restoration. The whole of the interior fittings, including the lighting arrangements, were supplied by Messrs. Jones & Willis, of Birmingham and London.

A High House.—The *Sanitary News* (Chicago), says:—Plans have been filed with the Superintendent of Buildings in New York for a ten-story building in that city, 150 ft. by 94 ft. in size and 200 ft. high,—ten stories,—supposed to be the highest building in the country. It will be located at the corner of Fifty-seventh-street and Seventh-avenue, and will be entirely fire-proof. It will be used as an apartment-house, and will accommodate thirty-eight families. The architecture is a modification of the Franco-Italian style, and it will be well lighted and ventilated. The basement and first two stories will be of brown stone, and the remainder of red sandstone with brown-stone trimmings. The cost will exceed 650,000 dollars, and it will take nearly two years to complete the building. Much unnecessary alarm is excited over the construction of high buildings for occupancy by families. There is no more reason why a high building should take fire and consume the occupants than a low one. As to facilities for escape in case of fire they can be as readily provided for ten stories as five, and as to loss of life or limb in jumping from a window, a leap from the fourth floor has no great advantage over one from a height of eight or ten stories. High buildings can be made fire-proof as well as those which are low, and ordinary precaution can prevent fire in either,—and no one has any right to lease a house, or occupy it, unless precautions are taken against fire. With elevators, the top-floor of a ten-story building is as accessible as one half as high,—indeed, as the floor on the ground itself. While there are no valid objections to high buildings, there are certainly good reasons why they should be high. If there were enforced regulations with reference to wide areas on all sides of city buildings,—as there might be if buildings were made high rather than broad,—light and ventilation might be easily and abundantly provided. Offices and living apartments that are high have many sanitary advantages not afforded in those which are low. There is less of noise and dust and smoke, and more pure air and cool breezes. High quarters will surely come into great demand, for offices or homes, as the dread of fire wears away, and a reasonable attempt is made to have them fire-proof.

Oxford Architectural and Historical Society.—A party of ladies and gentlemen, numbering about twenty-five, and representing the above-named society, visited Newbury on the 7th inst., and were received by Mr. Walter Money, honorary secretary of the Newbury District Field Club. The first halt was at the house in Cheap-street where Lord Falkland was quartered the night before the first battle of Newbury, September 20, 1643, and where he received his last Communion at the hands of Dr. Twisse, the then Rector of Newbury. From thence the visitors passed through the Market-place to the Corn Wharf, and inspected the old Cloth-hall and corn granaries, and the site of the demolished Castle of Newbury. The party then visited the Council-chamber and Town-hall, the principal object of attraction in the former being a portrait of John Winchcombe, son of the famous Jack of Newbury, M.P. for Reading in 1553. A move was next made to St. Nicholas' Church, where the visitors were received by the Rector (Rev. E. I. Gardner). The original church was founded previous to 1087, by Ernulf de Hesding, and the present church *circa* 1509, and was built chiefly at the cost of Jack of Newbury. Through the kindness of Major Thurlow, Shaw House was next visited. The Rector (the Hon. J. H. Nelson) here joined the party, and the earthworks were inspected. Assembled in the hall, which was adorned by numerous relics of the Civil Wars, the visitors listened to a paper by Mr. Money on the Dolman family. The party next proceeded to Donnington Priory, where they were received by Mr., Mrs., and Miss Fellowes. The party then wended their way to the well-known Donnington Castle. Thence the visitors returned to the town, and called at Herborough House, where Mr. Money exhibited the ancient pottery recently found on the estate of Mr. Wroughton, M.P.; also the carved woodwork taken from Jack of Newbury's house.

Fire at Sawmills.—On Saturday morning last a destructive fire broke out at the large sawing and planing mills of Mr. Alfred Oswald, at Pallion, Sunderland. The mills were burned to the ground, and the greater part of the valuable timber they contained was also destroyed. The damage is estimated at about 10,000*l.*

New Fruit Sale Room, Monument-yard.—A large and important pile of buildings has been erected in Monument-yard by the principal merchants in the "green fruit" trade, for the convenience of buyers and sellers. The upper part will be let out in offices. A large auction-room on the ground-floor will be used by the different firms. This hall is well ventilated and lofty. Mr. Brass is the builder, and Mr. E. J. Saunders is the architect. The opening took place on the 11th inst., when there was a large attendance of the trade. The sales will take place daily. Some of the figures of the wholesale green fruit trade of London, carried on as it has been in the narrow lanes of this part of the City, are somewhat surprising,—for instance, 788,000 packages of oranges of about 1¼ cwt., and containing about 450 each; 142,000 cases or boxes of lemons, of 1 cwt. each; 278,000 boxes and barrels of grapes, weighing 60 lb. each; 88,000 barrels of onions, of 1½ cwt. per barrel; and 82,000 barrels of apples. These are the approximate figures for last season, and represent an enormous turnover of money.

Exhibition of Samples.—Herr Paul Zilling writes from Stuttgart, calling attention to an exhibition which has recently been opened at Stuttgart, under the auspices of the Wurtemburg Government, assisted by the leading manufacturers of the kingdom. It is a collection of patterns and samples of such articles as are chiefly exported from this country, the respective producers being determined to follow the tendency of the time by trying to establish direct relations without the intervention of agents and middlemen. Under the title of Export-Musterlager Stuttgart, a general export agency has been established, supported by subscriptions of nearly 500 manufacturers, and by a Government grant, which enables the said agency to forego the usual charges to the buyer, which in many cases add so heavily to the original cost.

The Theatre Building Mania in London. Although we from time to time hear of proposals for new theatres in addition to those now in progress, signs are not wanting that this field of enterprise is becoming fully occupied, though some fresh theatres are threatened. The failure of the Pandora Theatre Company, before their building is finished and opened, is only one circumstance amongst several others that could be named, going to show that theatre-building in London has been somewhat overdone. Unfortunately the failure of the Pandora Company has involved the contractors for the erection of the building (Messrs. Merritt & Ashby), in bankruptcy. The Imperial can scarcely be called anything but a failure, and the Folies Dramatiques has been alternately shut up and opened since its completion.

The late Mr. Snooke, Architect.—The *City Press* records that the will and two codicils of Mr. William Snooke, architect and surveyor, of 20, Northampton-park, Canonbury, who died on February 18th last, were proved on the 24th ult. by Charles W. Courtney and Allen Courtney, the sons, and Mr. R. Page, the executors, the value of the personal estate exceeding 17,000*l.* The testator bequeaths 2,000*l.* each to his grandchildren, Wm. Randall Mack, Cyril Gordon Mack, Margaret Evelyn Mack, and Harriet Lilian Mack; 2,500*l.* to his granddaughter, Millicent Courtney Payne; and legacies to his sisters-in-law, son-in-law, executors, and others. The residue of his real and personal estate is to be held upon trust for his two sons, Charles William Courtney and Allen Courtney, in equal shares.

St. Mary's Hall, Motherwell, for the Rev. Dr. Glancy, has just been commenced from the designs of Messrs. Pugin & Pugin, of Westminster and Ramsgate. The contractor is Mr. John Devlin, of Glasgow.

TENDERS.

For the construction of a 15-inch pipe sewer in Woodsend-road, Flixton, together with the necessary manholes, lampholes, &c., for the Barton-upon-Irwell Sanitary Authority. Quantities supplied by the engineer, Mr. J. Price, Assoc. M. Inst. C.E.:—

S. Cowburn, Hindley	£370 0 0
W. Hayes, Bolton	206 18 0
M. Naylor, Hulme	201 1 0
W. H. Worthington, Rusholme	198 18 8
Williams & Whittaker, Flixton	193 17 4
E. Bird, Chorlton	187 10 0
Moore & Sons, Eccles	181 13 5
J. Randall, Weaste	173 7 11
Snape & Sons, Eccles	168 16 10
Turner & Sons, Heywood	155 13 0
J. Oakes, Kearsley (accepted)	155 11 2

For building two shops in Upper Kennington-lane, for Mr. W. Masters —
Eldridge & Gee (accepted).

For proposed alterations and additions at Berry Wood Lunatic Asylum, Berry Wood, near Northampton. Dr. Green, architect:—

Williams	£8,400 0 0!
Gregory	6,776 0 0
Branson	5,618 0 0
Iveson	4,986 0 0
Brimley	4,800 0 0
Dunkly	4,649 0 0
Cosford	4,240 0 0!

For building house and stables for Mr. G. Harris, of Broxbourne:—
S. Norris, Castle-street, Hertford (accepted).

For alterations and additions to the Richmond branch of the London and County Bank. Mr. F. J. Brewer, architect. Quantities by Mr. Barber:—

Sweet & Loder	£679 0 0
Gascoyne & Blake	653 10 0
J. M. Lucas	605 0 0
F. Sims	600 0 0
Pennington & Sons	585 0 0
B. E. Blasby	535 0 0
G. W. Hasler (accepted)	514 0 0

For building mission-house and room for the parish of St. Anne's, Brookfield. Mr. A. Baker, architect. No quantities supplied:—

Johnson	£4,750 0 0!
Macey & Sons	3,353 0 0
Dove Bros.	3,285 0 0
Smeardon	2,874 0 0
J. W. Dixon (accepted)	2,539 17 9!

For alterations and additions to No. 15, Falkland-road, Kentish Town, for Mr. W. Wilson —
J. W. Dixon (accepted).

For proposed villa residence, Latimore-road, St. Alban's, Herts, for Mr. Charles E. Kershaw. Messrs. Browne & Humphreys, of King-street-chambers, Luton, and St. Albans, architects. Quantities not supplied:—

Spencer, Luton	£2,067 0 0
Bell, Wood-green	2,039 0 0
White, Dunstable	1,895 0 0
Austen, St. Alban's	1,800 0 0
Miskins, St. Alban's	1,795 0 0
Redhouse, Baldock (accepted)	1,620 0 0

For restoring St. Mary Magdalene Church, Bermondsey. Mr. W. Muskett Letts, architect:—

I. Morter	£4,270 0 0
W. Brass	4,150 0 0
W. Downs	3,900 0 0
Peacock Bros.	3,750 0 0
Perry & Co.	3,670 0 0
Woodward	3,700 0 0
Fullar	3,600 0 0
R. Conder	3,570 0 0
Shepherd	3,295 0 0

For warehouse, Horton-square. Messrs Hammack & Lambert, architects:—

F. & F. J. Wood	£4,350 0 0
Gould & Brand	3,994 0 0
T. Boyce	3,351 0 0
Bangs & Co.	3,329 0 0
R. Conder	3,580 0 0
Johnson	3,542 0 0
B. T. Wood	3,516 0 0

For extension of St. Mark's Church, Coburg-road. Mr. R. Norman Shaw, R.A., architect:—

Kirk & Randall	£3,274 0 0
Mark Manley	3,150 0 0
Martin, Wells, & Co.	3,150 0 0
Tongue	2,910 0 0
Perry & Co.	2,898 0 0
Macey & Sons	2,734 0 0
R. Conder	2,586 0 0

For the erection of Tower House, Underhill-road, Lordship-lane, Dulwich, for Mr. H. G. Sadgrove. Mr. Edwin C. Somerville, architect:—

Hitchcock	£895 0 0
Hunt & Challis	820 0 0
Avis	723 0 0
Swain (accepted)	721 0 0

For erecting villa residence, for Mr. W. H. Thomas. Mr. Chas. E. Jackson, architect:—

Parrish & Hawker	£800 0 0
Lavender & Sons	665 0 0
Everhard (accepted)	599 0 0

For painting the external parts of the Brentford Union Workhouse, Isleworth. Mr. Edward Monson, jun., architect:—

A. Smith, St. Margaret's	£375 0 0!
Pennington & Sons, Richmond	497 0 0
Fowler & Son, Chiswick	349 0 0
C. Pereira, South Hackney	339 10 0
S. Brason, Hounslow	320 0 0
W. F. Croxford, Harrow-road	319 17 0
F. Pereira, Hackney	298 0 0
Wm. Burgess, Shepherd's-bush	287 0 0
Lowis Toba, Hounslow	267 15 0
Thos. Hudman, Westbourne-grove	240 0 0
Wm. Foord & Sons, Brentford*	209 14 0!

* Accepted.

For the erection of first portion of school in rear of Congregational Church, Romford. Mr. E. C. Allam, architect:—

Staines & Son (accepted)	£470 0 0

For additions to Havelock House, East Liss, Hants, for Mr. Geo. Wright. Mr. Mark H. Judge, architect:—

Snow	£880 0 0
Andrews (accepted)	775 0 0

For the erection of new offices at the Tower Steam Brewery, Abingdon, for Messrs. T. & J. M. Townsend:—

Wheeler, Wantage	£774 8 0
Stather, Abingdon	717 0 0
Wilkins & Son, Eynsham	700 0 0
Barrett, Abingdon	552 11 6
Buckle & Wheeler, Abingdon	543 15 0
Williams, Abingdon (accepted)	530 0 0

For alterations at the Old Hat and Halfway House, Uxbridge-road, for Mr. James Ellis. Mr. H. Walton Sim, architect, 8, Catherine-street, Strand:—
Rogers, Turnham Green (accepted).

For additions and alterations to the Middlesex Hospital. Mr. Matthew Wyatt, architect, 77, Great Russell-street. Quantities by Mr. W. B. Catherwood, 87, Gower-street :—

Haward Bros.	£16,785	0	0
J. McLachlan & Son	16,286	0	0
Holland & Hannen	15,898	0	0
Trollope & Sons	15,584	0	0
Dove Bros.	15,245	0	0
Wall Bros.	15,175	0	0
G. Shaw	14,674	0	0
G. H. & A. Bywaters	14,456	0	0
Higgs & Hill (accepted)	14,340	0	0

For rebuilding Kennan's Hotel, Crown-court, Cheapside, for Mr. T. Rowley. Mr. J. T. Wimperis, architect :—

Wall Bros.	£13,753	0	0
Stanley Bird	13,489	0	0
Boyce	13,440	0	0
Scrivener	13,249	0	0
Dove Bros.	12,535	0	0
Perry	12,100	0	0
Chappell	11,988	0	0
Brass	11,937	0	0
Patrick & Son	11,803	0	0
Morter	11,789	0	0
Bywaters	11,700	0	0
Fish, Prestige, & Co.	11,466	0	0

For the erection of new business premises, shops, and chambers, for Messrs. Pawson & Brailsford, High-street, Sheffield. Messrs. M. E. Hadfield & Son, architects. Quantities by Mr. J. McInery, surveyor :—

H. Brumby	£12,980	0	0
R. Neill & Sons	12,557	0	0
J. Scott	12,554	19	0
J. Fidler	12,380	0	0
Unwin & Goodwin	12,358	0	0
Bissett & Son	12,300	0	0
Tomlinson & Sons	12,200	0	0
Armitage & Hodgson	12,162	0	0
Chambers & Sons	12,154	0	0
G. Longden & Son (accepted)	11,765	0	0
J. Hall Thorp	11,718	15	0

For Congregational Church at Lower Edmonton. Messrs. Borer & Dobb, architects. Quantities by Mr. H. Lovegrove :—

Brass	£8,450	0	0
Fairhead	8,132	0	0
Woodward	8,049	0	0
Tongue	7,965	0	0
Dove	7,785	0	0
Sargent	7,335	0	0
Sharman	7,310	0	0

For new vicarage, Kingsbury, for the Rev. L. C. Edwards. Mr. I. T. Walford, architect, 82, Buckingham Palace-road :—

W. Scrivener	£1,373	0	0
J. Robertson	1,355	0	0
T. Turner	1,350	0	0
G. J. Waterman	1,328	0	0
S. Belham & Co.	1,295	0	0
A. J. Batchelor	1,200	0	0
F. Larter	1,102	0	0
H. Haynes	1,075	0	0

For various alterations and repairs to No. 4, Upper St. John's Park, Blackheath :—

Couchman, Blackheath	£222	0	0
Wenburn, Blackheath	215	0	0
Chapman, Blackheath	195	4	0
Blaw, Blackheath	190	0	0
Heryet, Blackheath	175	0	0

For internal distempering, cleaning, and painting works at the British Orphan Asylum, Slough, for the directors. Quantities by Messrs. Edgington & Summerbell, architects, Windsor :—

Arrowsmith & Co.	£260	0	0
Norris	246	0	0
Turtle & Appleton	195	0	0
Bowyer	195	0	0
Oades & Sons	184	0	0
Deverill (accepted)	180	0	0

For alterations to Finsbury Park branch of the London and South-Western Bank. Mr. George Truefitt, architect :—

Clarke Bros.	£568	0	0
Daver	495	0	0
Crossley	462	0	0
Nisbett	430	0	0
Atherton & Latta (accepted)	420	0	0

For the improved drainage of West London schools, Ashford, Middlesex, on the "Shone and Ault" system, Messrs. Shone & Ault, Wrexham :—
J. Bell, Wood Green (accepted).

For Salvation Army barracks, Gas-street, Leicester, for General Booth. Plans and quantities from surveyor's department, 101, Queen Victoria-street, London :—

Dunford & Griffin, Poole	£1,940	0	0
J. Rudkin, Leicester	1,449	16	0
H. Bland, Leicester	1,358	0	0
C. Bass, Leicester	1,350	0	0
G. Hewitt, Leicester	1,343	0	0
W. H. Kellitt, Leicester	1,287	0	0
J. Riddett, Leicester	1,191	0	0

For the erection of schools for 300 children, and master's house at Leighton Buzzard. Mr. Frederick Gotto, architect, Leighton Buzzard :—

G. Garrish, Leighton Buzzard	£1,982	10	0
D. Cook & Sons, Leighton Buzzard	1,798	0	0
T. P. Webb, Leighton Buzzard	1,781	10	0
H. Edwards, Egginton, near Leighton Buzzard (accepted)	1,740	0	0

For alterations to house and new cattle shedding, &c., at Little Sarcelon Farm, and new shedding, &c., at Feathers-tone, for the trustees of Mrs. Louisa Land. Mr. J. R. Veall, architect, Wolverhampton :—

H. Lovatt, Wolverhampton	£435	0	0
G. & F. Higham, Wolverhampton	408	0	0
Horsman & Co., Wolverhampton	385	0	0
Bradney & Co., Wolverhampton	385	0	0
J. & W. Cockerill, Wolverhampton *	354	0	0

* Accepted.

For pulling down Nos. 6 and 8, High-street, Highgate, and excavating and building basement walls up to ground level, for the Steep Grade Tramways and Works Company (Limited). Messrs. F. Clark & Co., surveyors :—
J. W. Dixon, Highgate-road (accepted), under schedule of prices.

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The Builder.

VOL. XLIV. No. 2108. SATURDAY, JUNE 20, 1883.

ILLUSTRATIONS.

Châlet Residence, Harrow Park (Double-page Engraving).—Mr. J. T. Walford, Architect 882
Lodge to Great Ayton-in-Cleveland Cemetery.—Mr. John W. Alexander, Architect 884
Artisans', Labourers', and General Dwellings Estate at Hornsey (Plans, 891).—Mr. Rowland Plumbe, Architect 886
A Room of the Oriental Museum, Vienna (Double-page Engraving)..... 888, 889
Plan of Artisans', Labourers', and General Dwellings Estate at Hornsey..... 893

CONTENTS.

On Art as Decorative and Decorative Art .. 869
The Safety of Egress from Public Buildings .. 870
The Irish Lace Exhibition .. 871
In and About Hampstead and St. James's Rural Ground .. 872
Passages in an Unsuccessful Career. My First Building .. 873
Cafés and Coffee Houses .. 874
The Picturesque in Concrete .. 874
Modern Hospital Construction: By E. C. Robins, F.S.A. .. 875
New Facts as to the Cost of Inland Transport .. 879
The Imperial Palace at Strasburg .. 879
Mr. W. J. Worthington, Architect .. 879
The Dangers of Overhead Wires .. 879
Victor Emanuel Competition .. 879
Châlet Residences: Harrow-on-the-Hill .. 879
Great Ayton Cemetery Lodge .. 879
The Artisans Estate at Hornsey .. 889
The Oriental Museum, Vienna .. 890
The Site for the Proposed Cathedral for Liverpool .. 897
Silos and Ensilage .. 897
Books Archæological and Architectural .. 898
Birmingham Archæologists at Oxford .. 898
Progress (Sale in Hanover Square) .. 898
Examinations at the Surveyors' Institution .. 899
Children's Hospital for Birkenhead .. 900
New Buildings in George-street, Edinburgh .. 901
Building Patent Record .. 901
Survey Salary Items .. 901
Stained Glass .. 901
Improved Air-Warming and Cooling Apparatus .. 902
Awards at the National Health Society's Exhibition .. 902
Competitions .. 902
Metropolitan Building Act.—What is a Building? .. 903
Guide Sewerage Works .. 903
The Royal Courts of Justice: Contractors Claim for "Retention Money" .. 903
A Dirty Slaughter-house: Public Abattoir Wanted .. 904
The Sunderland Catastrophe .. 904
Sliding Doors for Buildings and Railways .. 904
The Cost of Getting your Own .. 904
Masters and Men .. 904
Provincial News .. 904
Church-building News .. 905
Dissenting Church-building News .. 905
Books, Trenere's Hints to Hop-growers and Hop-pickers. Batsford .. 905
Variorum .. 906
The Ventilation of the District Railway .. 906
Miscellanea .. 906



On Art as Decorative and Decorative Art.

IT is a not unfrequent ground of complaint against those who are most eager to communicate their appreciation of works of art, that the terms which they habitually employ are sometimes too vague to fix any meaning whatever, and sometimes so equivocal as to cover only too many meanings. At the present time the occasion seems to have become pressing in the interest of simplicity and precision, to secure an understanding as to the consistent acceptation in the criticism of art of the word "decorative." It recurs now so frequently that it is quite worth while to hold it fast, if we can, to a definite limitation of characteristics.

All fine art is decorative, in a very decided sense, and, indeed, it claims to be art at all in virtue of being decorative; its end and aim, its purpose and pretension, is beauty; and what beauty is that which does not embellish? The very highest art may therefore, in a certain sense, be honourably and fairly referred to as ornamental,—as decorative,—and yet there is undoubtedly good reason for caution in making an application of the term. Do what we will, the habitudes of common life inevitably affect the terminology which refined criticism has to make the best of, and when the popular ear has resolved upon associating upholstery and decoration, it is in vain to struggle or protest. Decoration may then maintain its place in the dictionary or in Roget's "Thesaurus" as accurately synonymous with embellishment; but its writ will no longer run authoritatively beyond these bounds, when it proves that art can only be qualified as decorative under the liability to be understood as at best only just outside of the ministrations of the plasterer and paperhanger. Every word that we employ, as John Locke observed long ago, is, without exception, relative,—it expresses a meaning only with an understood qualifying reference to some other word that remains unspoken, to some other idea which confronts it in the mind, though it may have no name at all. It is not merely that father implies child, and subject implies sovereign, but identity presupposes the notion of diversity, light implies shade, and so beauty implies recognition of the possibility of its absolute contrast, ugliness. It is by the operation of this law that the use of an expression without any restriction or qualification is in itself emphatic. That it stands alone is taken to justify the most absolute interpretation relatively to whatever term would most positively exclude and contradict it. A work of art, therefore, which is shortly adjudged to be a decorative work, will be understood as purely decorative, as merely decorative, good as decoration,—happy it may be to be recognised as successful decoration, but there is the end. No more being said, it will be held to chiefly merit our thanks for relieving the monotony of blankness, for palliating blemishes otherwise obtrusive, for performing well the secondary service of breaking the otherwise harsh transition from truly fine art to no art at all.

"Decorative," therefore, is a term sufficiently complimentary in regard to pretensions that are moderate and respectable, but which, when offered professedly as a compliment to superior ambition, will either be a compromise with conscience or mask depreciation which may even be something like an insult. It is because an insult may be felt when nothing of the kind is intended, that it is well to set forth emphatically the true meaning of the word; there would be still more reason for doing so and making its import notorious on a supposition of any necessity to deprive ill-nature of an opportunity for covert sarcasm. The chief contingency, however, that we have to consider is to preclude unwitting injustice by candid but careless use of a term which has a claim on its own part to be relieved from misappropriation. Certainly language makes an acquisition which we may be thankful for when it secures a concise expression which will pass current for a meaning that must otherwise be packed into a periphrasis. Decorative art in the sense just indicated, is a matter of fact that has to be talked about, and it is well that it should get an accepted name. What we have to guard against is that the word in its progress from an indifferent and general to a particular sense should get settled as soon as possible and get clear from the intermediate equivocal stage. Till this comes to pass, it will lend itself and be liable to all manner of abuse. Art which is decorative in the noblest sense, will be apt to be depreciated because the casual application to it of the term decorative introduces associations incompatible with dignity. If noble works are liable to be degraded in this manner, a mischief almost as great will ensue by false elevation accruing to the merely ornamental by such unmerited fellowship, and there is also the incidental mischief to be deprecated of stamping really good decorative work as in itself contemptible.

It is by no means premature or inopportune to give this warning,—to make this protest as to what logicians call the nondistribution of a middle term, of such frequent recurrence at present as decorative art. If it is to be employed sometimes for only part of its significance, the misconceptions it will introduce must be quite as serious as if it is to lend itself to contradictory implications; and this, indeed, is the inevitable result. Ingenuity can contrive no worse confusion than when characteristics are pretended to be defined by a term that is sometimes taken for one part of its significance and sometimes for another, and sometimes is applied in a manner that admits of either interpretation indifferently.

Let us interrogate that popular usage to which it has been said that defer we must as to what sense it has resolved to attach to decorative art, and we shall probably elicit that such art is held to be distinctly subordinate and secondary; to be superinduced in the interest of beauty upon somewhat that has in itself no claim to beauty, but which has claims in respect to which beauty more or less is comparatively a matter of indifference. Decoration, therefore, will be vulgarly regarded as in nowise a native growth in its position, but something brought and put there. From this point of view, works and objects of utility are decorated, and it is a relief that they should be, and it is desirable, doubtless, that the decoration should be good in itself and appropriate; but, after all, when utility is predominant, decoration if admitted is admitted indulgently and perhaps weakly, for the primary consideration of use will be jealously conserved against all encroachment. In such cases, and so far as commonplace interest has rule, it is only after requirements of usefulness have been decided on and provided for, that the question of decoration is allowed to arise at all, and take its chance of an opportunity, with the natural consequence that it is liable to be dealt with perfunctorily and inartificially enough.

It is too frequently an unhappy consequence that what is thus entertained and treated as an incidental and secondary consideration does not obtain the respect to which, on its own part, it is fully entitled. The happy point, says the Roman poet, was hit by him who combined the useful with the pleasant; but how much depends on the perfectness of the combination? If decoration is what it should be it will be found that its charm will be due in large proportion to the fact that the combination will be complete; the transition will, in such a successful case, betray no unnatural and violent surprises, but sequence and coherence will be preserved throughout. The suggestion and motives of the decoration will be found on analysis to be presupposed by the conditions of the problem which it accepts, and thence developed by imagination and pursued through a wealth of collateral associations. If the work to be decorated does not supply such motives in abundance to a lively imagination, this does but prove that in such a case an attempt at elaborate decoration would be inappropriate

It is probably as much because this reserve is too often neglected, and ornament is overcharged, as because the best opportunities do not receive adequate treatment, that decoration comes too frequently by an ill-name, as evincing rather mechanical attachment than growth as of an organism. The worst of such examples of overdone ornamentation is that they tend to reconcile the world to give up relieving decoration altogether, and to repudiate the notion that works of predominant utility need any more recommendation than their simple serviceableness. The accommodation of the engineer, it comes to be thought, like the beauty vaunted by the poet, is when unadorned adorned the most. But the laws of nature do not let us off quite so lightly; the option allowed to us is between beauty and ugliness. In the works of nature beauty is beneficently the rule; it asserts itself in the uncultivated wilds, and among the ruins of civilisation. But beauty does but in the rarest instances evolve itself spontaneously in the works of man without any exertion of the artistic faculty which is implanted in him, and which he is under responsibility to cultivate and exercise as much as his intellectual and active powers. There is no object of necessary utility, from the shovel at the fireplace to the iron cylinder that supports a railway bridge over a river, that is not likely to be offensively hideous if merely treated with reference to its service, but that is not susceptible of appropriate decoration; though the designer may be restricted, and if the designer will only frankly recognise his restriction, to the very simplest elementary curves. An object is not undecorated because the decoration is unobtrusive, and abstains in what we may call self-respect from challenging attention to itself independently of the very occasion that justifies its existence at all; and no occasion for appropriate decoration is to be disallowed, and as little on the score of severity as of simple triviality.

> "It was not meant,
> By him who put the back the burden bound,
> That cares, though public, critical, and grave,
> Should so encase us and encrust as shuts
> The gate on whatsoever beautiful below,
> And clogs those entries of the soul of man
> Which lead the soul to what he hath of heaven.
>
> —— Life, life, my friend,
> May hold a not unornamented course
> Wherever it shall flow; be the bed rocky
> Yet are due to flowers, and none of brighter hue,
> That to the rock are native. War itself
> Deals in adornments, and the blade it wields
> Is curiously carved and gaily gilt."

Even within the strict limits of decorative art most scrupulously defined, there is wide range for diversities of merit as well as of styles. Therefore it is that the term must be guarded against lapse into import of unqualified disparagement. The accomplished architect must ever be a master of decorative art in its best sense, inasmuch as his work comprises regard for the convenient in its most absolute relations; and this appeals to him, and not in vain, for such treatment as will enable it to blend harmoniously with characteristics of refined beauty and elevated dignity. Decoration proper, in this point of view, may be taken to express enrichment of the proper architectural members by graceful variation in systems of mouldings, of panels, diapering, foliation, and management of diversified colour and the application of gilding. The decorative treatment of minor members may be perfectly appropriate when it is appropriate to the spirit of the composition to verge towards the expression of the elegant, the playful, or even the fantastic.

If we press this consideration to the extreme we may even find ourselves constrained to admit that a work may be properly architectural and yet, in fitting place, be almost purely a decorative work, as exhibiting an indulgence of ornament out of all proportion to the modicum of practical convenience or utility that serves as a simple excuse for its agreeable display. Such a decorative work is, in fact, an ornament as a jewel is an ornament, or a trinket, or a dress-sword; it is much if it stands in the same relation to architecture that an *escritoire* does to upholstery, which is enriched with a luxury of fantastic extravagance which may be charming to look at, but which no one supposes to be more than infinitesimally useful, and is never intended to have even that degree of utility seriously put to the test.

To painting is usually assigned the most important part in decoration, and decorative art of considerable value may be exercised in the invention and execution of coloured patterns, arabesques, and so forth. So long as these attract and amuse the eye agreeably, their function is performed, and this is the most that is often effected or anticipated from flower painting, and even from landscapes. Very important pleasure may be ministered by these classes of painting, but the appreciation of them depends far more on refined sensations even as largely in the case of music, than on possession of knowledge or sensibility to the expression of passion and character. Paintings, which from their subjects have ostensibly a higher claim to position in art, may still belong to the class of decorative works, if their appeal to the sympathies is but trivial as compared with the force and directness with which they address the simple senses. Very much of the art of Tintoretto at Venice, and of Paul Veronese, is of this character. Notwithstanding the power of drawing and colouring, and composition, which is bestowed upon vast surfaces, the conviction as we gaze on many of their works will not be suppressed, that our enjoyment is rather sensuous than sentimental; our sympathies are invoked for technical mastery, brilliant execution, facility, and dash, for unimpeachable composition and invention, which, within a certain range, seems unfailing and inexhaustible; yet our delight is at last but evanescent, and we pass onward and away unconscious of that detaining and abiding influence which works far simpler exercise upon us, because they touch the heart. It is on this account that the brilliant series of Luxembourg pictures, by Rubens, in celebration of Henri Quatre and his bride, Mary de Medicis, is, after all, but decorative painting. We are affected much in the same manner as by imposing scene-painting, which at the moment takes possession of us as if the creation of genius, but very shortly after is removed, and we have not a regret to spare to follow it. Painting and sculpture, decorative in this humbler sense, may doubtless add a charm which is not to be despised, to the structures of the architect; but assuredly the best works of the architect have a claim to something more. For the opportunities which he provides in his noblest works he is entitled to ask as a return that the embellishments which painting and sculpture may provide should worthily emphasise the culminating spirit of his work. This is the very problem that is set forth in the project for the interior decoration of St. Paul's. Decoration proper has responsibilities enough in the distribution of gilding or bronze, or incrustation more or less extensive with coloured marbles, but it is surely with good reason that achievements of nobler scope than merely decorative painting should have been required to worthily occupy the most conspicuous and critical spaces. Art is redeemed from mere decoration when it is imbued with distinguished and concentrated character.

Architects have especial reason for jealous anxiety that the art which painters and sculptors contribute as the ultimate embellishment of their work shall not be considered good enough if merely ranking as superior decoration. The bronze doors of the Florentine baptistery are framed and bordered with foliage and animals of exquisite invention and workmanship, decorative art of the highest order, but the sculptured panels in low and diversified relief are replete with poetical character individually and by their poetical coherence, which gives them a truly organic connexion with the structure that is worthy by its design and beauty, *mio bel San Giovanni* (Infern. xix., 17) that Dante should have been therein baptised. In the *loggie* of Raffaelle the same rule holds, though there, indeed, the ornamental element asserts predominance, and the full devotion of noblest painting to glorify the centralised control of Christendom, only bursts upon us as we enter the stanze. It is no fault, but a grievous misfortune, for the architect of genius, if so it be that genius in the other arts may not be forthcoming, to give the last finish to his work or be diverted by the accidents of the world elsewhere; but assuredly he has claim to the best assistance of the best genius in the collateral arts that his age affords.

The most important example that is furnished by the history of art, by the history of the world, of the worthy contribution by a sculptor of the culminating glory to a work of architectural genius is, no doubt, the Parthenon. It has been due to the confused conceptions which, as we have set forth, are apt to infest allusions to art as decorative, that the true relation here of architect and sculptor, of Phidias and Ictinus, has been grievously misconstrued. It were difficult to imagine to what other source could be due the suggestion which has been confidently launched to take its chance of gaining popular acceptance as a sensational paradox, that the Elgin marbles, being only decorative architectural sculpture, are not to be regarded as sculpture in the pure sense of the term, and, therefore, cannot fully represent the greatness of the works to which the fame of Phidias in antiquity was due. "The excellent good word" decoration will, indeed, "be brought into disrepute all over the realm," if it is to betray critics into such an enunciation as that only under indulgence of such a reservation can these marvellous remains be admitted to convey with any force the spirit of the sculptor's art. We have a very complete list and authentic descriptions of the works of Phidias, and it is a simple fact that the works which he contributed to give the crowning glory to the architecture of Ictinus had not only the unrivalled perfection of which we can still judge, but were, in fact, the most important compositions of most numerous figures, and those colossal in scale, that the best Greek genius of the best age ever produced. Whatever may have been, and must have been, the excellence of the great single temple statues and others produced by Phidias, it is clear that compositions full of diversified action and alive with emotion, made a demand on the resources of art which were not called upon in any way in the design of isolated figures. It is difficult to conceive what can be the definition of pure sculpture that would only admit the claim of such productions "under reservation." We might as reasonably disallow the Last Supper of Leonardo da Vinci as pure painting because it decorated a refectory, or treat the ceiling of the Sistine Chapel as mere decorative art, which, in consequence of its intimate connexion with architecture, could only be accepted with reserve, and somewhat rashly, as painting in a proper sense,—pure painting, at all.

THE SAFETY OF EGRESS FROM PUBLIC BUILDINGS.

THE often-repeated efforts of this journal to secure proper care as to the means of exit from public buildings have been shown to come from no needless anxiety, by the heart-rending catastrophe at the Victoria Hall at Sunderland, on the night of the 16th of June, of which some account was given in our last number. The tender age of the sufferers, no less than the appalling number of the victims, tends to render this wholesale slaughter a calamity without precedent in our own country and time. Into the details of sorrow and of suffering it is needless now to enter. Neither is it fit, as we before remarked, considering the grave responsibility that must lie somewhere, to say a word that may tend to throw blame on any individual in anticipation of any verdict of a jury, or other judicial apportionment of censure. But it is of moment, while public feeling is at its height, to direct attention to the two points,—with respect to our protection from such misfortunes in the future,—of the organisation of crowds, and of the structural rules that should be enforced in all buildings constructed to hold a large number of people.

The Sunderland catastrophe, regarded only from the scientific point of view, has a special feature. Alone among the instances of crushing by crowds, it did not originate in panic. There was no rush of strong men, brutalised by panic-terror, tearing their way among those weaker by sex or by age. The tide of the infant sufferers seems to have accumulated almost with the quiet but irresistible force of hydraulic pressure. The children at the skirts of the column, to which they were unconsciously communicating a fatal acceleration, were unaware of what was occurring a little way down the staircase. We have said that the width of the staircase was about 8 ft. The great point in deciding on the proper width for a passage or corridor is, that it should be so proportioned to the dimensions of the human figure as to allow of two, four, or more persons walking abreast, without leaving space between them to tempt any one from behind to rush into the file. It is, however, quite another thing to allow such a width on a staircase as the sole exit for 1,000 persons,—which is said to be the number that the gallery could contain,—without some aid in the way of a central handrail to check

a too rapid descent. That, however, does not seem to have occurred in this instance. If we suppose an equable flow of six persons abreast down the stairs at the slow march rate of 62½ yards per minute, it would empty the gallery in 2⅔ minutes. Two hundred persons to each file is an allowance that has been made in the most famous buildings in the world, where the rapid exit of a large mass of visitors was likely to occur, and six in a rank gives a more ample proportion for exit in the present case.

But when the 7 ft. or 8 ft. are suddenly constricted to 2 ft., a case occurs in which the analogy of the flow of liquid would be altogether misleading. In rivers and conduits the occurrence of a constriction, although always undesirable, may at times produce no very sensible effect on the quantity of outflow in a given time, because the steady pressure behind drives the fluid through the neck at an increased velocity that makes up for the diminished area. In the case of a human tide this is impossible. The first law of safety, therefore, in the construction of passages of inlet and exit is that there shall be no local constriction. In the case of a staircase, where a sudden rush of people is possible, another factor is introduced, and we repeat, what we have said on many occasions, a wider staircase than 4 ft.,—where support by means of a handrail, or by a third person holding those who are supported by the handrail, can be had,—means possible destruction, such as we have seen in the present case.

The sound, safe, and ancient canon is habitually, —we may almost say universally,—violated in the public buildings of this country. And it is not the architect who violates it. On the contrary, the means by which the check is effected are for the most part the very scandal and stigma of architecture, added, it may be, by the joiner or the carpenter; and even if passing under the sanction of the architect, controlled by a higher power,—the power that seeks to collect £. s. d. It is true that in some places of public amusement this collection is the very *ratio entis* of the building. But for all that, no sound architectural canon can be violated without risk, or rather certainty, of mischief. Nor is risk of pressure the only one to be avoided. Some of our railway stations are so ruined in their access by the means taken to supply the public with tickets, that the passengers are detained for minutes in a through draught that may prove fatal, and often has disagreeable results. It *may* be requisite for the protection of ticket-collectors to restrict the communication between them and the passenger to the few square inches of opening at which the latter have to take their turn of patient or impatient attendance. The plan has been borrowed from the French banks; of which the customers of our English banking establishments have so natural and wholesome a hatred. But if this be so, and if it be a part of the arrangements of a company that the tickets for a train shall be issued within five or ten minutesof the departure of the same, the least that the public can demand is that there should be enough of these minnikin windows to allow of the transaction of the requisite business within the assigned time without the present undue crowding, haste, and discourtesy.

In a word, the necessity of bringing each person who enters a station, theatre, or other public building face to face with a money-taker or ticket-taker, is one which, if acknowledged, should not be permitted to interfere with the public convenience, health, or safety. It is inexcusable for it to do so, for the reason that it is as easy to obviate, as it is to foresee, the mischief. The canon is a simple one, and should be strictly enforced. Whatever constriction, for any purpose, is introduced into a channel of human flow, the arrest of the volume of passers in or out should be avoided by making the barriers as numerous as the general width of the corridor requires. Thus, if there is a corridor or passage from 56 in. to 72 in. wide, intended for the passage of four persons in a rank, and if at any period it be expected or possible that the passage should be so used,—then, if barriers be introduced that allow only one person to pass at a time, there should be four such barriers. By this means the influx, flow, and efflux of the human tide can be perfectly and safely regulated. And it can be done by no other means.

People are often very ready to throw blame on those of their fellow-sufferers, under the pressure of a crowd, who may deserve it as little as themselves. The case of safety of entrance or exit must be regarded, not on moral, but on physical grounds. It may be true that an English crowd is a rough one. Certainly we think it is a much more dangerous crowd to be in than an Italian crowd. As to comparison with a French or a German crowd we leave others to specify the likeness or the difference. But be it what it may, it is necessary to recognise and to deal with it. For the danger of pressure is not confined to the rough element of society. Nowhere is pressure greater, in England, than in the entrance to the throne-room at a levée, where all that is noblest and best bred in the country, in limited numbers, each person duly provided with a card to be handed to the Lord Chamberlain or his deputy, has to pass the barrier in the ante-room, and there a crush at times occurs which those who have felt it can never forget. To give one instance out of many,—as a personal observation,—we have seen the strong brass guard of the heavy sword of an engineer officer bent flat by the pressure at the barrier of the ante-room in Buckingham Palace.

Let us put the matter in a form with which it is easy to deal. The natural inclination, or sway forward, of a man whose feet are together on the ground may be taken at from 6 in. to 9 in. at the level of his chest. If he leans forward as much as that, he has to put out his hand for support. The pressure that will thus exist will depend on the angle of inclination, and on the weight of the individual. But we may take it at one or two pounds,—if the stop is made in time,—easily rising to two or three times as much, if the pressure is more violent. In anything like the struggle with a crowd, though the oscillation is checked, it is checked by the exertion of a certain resistance. Five pounds per unit of the file will probably be under the mark. But then this pressure accumulates, so that the fifth person (it is, at all events, quite conceivable) may be pushed against with a weight of twenty pounds. And in a crowd six or eight persons in rank, and perhaps 100 in file, it is easy to see how the pressure may become overwhelming on those who are suddenly arrested in their motion by the interposition of a barrier, without any single individual in the mass being in any way to blame. The pressure is a simple outcome of the law of gravitation, and is as susceptible of calculation as are problems of statics or dynamics. To talk about avoiding crushing in such a case by appeals to the crowd, is like Mrs. Partington mopping out the sea.

It is thus, we think, obvious that in dealing with a crowd we have to deal with a mass of human beings in each of whom the individual will, sense of decency, and love of order, are for a time at the mercy of purely mechanical forces, beyond ordinary control. In such cases it is the duty of the architect to provide that these mechanical forces should never be exposed to so sudden a mechanical check as to become mischievous from their very nature. Where a constriction is applied to a corridor, passage, or confused flow of human units, dangerous opposition to mechanical force becomes possible, and under certain circumstances, certain; and the rule that we have given, that the number of constrictions shall be such as to make up for their size, should, we think, be considered as absolute.

While the observation of a course that is in accordance at once with geometric and dynamical law, and with the practice of the most famous architects who have had to provide for the movement of large masses of people, would in itself render such a calamity as that of the Victoria Hall impossible, we should not overlook the importance of the introduction of organisation, wherever a crowd is collected. It was, if we remember rightly, the remark of no less an authority than the Duke of Wellington, on the occasion of the Great Exhibition of 1851, that there were very few men that he knew who could conduct 70,000 persons into, and out of, Hyde-park. But for the step in street organisation long since suggested by the *Builder*, and now common at certain points of crossing and conflicting traffic,—the presence of a policeman to give signal to stop or to go on,—there are not a few places where London, in the present heyday of the season, would be absolutely impassable, one dense jam of carriages and men. In any large public assembly some regulation of the kind is absolutely necessary. One quiet, self-possessed man, with a wand, maybe, in his hand, may prevent a concourse from becoming a mob. Half a dozen stewards can effect the orderly and comfortable distribution of a mass of people who, in the absence of such guides, only obstruct and confuse one another. We should say that there is no instance in which the good effects to be wrought by the presence of a very small number of competent guides are so striking and so needful as in the marshalling of a crowd. We say nothing now as to the occasion which unhappily has called for these remarks. But we do say that two classes of persons are deeply interested in the study of the conditions that we have suggested. If the architect do his duty, and if his well-designed passages be kept free from the obstructions erected for the convenience of the money-taker, one cause of danger will be removed. But there still remains the danger, under certain circumstances, of the action of the crowd upon itself; and this danger is to be obviated by forethought, and by simple but properly designed organisation. It is the duty of those who collect crowds to see that they are not, by so doing, imperilling human life.

We are glad to see that one of the points on which we have repeatedly insisted, viz., the necessity that the doors of public buildings should be able to open outwards, has been brought under the notice of Parliament by a Bill introduced into the House of Commons.

THE IRISH LACE EXHIBITION.

WHATEVER may be the conclusions to be drawn as to the commercial value of the lace industries of Ireland, there can be no doubt that the exhibition at the Mansion House includes a considerable quantity of very beautiful work. This is very well arranged in the "Egyptian Hall," and during the short time it will remain open the exhibition is likely to be a centre of considerable interest; it ought to be so, both for philanthropic and artistic reasons.

In regard to the former aspect of the subject, it is hardly possible for any who are not professed lace fanciers, or commercially concerned with lace, to form much idea how far the special manufactures here represented have a chance of independent prosperity on their own account. These things depend so very much on fashion, which may raise a demand one year for what it neglects the next year, and which is inscrutable in its ways and beyond the reach of merely human prophecy. A good deal of the lace in the exhibition is professedly an imitation of recognised standard styles, Venetian point and Spanish point especially; and as far as mere effect goes is not inferior to many examples of the original styles. If value is attached to artistic achievement rather than to the mere name of a country or locality, and if these very good Irish imitations can be produced at less cost than the Venetian and Spanish point can now be procured for (and they probably can), there ought to be a market for this work; as long, at least, as it can be truly said of every woman, as Dr. Johnson once said of every man: "Greek, sir, is like lace; every one gets as much of it as he can." Not that the Irish lace is only imitative of other styles; there is a good deal of individual style, but we were considering the imitations in the first instance.

From the book distributed at the exhibition it would appear that nearly all the establishments of lace-making in Ireland have been, like the present exhibition, of philanthropic rather than commercial origin; a consideration which, it is needless to observe here, is rather ill-omened for the future success of the Irish branch of the craft. It cannot, however, be productive of any possible harm, and may produce the best results, to call public attention afresh to the existence of, and to the value of, the work done by the various Irish lace-making communities.

The commencement of this work in Ireland was, comparatively speaking, very recent; none of it dates back earlier than 1820. At that date "Mrs. Grey Porter, wife of the rector of Dunnamoyne, taught her domestic servant, Mary Steadman, to make lace from a specimen she had brought from Italy. She succeeded so well that the then Lady Lyttelton and other distinguished persons gave orders. The circumstances became known to a Miss Reid, of Ahans, near Carrickmacross, who first sought to amuse her sister, Miss Dora, with the work, and afterwards conceived the idea of teaching the art to the deserving poor around her, as a means towards their support." This was the origin of the Carrickmacross lace industry.

Miss Reid built a school upon her property, and a subsequent manager of some adjoining estates, Mr. Tristram Kennedy, built several schools on his estate; it does not appear whether these were general schools or schools for teaching design and manufacture of lace only, but the latter was taught in them at all events, and the lace of the district took its name from the principal school at Carrickmacross. The Limerick centre was the next started (1829), and this alone is said to have owed its origin to commercial instead of philanthropic enterprise. It was, for a considerable time, commercially successful, but has now ceased to prosper, and "it is not now positively known that a single young girl in the city is learning to make lace as an industry by which she will earn her livelihood." But why is this? We find no explanation that can be considered satisfactory under the circumstances. The demand, we are told, daily declines, "but would soon revive, if work of a higher merit were reproduced." This seems rather like arguing in a circle. The trade appears to have fallen off, as far as we can gather, because there was no demand, and the best workers went elsewhere, or were not replaced by a new generation. That things are not on a very satisfactory basis in this respect is indicated by the brief account of the efforts made to promote the lace industry and the sale of its proceeds at the time of the famine of 1846. The sentence in which this is related is, we fear, sadly too suggestive of a deceptive economic basis:—

"Lacemaking was only one of many forms of labour that the benevolent adopted, but it soon became popular. It had one great advantage over many of the others, that it required no capital to commence. Whoever had the heart to do good could by teaching assist the poor to earn their bread. The difficulty was to get ready sale for what was made in the remote parts distant from towns and markets of any kind. To meet this general and national want, some ladies in Dublin formed themselves into an association, called the 'Ladies' Industrial Society for Ireland.' At their own cost they rented premises, paid salaries and all expenses of sale, opened correspondence with every English or foreign acquaintance to sell, free of charge, any Irish work sent to them, and to remit to their owners the full amount that their work realised. Thus lacemaking was assisted to secure a commercial basis (!), and though the society dissolved after a few years of active work, it prepared the way for the lace industry to become a commercial success."

And this is just after telling us that it is now at a complete standstill! If such are the economic prophets of Ireland, can we wonder at profits, with the other spelling, being so unsatisfactory? The passage we have quoted is delightful from the point of view of Mr. Ruskin: but what would the Charity Organisation Society say to it? Over and over again practical experience has proved, what economic theory assumes, that to make an artificial market for any industry in that way is only to buoy people up with false hopes, only to stave off an evil day which may sometimes be all the more evil, when it comes, from having been staved off. For the moment it has perhaps this excuse, that it is a way of giving people charitable help with less injury to their character and self-respect than by giving them money openly; it does them the momentary benefit of persuading them that they are earning their living. But it is charity all the same; and unhappily that is a sort of charity which, unlike the other quality hitherto translated "charity." in the Bible, "*always* faileth,"—in the long run. That single passage sufficiently shows why the Limerick lace industry is at a dead lock now. It was revived upon a fallacious and deceptive economic basis. We by no means say that this is the only basis upon which the lace industry of Ireland can stand. Let it be shown either that better lace can be made there than elsewhere, or that lace equal to the more expensive types can be produced at less cost, and the Irish lace industry need have no fear. But it is impossible to read such remarks as we have been quoting without pointing the moral of them and giving a warning.

There appears to be, in fact, evidence in the work exhibited, and in some of the facts mentioned about it, that there may be some probability of increased success for Irish lace on sound commercial grounds, if properly made known. A great deal of the lace exhibited is artistically of very effective character. Some of the imitations of Venice point, made in the Clones district, with the crochet-needle, are hardly to be distinguished from ancient lace of that class, except in the want of that look of age which cannot be imitated, and of which the imitation is not to be desired in one sense; and if this can be produced, as we are told, at much less cost than the original, there certainly should be a demand for it among those who think more of the appearance of a thing rather than of its mere name. Among the laces which have local character, the "knotted" and "lifted" guipures from Clones are very effective, and have about them a curiously marked Celtic look, as if half-suggested by reminiscences of ancient Irish ornament. Among the cheaper work, which is not really lace, may be mentioned with approval the "pearl tatting," done in the Ardee district, of which some examples are very effective and unusual in design. In the same district a school was opened by a lady for teaching girls to make "Lacet," a lace (so called) which consists principally of braid or tape shaped into a design; this is made very cheaply, and though, of course, lace-fanciers would not accept it as "lace," it is a very artistic and effective ornament of its class; we had noted one specimen (in Case 8) for its effective design, before coming across the description of the mode of manufacture. But among the classes of work which are not imitative, and which have distinctly local characteristics, by far the best and most interesting is the Carrickmacross guipure, a lace made by tracing a design on a cambric foundation with a thread marking the outline, the superfluous parts being then cut away and the pattern connected by "brides." It is said by experts that this is not a good lasting or washing lace, which is, of course, a definite drawback to it, if it be so; it is also, we understand, looked coldly upon by connoisseurs as not having altogether the proper look of orthodox lace; but lace-fanciers, like pigeon-fanciers, have a conventional standard of excellence; we look at it from the impartial art-critic's point of view, and we say this is most beautiful work, equal in many cases to some of the most admired Indian patterns, and it is only prejudice which would say otherwise. Among the finest pieces of work there is a piece of point lace on a large scale belonging to the Duchess of Abercorn (Case 46), which is exceptionally fine and bold in design; but this is only one of the best among a number of specimens of very artistic work.

One other sentence we may quote from the report, as to the cause of the decay of the Kildare lace trade, and perhaps of wider application:—"The natural carelessness of the poor Irish always induces them rather to fall from than to go on to greater perfection. They more willingly make twelve bad collars for 5d. each than one good one for 5s.; never caring to learn that twelve inferior specimens of work more readily alienate twelve patrons than one good specimen can do to regain them." We fear this is only one out of other indications of the truth of what we have always believed, that much of the poverty and difficulties of Ireland arises from certain defects in the otherwise very attractive national character of the people.

Proposed New Lunatic Asylum for Lanarkshire.—It is stated that at a meeting of the County Lunacy Board, held in the Council Chambers, Glasgow, on the 13th inst., the sub-committee on sites concluded the final arrangements with Mr. Peter Forrest of Shotts, for the acquisition of his lands of Hartwood and Bowhousebog, and that at a meeting of the committee held the same afternoon the arrangement was approved and confirmed. Mr. Forrest's lands extend to about 500 acres, but as the committee expressed a desire that an additional extent should be obtained, arrangements were at the same time made for purchasing two small adjoining properties, which will bring up the total area to 600 acres. The lands are situated in Shotts parish, about two miles to the east of the Omoa station, Caledonian Railway, and have a slope towards the south. The committee have been engaged in the work of selecting a site for nearly three years. When completed, the new asylum will be on an extensive scale, and fitted up to accommodate 900 to 1,000 patients. The ultimate cost will be not less than 150,000*l*. The *Hamilton Advertiser* understands that the total price paid for Mr. Forrest's property and the two adjoining estates acquired, with the whole minerals in the lands and sixty dwelling-houses at Liquo, is 26,5[illegible]*l*.

IN AND ABOUT HAMPSTEAD-ROAD.

ST. JAMES'S BURIAL-GROUND.

"And Hogsdone, Islington, and Tothnam Court,
For cakes and creame had then no small resort."
GEORGE WITHER'S *Brittain's Remembrancer*, 1628.

"When the sweet-breathing spring unfolds the buds,
Love flies the dusty town for shady woods.
Then Tottenham-fields with roving beauty swarm,
And Hampstead balls the City virgins warm."
Gay to Pulteney.

THE London and North-Western Railway Bill for acquiring this site, in view of their intended works, passed its third reading by a majority of 16 over 157 votes. At length awakened to a sense of their position, the parishioners of St. James's, Piccadilly, resolved, at a meeting held two days before, on the motion of Mr. Oakley, to petition the Commons against the contemplated spoliation and desecration. It appears that as many as 50,000 interments have taken place since the churchyard was first acquired for the mother parish. Neglected and desolate during several years past, the ground was put in order by the trustees, they being nominees of the vestry, to serve as a place of recreation for the inmates of the London Temperance Hospital on its removal from Gower-street to new premises in the Hampstead-road, overlooking the disused cemetery. After some negotiations with the trustees, and amendments in the House of Lords, the railway company now stand to purchase one-third of the site (which altogether exceeds two acres in extent), and to make sundry improvements as regards the remainder.

The burial-ground was established about a century since in the then open fields to the south of Rhodes Farm, on the highway to Chalk Farm and Hampstead. It lay between Rhodes Farm and a reservoir of the New River Company,—site of Tolmer's-square,—the reservoir adjoining an ancient house, pulled down in 1808, named in various records King John's Palace. One of the first to be buried here was Lord George Gordon, who, confined in Newgate for a libel upon Queen Mary Antoinette, died in 1793 of the gaol distemper in that prison which his No Popery rioters had burned and sacked thirteen years before. Of other interments should be noticed those of John Hoppner, portrait-painter (1810), and, in the middle of the little square plot by the entrance on the left hand, George Morland (1806), many of whose stable scenes were taken from subjects in the neighbourhood, as well as from the cottages at Harlesden-green and Ball's Pond which he would often frequent. Long time separated from her husband, who died at a sponging-house in Eyre-street-hill, Leather-lane, his wife, surviving him but a few days, was laid by his side. In the Life of W. Collins, R.A., the son relates how his father, then a young man and a stranger yet to fame, attended Morland's funeral. When the attendants had left he forced his stick into the earth as far as it would reach, carried it carefully home, and when dry varnished it. Such was the veneration he felt for that wayward unfortunate child of genius.

This commonplace, unattractive quarter, indeed, is marked by reminiscences of many a celebrated artist, as reference to old Academy catalogues will evince. Here lived Scriven the engraver, and De Wilde, famous for his series of historic portraits in illustration of Bell's "English Theatre"; and in Tottenham-street lived the English Claude, Richard Wilson. George Cruikshank resided for many years in the Hampstead-road, near the St. James's Chapel; Charles Dickens passed a part of his boyhood in Sol's-row, so named from the "Sol's Arms," a sign he introduces into "Bleak House." In Sol's-row, too, whose pretty little houses and front gardens, north of the Adam and Eve Tavern, gave way to Charles-street forty years ago, lived David Wilkie, who, at No. 10, painted his "Blind Fiddler." The Adam and Eve in its earlier shape is made familiar to us by Hogarth's "March of the Guards to Finchley." It stood at the north-western corner of the junction of the present Hampstead and Euston roads on the site of the prebendal manor of Totenhall cited in Domesday Book as Tottenham Court, a property of the dean and chapter of St. Paul's. Held in succession by Sir Robert Dudley, to whom Queen Elizabeth demised it in the year 1560, by Sir Harry Vane, Sir Henry Wood, and Isabella, Countess of Arlington, it ultimately descended to her daughter, the Duchess of Grafton, and thus passed to its present possessors, the dukes of that title. Most of the streets, squares, &c.,

preserve the names of members of the house of Fitzroy. In Fitzroy-street lived the Countess of Melfort, more commonly known as Lady Caroline Drummond, only child of the seventh and last Earl of Seaforth, and a lineal descendant of King Charles II. A distinguished ornament of the literary and fashionable circles of her day, this lady, when a child, was a great favourite of Dr. Johnson, who, in allusion to her royal blood and the well-known sympathies of her race, used to call her "his little Jacobitish mistress." Parton, in his "History of St. Giles's," gives us a first mention of Tottenham Court as a house of entertainment, by an extract from the rate-books of that parish for 1645, when Mrs. Stacey's maid and her two companions are fined each a shilling "for drinking at Tottenhall Court on the Sabbath daie." Eden-street is built over the tavern gardens, once a highly-favoured resort, whence Lunardi, the aëronaut, would make ascents in his balloon (1785). An interesting view of the Adam and Eve, showing later additions, is contained in Hone's "Year-book." At that time,—it was taken in the year 1825,—the Paddington stage used to drag its slow progress along the New-road down Gray's Inn-lane to the City (the subsequent route to the Bank by the City-road on the part of a Hampstead coachman being considered a feat worthy of the mailéd voyager of Horace's Ode), performing the journey in about two hours and a half "quick time." Some other views of the turnpike, the palace, the manor-house, tavern, turnpike, &c., are preserved in Wilkinson's *Londina Illustrata*, and the Crace collection, British Museum. In the graveyard of the Foundling Hospital, where is Hogarth's painting, lies Nancy Dawson, a former inhabitant of Moll King's Row, on the way to Haverstock-hill, which is shown in the distance in that picture.

PASSAGES IN AN UNSUCCESSFUL CAREER.

III.—MY FIRST BUILDING.

IF the polite reader who has followed the story of my unsuccess so far should think that now I am about to harrow up his soul,—that now my troubles are beginning in earnest,—that the record henceforth will be one long catalogue of yielding foundations and tottering superstructures, of pervious walls and smoking flues, of unscrupulous builders and exasperated clients, of extras, arbitrations, litigation, and all their envious brood of "oughly-headed monsters,"—he would but disclose his ignorance alike of nature and of art. Of nature, because no worldly lot is uniformly and consistently unfortunate; and of art, because the effect of this narrative would be spoiled if there were no bright touches to relieve the general gloom. But, above all things, I should be falsifying history, and this shall not be done by me. No; my first building was entirely successful, and my first client is my firm friend to this hour.

My employment as architect happened in this wise. A friend bought a plot of freehold land, and cutting it in half sold each half for what he gave for the whole. He was, you see, an altogether different person from your humble servant. A golden harvest followed wherever he trod, and fortune smiled graciously upon all his enterprises. He is dead now, but, like Tennyson's Northern Farmer, "A died a good 'un, a did." I cannot say that in selling his land he attached as a condition that I should design the buildings to be erected thereon; but I think that, with a fine business tact, he contrived, at a critical turn in the negotiations, to throw in the suggestion with such adroitness that the desired result could not well fail to ensue.

It was by no means a large matter; but it taxed my ingenuity to the utmost. For the problem was the too common one of endeavouring to get a quart into a pint bottle; that is, of getting a pound's worth of accommodation for 10s., and giving to the work a character befitting the residence of a gentleman. When every imaginable compromise had been tried, and the needs of my client had been reduced to the lowest point, there was not, as may easily be conjectured, a very wide margin for architectural display. None, in fact. I contrived to obtain red tiles for my roofs, threw up some good lofty chimney-stacks of red bricks, pleaded for and obtained a little latitude in the matter of the staircase and the mantels, which were of hard woods, with panels of specially-designed figure tiles, and a little geometrical glazing here and there. It was rather hard work to make anything of it. However, such as it was, it was highly successful, and it led to some half-dozen commissions for residences of the same class, and, better still, many warm and enduring friendships. It is among the many advantages of an architect's profession that it brings him into closer social relations than almost any other. The lawyer is regarded by his clients with a sort of distrust. One's doctor is too variously and constantly occupied to be able to devote much of his time to the calls of friendship. You would not wish the dentist to be a frequent visitor,—fearing unpleasant suggestions of a professional nature. But the architect is a welcome guest in every house, and there is no calling which, when successful, has more variety or more opportunities of social enjoyment of the most agreeable kind, especially if one's practice lies in domestic work of the better sort.

In my first undertaking, I had the good fortune to fall into the hands of an honest builder, one who really was as anxious about his part of the work as I was about mine. He spared no trouble and no cost to do the thing in the best way. It is now a good many years ago, and his work has borne the test of time triumphantly. Perhaps he did his work too well in other matters, for I saw, less than a month ago, that his firm, after a long run of varied and important works, was bankrupt.

I may, perhaps, have raised a smile in an earlier essay by avowing my belief in the fair conduct of a great proportion of public competitions for architectural matters, and the smile may perhaps broaden into a grin when I say that I am a believer in the honesty of a large proportion of builders. I can only speak of them as I have found them, and I put it on record that my conviction, after a pretty long experience, is that scamped work when resorted to is often a retaliation for needless and officiously obtruded suspicions.

From this my first building has, with few exceptions, sprung almost all my professional employment, and my unsuccess lies in this, that there has not been enough of it, and that while others have more than they can do I have less.

I am perhaps as free from envy as another man, and I do not repine at the good fortune of the really great. I recognise a variety of mental as of physical stature, and as I do not fret because I am not 6 ft. high, I accept resignedly the failure to attain the intellectual and artistic standard of a Street, a Pearson, or a Norman Shaw. I may regret that it should be so; but I bow to the inevitable. But why A and B and C should have prospered so disproportionately perplexes and disheartens me. So far as I can see, their attainments are not beyond my own. They have neither a greater share of intellectual strength nor of artistic faculty.

"We were reared upon the self-same hill," and I had as good a start in life as they. Nay! better, for I shot a-head for awhile. Spurted, as I suppose my sporting friends would say, but had not staying power. But leaving all reference to one's personal acquaintances, who have made themselves a secure position in the profession, and turning to the works of the successful men of the day, are we, in every instance, struck with the superior ability displayed?

At the west end of the metropolis enormous buildings are rising thick and fast, covering a great historic site. The fortunate architects are reaping a rich reward. Do we exclaim as we approach these works, "Here, indeed, is architecture! What nobility of general form! What dignity! What a breadth of manly treatment! And with what enchanting refinement of detail is the whole vivified and adorned! We feel, indeed, in the presence of a superior mind. This is *art*, and *art* is priceless; and we grudge not the golden shower that fills the laps of these gifted ones." One might say all this; but it would be difficult to do so with a composed countenance.

No! I suspect that the one thing necessary for an architect is not skill in the art of architecture, but a touch of the commercial traveller. An artist friend of mine, who had failed to obtain the coveted A.R.A., told me, in the bitterness of his soul, that it might do a painter no *harm* to know something about painting, but that it was not the one thing needful. We may discount the sarcasm in consideration of my poor friend's disappointment, but there is, after all, a spice of truth in it. I cannot say whether there are painters who cannot paint. It has been alleged that there are sculptors who cannot "sculp," and it is within the knowledge of many that there are prosperous architects who never spend an hour at their drawing-boards. And it may be that this lack of the commercial spirit is the cause of failure in my own case. "Life," in the poem, said to the poet:—"As thou hast carved me such am I." I have built a few churches and chapels, a few schools, a public institution, some large houses and some small ones, and have had a few of those miscellaneous employments which go to fill up the interstices in the career of a professional man. But the whole, when spread over a quarter of a century, make so very thin a film that, but for a little "charing" and other aids, my fare would have indeed been frugal and my enjoyments few.

As I review the past, however, I can but temper my own complainings by remembering the brave hearts which have broken and gone down utterly in the struggle from which I,—though torn and maimed,—survive.

> "Where are you, old companions trusty
> Of early days here met to dine?
> Come, waiter, quick, a flagon crusty,—
> I'll pledge them in the good old wine.
> The kind old voices, and old faces,
> My memory can quick retrace;
> Around the board they take their places."
>
> * * * *

"Soft! 'twas but a dream"; for here I sit, alone, in the solitude of my deserted office, the evening of life closing in, with a plentiful lack of employment,—a too abundant leisure to reflect upon the incidents of an almost fruitless career,—and so conditioned, financially, that I look forward with unaffected interest to the receipt of the modest cheque with which a generous (but discriminating) editor will reward these excursions of an idle pen.

CAFÉS AND COFFEE-HOUSES.

IN the modern crusade against what one constantly hears denounced as the "national vice," it is agreed on all hands that there has been no more powerful ally in favour of that temperance, which is even more desirable than teetotalism, than the increased consumption of tea and coffee, and the opening in every direction of coffee palaces, coffee-houses, and people's *cafés*. One occasionally hears from interested quarters of the value of public-house property having been affected, a fact which it is not difficult to believe, in face of the actual influence upon the national budget produced by the increased temperance of John Bull. This wonderful change, which is already threatening to affect that comparatively exclusive, however extended circle, known as "society," has, as we have already remarked, been largely brought about by the increased consumption of tea and coffee. Such has been the success of the movement in favour of the opening of a number of *cafés* as counter attractions to the pleasures of the public-house, that it is important that the continuance of its efficacy should be ensured.

It is our opinion that much may be effected in this direction by largely improving the character of those *cafés* which have so far been attempted. Comfortable as these in a measure have undoubtedly been made, there yet remains much to be done to render them more attractive, to ensure their being as influential for good upon the eye and mind as they have proved thus far upon the health and fortunes of their frequenters. No one has ever hinted that the attractiveness of the ordinary public-house,—however gorgeously landlords may have considered it necessary of late years to decorate their places,—was dependent upon the beauty either of the bar or the sanctuary of the coffee-room. It has, however, to a great extent, become understood that a large share of the attractiveness of the modern coffee-house must consist in the proper supply of some form of intellectual or pictorial amusement. This has been fully appreciated in many quarters, but we repeat,—and it is a question eminently suited for our pages,—more may be done in this direction.

It is almost impossible in this connexion not to be tempted to speak of *cafés* abroad, though it is not our intention to put forward as an example to copy, the foreign *café*, such, at least, as most people picture to themselves those establishments, — the *cafés* of the French capital. It is a mere platitude to state that the extreme difference of temperament, general

education, and climate preclude the possibility of the direct adaptation to our country of such an institution as the usually accepted type of the foreign *café*, where,—at least, in Paris,—the coffee, which in the past was the speciality, is daily being driven out by beer, after a terrible period, which we hope has reached its climax, of a rage for absinthe. No French *café* could be taken as a model, however many agreeable features they may seem to possess.

If any foreign *café* could be pointed to as an admirable model, to all who know the Continent there are no *cafés* superior to those of Vienna, that city of *cafés*, where coffee was first introduced into our Western existence,—it was only the other day that the 200th anniversary of the event was *fêted*,—and where coffee of the best quality is almost all that is supplied, together with free and generous use of card-rooms, chess-rooms, billiard-rooms, conversation-rooms, and, —we are not exaggerating,—several hundred papers, in every European language, handled about by polite and utterly unobsequious waiters. To dream of the possibility of our ever having in London such a *café* as the Café Central at Vienna,—one of the modern architectural wonders of the world; such electrically-lighted *cafés* as the Café Schnitzar, or the Café Arcaden, with coffee,—the famous *mélange* of Vienna,—a cake, polite attendance, and unlimited and constantly renewed glasses of ice-cold water supplied at 6d. a head, is, we suppose,—we know not why,—beyond the expectation of the Londoner, though he may boast of inhabiting the richest and largest city in the world. Is it, we ask, strange that with such places of amusement to go to as the Austrian and the German have in their capitals and in every town of any importance, — the Berliner in his handsome Wiener *cafés* on the Unter den Linden, *cafés* in which cool fountains play among greenery, and ladies in the smartest toilettes come and chat with their friends, flower-girls flit about, and the whole air of the place suggests a crowded reception without its boredom,—is it wonderful, we repeat, that when the foreigner is supplied with such places of amusement, even the *café* of the smallest Italian town has about it a smack of thrifty conviviality? Is it extraordinary, whatever vices we may accuse Continentals of possessing, that foreigners generally should be more temperate than we, that the habit of frequenting the drink-shop is confined almost exclusively to the lowest and most degraded, those whose laborious habits admit of the use of stimulants; that the toper sneaks into the dramshop down some quiet street where he may hide from the world a taste which, we in England, seem fiendishly to endeavour to spread by placing public-houses and bars conspicuously in every thoroughfare and every building frequented by the public?

There is a singular difference in the manner in which the foreigner uses the *café*. The Frenchman is little of a reader, the few newspapers supplied are glanced over for the journal in accordance with the political bias of the customer. It is to talk, and show his grand airs and fine clothes, that the Frenchman chiefly frequents the *café* of his preference; with the Italian it is much the same. The local gazette and a few journals from the capital form the whole stock of current literature in the smaller *cafés*, the waiter as often as not,—though he thoroughly understands his place,—entering freely into the general conversation of a group of his patrons. It is very different with the German and Austrian; since Austria and Germany have received the benefits of a free press, there is no more greedy reader than the German *café* frequenter from Hamburg southwards to Buda-Pesth. The leading papers of every town in the kingdom, three or four English, half a dozen French and Belgian, several Italian, Russian, Swedish, Danish, Polish, Hungarian, and other papers, will, in the leading *cafés*, be found carefully supplied.

Cafés and coffee-houses are spreading in every direction in our country, and to return to our original contention, there remains much to be done to induce those who frequent these *cafés* to regard more seriously those amenities of existence which are the inevitable accompaniments of that life of refinement to attain which every one in a measure is striving. To the architect it is evident his work in this direction is to endeavour to render the building with which he may be entrusted as comfortable and cheerful as possible; to those generous patrons who so far have come forward to assist in such undertakings, there is always left the question of wall-decoration, which, however much a difficult matter, requires only consideration. As a proof that expense need enter very little into the matter, we have in our mind the recollection of a very large number of prints which the owner has modestly termed his "penny collection," formed of gatherings from illustrated newspapers,—chiefly, it is true, foreign,—a collection which contains reproductions of some of the finest works of art, prints, pictures, portraits, and antiquities which the world's museums can show.

But,—and here we come to a practical question,—a chief step in the direction of improvement can be made in the quality of the coffee supplied at such establishments as are now springing up in every direction. We are aware that those whose habit it has been to consume large quantities of intoxicating liquors pine for their "pint" of coffee or tea, but there is no reason why the "superior do.," as it is termed on the tariffs,—should not be really what it professes. It will be admitted, we think, by all our readers that there is no more frequent complaint among those who of late years have "swored off," than the difficulty of obtaining a good cup of coffee. Why English people should tacitly accept the statement so often repeated, that one only gets good coffee abroad, and good tea in England, we know not. With this desideratum supplied with more certainty, with our *cafés* made more attractive, there is no reason why our community should not be divided, as it is in all other countries, into two great divisions, those who, without subscribing to the exactions of teetotalism, prefer *café* life and its accompanying refinement and wholesome social amusement, and those who prefer life at the dram-shop and the bar. To which of these two sections to belong, it ought not to be a very difficult matter for sensible men to decide.

THE PICTURESQUE IN CEMENT.

THE representation of this element in architecture seems to be the object of a book of designs for houses which has been published by Mr Lascelles,* the well known builder, who has done so much in the way of suggestion and improvement in the uses of concrete and cement in building. The designs are described on the title-page as made for execution in Mr. Lascelles's "patent cement slab system"; and we presume the term "cement" has been adopted for what is really a very fine concrete, as better describing to the general reader the nature of the material, as something much less rough and intractable artistically than concrete in the usual sense can be said to be.

For the knowledge that these are designs for concrete houses we are, however, entirely indebted to the title-page. For all that appears in the character of the design we might conclude that these were a set of brick houses in Domestic Gothic style, with mullioned windows, some of them half-timbered. We sincerely hope that in the latter cases the timber-work at least is genuine, and not a concrete or cement imitation; it is shaded in the drawings as if it were timber, but there seems such a desire to persuade people that they may have concrete and cement slab houses quite undistinguishable in appearance from houses built in more favourite and generally used materials, that we do not feel sure how far the deception may be carried. At all events, the drawings here are just like hundreds of other pretty drawings made by practised draughtsmen in the present day, many of which, in the same kind of style, may be seen annually on the walls of the architectural room at the Royal Academy. As sketches of house-architecture, the majority of the designs are pleasing, though we are unable to follow out the delicacies of distinction which constitute one design "a riverside house," another "a roadside house," &c. As far as we can see, they might be "whichever you please," as the saying is. The special distinguishing element of "a house for the Midlands" appears to consist in putting a number of the windows in the external angles of the walls, leaving the angle of the wall supported (to appearance) only by a mullion of the window, the opening for the window being cut out of the two faces of the walls at right angles to each other. This may be piquant; its peculiar suitability to the Midlands we hardly profess to understand; but what is quite obvious is that such a way of placing windows is not very good building, and (consequently) not very good architecture. A design for "a house by the sea," (E. S. Prior, architect) has just a hint of more definite special character, in a certain solidity of appearance, and an untouched mass of wall towards the base; but this kind of expression should be carried out more forcibly, if attempted at all.

In reviewing the Building Exhibition of last year we remarked upon the too great tendency of those who were endeavouring to recommend concrete, to make it in imitations of other and quite different materials. Mr. Lascelles addressed a letter to us then in defence of his procedure, very frankly admitting that in order to recommend his material he was making it look as like materials in ordinary use as possible, and quoting precedents for doing so. We have referred to his letter again in connexion with this book, and perceive that the essential point of our criticism is hardly understood. If a maker finds it convenient to make cement slabs in the same shape and size as tiles, and to give them, in making, a colouring matter giving the colour of red tiles, we have no objection; it is merely another way of making tiles: the colour may be accepted as more agreeable than that which the uncoloured cement would assume. But when the cement is made in slabs of 2 ft. or 3 ft. square, and then the surface treated so as to appear like a conglomeration of tiles of the ordinary size and colour, that is ridiculous. That series of small overlapping surfaces is the natural appearance which tiles assume from the way they are put together on a wall; but the appearance is not in itself a thing beautiful enough for imitation for its own sake; and to imitate it deliberately with a material of quite another nature made in a different way and in larger pieces, is a proceeding which is ludicrous in the eyes of persons of true taste and feeling in such matters: and the same reasoning applies in other cases. If concrete is made in the size of bricks, put together as bricks, we see no objection to mixing colouring matter with it so as to approach brick colour, if that is supposed to be more pleasing to the eye; that, again, is merely another way of making bricks. But if it is made in larger slabs and jointed to resemble brick, that is an architectural absurdity. Whether anything so illogical is contemplated in the designs in this book, we cannot guess, as the drawings give no clue to the practical method employed. All we see in the drawings is an apparent collection of tolerably pretty brick and half-timber houses, recalling the style of a good many old English houses, but which we learn from the title-page are intended for execution in an entirely new method and materials, not existing when the style of house from which these are derived was evolved. Abstractedly, no doubt, Mr. Lascelles is right, both commercially and on other grounds, in wishing to have the houses built with his materials to look picturesque, and we give him full credit for the good intention. But he has not got the right man yet. To imitate the picturesque character of a house style which arose under perfectly different conditions is not the way to do it; that is only shirking a difficulty. New materials give the occasion and opportunity for new treatment; but that is not to be done without more thought than has been given to this matter yet.

* Sketches for Country Residences, designed to be constructed in the Patent Cement Slab System of W. H. Lascelles. By Ernest Newton, architect. London: B. T. Batsford (no date).

Newcastle-upon-Tyne.—Messrs. R. & W. Hawthorn, one of the oldest and largest engineering firms in this district, have taken possession of their new and extensive range of offices, at St. Peter's, which have been carried out in red brick, with stone dressings; (the interior finishings being of oak and pitch-pine) from plans prepared by Mr. William Glover, architect. They consist of partners', private, and waiting rooms, board and manager's rooms; drawing-office, designing-room, and counting-house. Second floor, — Telegraph, telephone, photographer's department, and plan store. Ground-floor, — Time-office, inspector's room, and general stores. The contractor, Mr. Walter Scott; Mr. Robert Preston, slater; Messrs. Walker & Emley, heating, ventilation, and plumbing; Richardson & Co., painters and glaziers; Chubb & Sons, fireproof doors; Swan & Co., electric light.

MODERN HOSPITAL CONSTRUCTION.*

In response to the invitation of the Council of the Parkes Museum I am to address you to-night upon Hospital Planning, a subject embracing nearly every purpose for which this Memorial Hygienic Museum has been instituted.

Whatever sanitary principles and appliances are needed to make an ordinary dwelling-house sweet and wholesome, within which *healthy* people may live, breathe, and have the full enjoyment of their being, must necessarily be of paramount importance in the case of those who are *sick*. And, still more, the congregation of many disabled and diseased persons under one roof obviously calls for very complete and careful arrangements and special contrivances for the preservation of the purity of the earth, air, and water, both within and around the buildings thus exclusively devoted to the reception of the sick and the healing arts.

It may not be without advantage, therefore, to occasionally pass in review the progress made and still making in the design and construction of hospitals generally,—military, civil, and pauper,—and the improved application of sanitary principles in their construction and maintenance.

Dr. Mouat (our chairman) has divided such buildings into five groups, "the successful treatment of disease being the cardinal condition, or *raison d'être*, of every such institution," thus:—

1. Clinical hospitals, or hospitals attached to or forming part of medical schools, as University and King's College Hospitals.

2. General hospitals, or those in which all classes of cases, medical and surgical, are treated, with or without detached wards for infectious diseases and parturition. In this group Dr. Mouat places the great separate Workhouse Infirmaries.

3. Special hospitals, such as fever and small-pox hospitals, lying-in hospitals, ophthalmic, skin, orthopædic, and other institutions, devoted to specific purposes, as indicated by their names.

4. Cottage hospitals.

5. Convalescent hospitals, the "missing link" between the hospital and the home.

Dispensaries, free and provident, and all institutions which have no beds for taking in-patients, are excluded from the foregoing list.

In a mixed audience it will be undesirable to be either too technical or too detailed in the treatment of the subject in hand; but with the assistance of the numerous drawings with which I have sought to illustrate the paper, it will be possible to obtain a pretty clear idea of where we are, and what should be aimed at, in our studies, yet further to develope the science of hospital hygiene. In all such efforts, it is always essential to success that the public should be sufficiently well informed to be able to recognise and encourage the promoters and originators of every improvement as it appears.

The fitness of means available, to ends attainable, is the best use to which technical education can be turned. And I know of no better training for a young architect, who would be useful as well as ornamental, than the study of the various English and foreign works in hospital construction, sanitation, and general arrangement, especially if he follow it up by making original designs based on the information so obtained, confirmed or otherwise by personal inspection, observation, and comparison of existing examples. Such designs are all the more likely to be practically valuable if they are made in answer to invitations to architects to compete for the erection of some public building of the kind.

It was in this way that I acquired what little I know of the subject of which I am now treating; and the room is surrounded with a series of early designs prepared by me in competition for the various hospitals whose titles appear in the drawings exhibited. Some of these are premiated designs; some are neither premiated nor executed; and some are both.

It is not, however, by my own designs that I propose to illustrate this paper,—I exhibit them as studies, not models,—but rather by the process of comparative analysis afforded by the representation of a series of typical examples of existing buildings, drawn to one scale, and placed side by side.

But a few prefatory remarks are needed as an introduction to their consideration, for it was not till the death-rate in hospitals as formerly built had increased to an alarming extent that the public conscience was awakened, and its responsive echoes were heard in the House of Commons.

The lessons learned in the Crimean war will go far to redeem its losses. It is now nearly a quarter of a century since the report of the Barrack and Hospital Improvement Committee and the report of the Commissioners on the Sanitary Condition of the Army appeared, and by its authoritative recommendations, based upon world-wide and most voluminous evidence, firmly established what is commonly known as the "Pavilion system" of hospital planning, the simplest form of which principle was exemplified in the Hounslow Hospital, with the pavilions in line having a central administrative department and single-story wings for wards for the sick in the same axis as the main building. The Bucks Infirmary is a good example of a civil hospital on this plan, of two stories, and there are many other examples exhibited.

The more extensive and complex form of the same principle found its happiest embodiment in the great Herbert Hospital at Woolwich, a full and complete description of which was presented to both Houses of Parliament in 1865 in the form of a report by its chief designer, Captain Douglas Galton, who was assisted by the leading authorities of the time.

In this admirable essay little of novelty is left to be said upon the general subject, and the building it describes still continues to be, though one of the earliest, yet one of the best of the great modern hospitals.

The valuable series of papers by George Godwin, F.R.S., the editor of the *Builder*, did much at that early time to popularise the new principles, which consisted in the entire separation of the sick wards in distinct buildings or pavilions, united only by a covered or closed corridor on the ground story with the administrative departments of the hospital.*

The conclusions to which the Royal Commissioners arrived under the presidency of the late Lord Herbert were summarised as follows, and laid down as the principles to be observed in the construction of all military hospitals:—

1. The cubic space per bed to be 1,200 ft. at home, and 1,500 ft. in tropical climates.

2. In the construction of new hospitals the adoption of separate pavilions with lateral windows in opposite sides and natural ventilation.

3. The use of Parian cement or other impervious material for walls and ceilings.

4. Sufficient provision for warming and lighting the hospital.

5. The introduction of water-closets and sinks with efficient sewerage by impervious drains free of the buildings; the closets and sinks to be cut off from the hospital by a ventilated lobby.

6. The provision of suitable lavatories, baths, and laundries.

7. The use of stone or fireproof material for staircases and landings instead of wood.

8. The introduction of cooking apparatus.

The Barrack and Hospital Committee appointed in 1857, by Lord Panmure, on the recommendation of the Royal Commissioners adopted these principles as the basis of its proceedings, and set about their practical application, which afterwards bore good fruit, as we have seen in the foundation of the Herbert Hospital.

The first thing that claimed the attention of the committee was the form of the sick wards, and the minimum and maximum number they should contain, for most wisely they considered that the accommodation required for the inmates should be made to govern the shape of the hospital, all other portions being made subsidiary.

The best form of wards in military hospitals, in the opinion of the committee, was thus defined:—

1. The wards for the sick to be 24 ft. in width, at least, to ensure the requisite facilities for ward work.

2. The wall space for each bed to be not less than 7 ft. 2 in.

3. The height of each ward to be 14 ft.

4. The superficial area per bed to be 87 ft.

5. These dimensions give a cubic content per bed of 1,218 ft., which is very nearly that recommended by the Royal Commissioners for home stations; but the committee wisely added that the maintenance of the superficial area per bed was of more importance than mere cubic space. The maximum number of beds to a ward was fixed at thirty-two, and preference was given to the plan of placing the beds between the lateral and opposite windows, instead of next blank walls, with end windows, which would reduce the accommodation more than one-half to obtain an equally cheerful and well-lighted ward. The number of beds to be placed between the windows was limited to two.

Great simplicity in the heating and ventilating processes was recommended, and the separate warming and ventilating of the lavatories and water-closets was adopted in addition to the cross-ventilation by windows of the entrance lobbies to the conveniences,—the use of which latter in winter was impracticable, and consequently the ventilation of these conveniences had previously commonly been into instead of away from the sick wards, the higher temperature of the latter sucking in the foul air of the former.

Open-fire ventilating-stoves were recommended for heating the wards, but it is doubtful if the ordinary radiating stoves will always be found sufficient in long wards of the size recommended, with so large a surface of cold radiation from the windows and walls, though well enough for smaller wards.

The indirect manner in which a room is warmed by radiation, the open fire heating the walls and furniture, and through them reflecting it back into the room, creates a limitation in their fitness for this purpose, the opposite end walls of the wards being too distant to get warm or reflect much heat. It is, therefore, desirable to supplement the open fire by hot-water piping during the winter months, over which the fresh air admitted may pass, and be sufficiently raised in temperature without losing its freshness.

It is only fitting in this place that I should put you in possession of Dr. Parkes's opinions on this subject, briefly stated by him in the second edition of the ninth chapter of his now famous work of 800 pages, entitled "Practical Hygiene," which has gone through five editions, the last being edited by his successor and sometime associate, Dr. F. de Chaumont, Professor of Military Hygiene in the Army Medical School at Netley. In his opening remarks, Dr. Parkes pays a high tribute to Miss Nightingale's work entitled "Notes on Hospitals," which gave an impetus to the study of the subject, and led to the publication of many works on hospital construction and management in England, France, Germany, and America, which, taken in connexion with Mr. Godwin's professional papers, formed my chief text-books when preparing the designs exhibited.

Dr. Parkes sounds a note of warning as to the dangers necessarily arising from the aggregation of many sick people under one roof, and he draws attention to the risks of contamination of the air and of impregnation of the materials of the building with morbid substances being so much increased thereby that the greatest care is necessary that hospitals shall not become pest-houses, and do more harm than good; but he also assures his readers that a great supply of air, by immediately diluting and rapidly carrying away the morbid substances evolved in such quantities from the bodies and excretions of the sick, reduces the risk to a minimum, and perhaps removes it altogether. The quantity of air required for this purpose is very large, which he estimates at an average of 4,000 cubic feet per head per hour.

As an important means to the end desired, Dr. Parkes gives his adhesion to the pavilion form of building for large hospitals, the detached sick wards being wide apart, so that 1,000 sick should spread like a village. From 100 ft. to 120 ft. superficial should be given to each bed, in his opinion, and from 1,500 ft. to 2,000 ft. of cubic space. He prefers natural to artificial ventilation dependent on the movement of the outer air, and on the inequalities of weight, and consequent pressure, of the external and internal air. Upon this point there is a variety of opinion, and doctors differ very much. He limits the width of the wards to 24 ft., with opposite lateral windows reaching nearly to the ceiling, and considers that there

* A paper by Mr. E. C. Robins, F.S.A., read at the Parkes Museum on the 28th inst.

* We may be pardoned for stating in the interests of truth that these endeavours, obligingly referred to, in conjunction with the works of the late Mr. Robertson, of Manchester, and Miss Nightingale, preceded the erection of the buildings above named, as well as others, and which in some cases were avowedly founded on the publications in question. Our own reward was the rapid spread of the principles then enunciated, and the concurrent advantages resulting to the human race.

should not only be good ventilation, but that the wards, in turn, should be empty for two or three weeks in every year. The fewer the number of stories the better, single stories being the best arrangement. The ward walls to be lined with impermeable materials, and the floors of hard wax-polished wood, the furniture being reduced to a minimum.

Dr. Parkes gives an illustration of the arrangement of the lavatories, water-closets, baths, &c., at the end of a 26-ft. wide ward,—extracted from Miss Nightingale's book, which he approves,—showing the cross ventilated passages to the same, on either side of the large window at the extreme end of the ward. A stove is provided for warming each passage,—to the slop-sink and water-closet on one side, and to the bath, urinal, and lavatory on the other.

The patients in a ward may be any even number between twenty and thirty-two, and separate small wards for one or two beds should be provided; also a ward-scullery and nurses' room, with window overlooking the wards.

Where space and means are sufficient, day-rooms are most desirable, but more especially an external ambulatory.

Dr. Parkes proceeds to say that with regard to the supply of food, the diet of the sick is now becoming a matter of scientific precision, and he adds that the kitchen should be centrally placed, but quite apart from the sick-wards, and means should be taken to keep food warm in hot closets near the wards.

Hot and cold water to be supplied everywhere, and the supply to be from 40 to 50 gallons per head daily. Every contrivance to save labour and cleaning should be employed,—lifts, tram-ways, and speaking-tubes,—to save time and enable the attendants to give their full attention to their patients.

Dr. Parkes gives but two illustrations,—the Lariboisière Hospital of Paris, and the Herbert Hospital of Woolwich,—which latter he considered "the best military hospital in the country, or perhaps any where." By comparing the illustrations I have given, an obvious defect will be noticed in the former building, namely, the enclosed central court, from the sides of which the pavilions project, while free and uninterrupted openness to every wind is the distinguishing characteristic of the latter.

The Lariboisière has not proved a healthy hospital, but the Herbert Hospital is eminently so, especially since more warmth has been given in winter.

The Herbert Hospital consists of four double and three single pavilions, of two floors each, all raised on basements, and connected by a 12 ft. wide corridor. There is a convalescents' day-room in the centre pavilion. The administration is in a separate block in front. The axis of the wards is a little to the east of north. There is a corridor in the basement, through which the food, medicines, coals, &c., are conveyed, and then by a series of lifts elevated to the wards.

The terraces on the corridor afford easy means of open-air exercise for the patients in the upper ward. The wards are warmed by two central open fireplaces with descending flues, round which are air-passages, so that the entering air is warmed. The lavatories and water-closets are separately warmed and ventilated. The floors are supported on iron joists, filled in with concrete, and covered with oak floor-boards.

There are 650 sick inmates in this hospital,—twenty more than are accommodated in Lariboisière. The large wards, for 32 beds each, measure 117 ft. by 26 ft. by 13 ft. 6 in. high. The superficial floor area is 97 ft., and the cubical contents, 1,315 ft. per bed.

Professor de Chaumont, Dr. Parkes's successor in office, in his report on the Norfolk and Norwich Hospital, says that the height of wards is to him an important question; for that nothing is gained by making them more than half their width, or 12 ft. high, the width of the wards being 24 ft., and the superficial space, 100 ft. He had proved by experiments upon which tables had been constructed, that there is practically no difference in favour of 1,400 cubic feet per bed and 1,200, the floor-space being equal, the conditions of the air being relatively identical at the end of the second hour. Taking into account, therefore, the increased difficulty of warming the larger space, and the greater cost of construction, there would seem to be small advantage gained by passing a certain limit of height, to say nothing of the disadvantages referred to, and the increased cost.

Then, again, as to limits of practical ventilation. Professor de Chaumont says we can hardly hope to change the air oftener than three times in the hour without draught, and as 4,000 cubic feet is the minimum that ought to be given per head per hour, the third of this, or 1,333 cubic feet, ought, therefore, to be provided as air-space per bed. With 108 ft. of floor-space, 12 ft. 6 in. high would give 1,350 cubic feet per bed, which, if changed three times in the hour, would require 4,050 cubic feet of fresh air per bed per hour, which is generally considered to be sufficient for all practical purposes.

As regards the temperature of the air thus introduced and exchanged as a means of ventilation, the Professor proceeds to say that it ought to be remembered that in cold weather in this country, warming part of the air is necessary, if a sufficient supply is to be brought in for sanitary requirements; and that for this purpose air brought in directly from without, over coils of hot-water pipes, is best for a large ward. In this view I quite accord; and in the Training Hospital at Tottenham, now building, I have adopted this plan as an aid to the open fireplace, which I still retain for the sake of its cheerfulness and companionship, and its aid as a means of expired air extraction by its flue.

The wide divergence of opinion in the many subjects connected with hospital construction and management makes it unwise to be empirical; it is encugh to commend what seems the best and to condemn what has been proved the worst, and between the two extremes to be content to give the opinions and the arguments supporting them, without attempting reconciliation. Time and experience can alone judge between them.

As Mr. Snell has observed in his introduction to the second section of the valuable work on modern hospitals, which has just been published by him and Dr. Mouat:—"While most of the now generally-accepted principles of hospital construction are nearly identical in all countries, yet in the practical application of them to matters of detail considerable diversity exists. On the other hand, there are a few important points, such, for example, as the question of aspect, upon which no two authorities appear to be in entire accord, for it would not be a very hazardous conjecture to make, that from amongst all the best pavilion-hospitals now existing, an axis could be found for every two points of the compass. Then, with regard to the even more important question of cubic space requisite for sick wards, we find this varies in general hospitals of admittedly good type from 1,300 ft. to 2,500 ft. per bed, and the floor space from 90 to 150 superficial feet per bed."

The Marylebone Infirmary.

From military we may now pass on to workhouse hospitals, and it will be sufficient to describe the latest, said to be "the most perfect building of its kind yet erected," which was opened by their Royal Highnesses the Prince and Princess of Wales. The architect was Mr. Henry Saxon Snell, whose experience and skill gained from the erection of five other large metropolitan infirmaries has culminated in this, the Marylebone Infirmary at Notting Hill,—full particulars of which will be found in the work from which I have just quoted, and in a previous volume published by Mr. Snell on "Charitable and Parochial Establishments," wherein he has given the results of his large experience and patient perseverance in the endeavour to raise the character and efficiency of these houses of refuge for the London poor. This great building gives accommodation for 744 inmates, in thirty-six wards of two beds in each, and twenty-four wards of twenty-eight beds each, in distinct pavilions.

The main corridor, connecting together the various blocks of buildings, is 10 ft. wide; it runs through the centre of each double pavilion, and has passages 6 ft. wide leading off from it to the various wards. It is enclosed with rising sashes, and is roofed so as to form an ambulatory for the use of convalescent patients. The main sick wards of this building are similar to those of the Herbert Hospital, being planned as pavilions, in pairs, connected together, in each case, by a staircase, duty and day rooms, and other offices; but each double pavilion, owing to the necessities of the case, contains three floors of wards instead of two, as at Woolwich. The height of the eaves of the roofs of the pavilions is 39 ft. 6 in., and they are situated nearly twice their height apart. Each ward is of parallelogrammic shape, and contains twenty-eight beds, is 84 ft. long, 24 ft. wide, and 13 ft. high. The total floor space, equally divided gives 72 ft. per bed, and the cubical contents 936 feet per bed. The average lineal wall space is 6 ft. per bed.

The system of warming is that of open fireplaces, combined with hot-water heating pipes, on a principle invented by the architect. This apparatus is known as the "Thermhydric grate," and is one of the exhibits in this museum. Its construction is such that the sides, back, and top of the fire are surrounded by a wrought-iron case containing water, and communicating by means of short tubes, with upright coils of pipes, so placed on either side that the water when heated by the fire circulates through them.

The medical officer of St. Olave's Union gives his testimony in favour of these stoves, stating that they gave out from 3° to 5° more heat, and consumed a third less coal, than the previous stoves in use.

"The ventilation of the wards," says Mr. Snell, "is effected by purely natural means, and is dependent, therefore, upon the very simple and well-known fact that heated air will always rise to a higher point than the colder air surrounding it, and that in its passage it will carry away with it noxious gases and other deleterious matters which would otherwise, by reason of their greater density, remain stationary or descend to the floor-level." The fresh air is brought in under the bed-heads, and is extracted by horizontal channels in the ceiling between each pair of beds communicating with 14 in. and 9 in. vertical ventilating-flues in the walls. The general ventilation of the wards is supplemented by the central stoves and upcast shafts in the side-walls, the total area of the outlet and inlet flues being 15 ft. in each of these sick wards. In the separation-rooms, 1,300 cubic feet of air-space is given to each of the two beds. The cost was only 177*l.* per bed.

In the year 1867 I was engaged by the guardians of the parish of St. Pancras to erect several dispensaries, having successfully competed for the enlargement of the workhouse, which, however, was not then carried out; but I won a premium for my design for the St. Pancras Infirmary in the year 1869, the plans of which are exhibited to-night, consisting of five blocks of wards, three stories in height, with separate administrative block, and all connected by the usual corridor, forming an ambulatory over, as shown in the perspective view.

I now come to the consideration of general hospitals, some of which, both in England and on the Continent, I have personally inspected; and for others I shall be dependent chiefly on the well-attested facts given in Dr. Mouat and Mr. Snell's book, which cannot be too highly praised, and will always remain a useful *aide-mémoire* to the profession, and reference-book for the student, to whom, I must also recommend (in addition to Mr. Godwin's essays and Captain Galton's reports in the Herbert Hospital and the Norfolk and Norwich Hospital, and his papers in the *Lancet* in connexion with Dr. Sutherland) the reports of Messrs. Bristowe and Holmes and the treatise of Dr. Oppert and M. Husson, the latter so highly praised in Miss Nightingale's book.

An admirable *résumé* of the papers in the *Lancet*, entitled "Principles of Hospital Construction," was given during the year 1874 in an architectural contemporary. In 1881 Dr. Mouat described in the *Lancet* two remarkable foreign examples, with reference to which I shall have something to say farther on; in the mean time, let us glance at a few of the more important modern examples of the new principles of hospital planning.

The Blackburn and East Lancashire Infirmary

is an example which is usually quoted, but is not one to be imitated in many respects. The accommodation is ultimately intended for 158 beds, in fourteen wards for eight beds, three for six, eight for two, and twelve for one each.

The general plan consists of eight ward blocks besides the central administrative blocks, arranged alternately on each side of the connecting corridor, which is three stories in height, including its basement. The comparatively small wards for eight beds only are 39 ft. by 22 ft. 6 in. wide, and 16 ft. high, having an area per bed of 106 ft., and a cubic space of 1,700 ft., the average lineal wall-space being 9 ft. 9 in. The ward opens directly into the corridor,—the staircases being projected on the opposite side of

the same; and the ward scullery, and bath, and water-closet, &c., are huddled together at the end of the wards, without any attempt to obtain cross-ventilation, and neither the slop-sink nor the water-closet has any window opening directly to the air.

There are no nurses' rooms, and I instance this example to show that there still remains the necessity for much watchfulness over the manner in which the details are carried out in public buildings; doubtless these defects will be remedied in the wards still unbuilt.

The Leeds General Infirmary

is one of the finest provincial hospitals, and was designed by the late Sir Gilbert Scott, for 328 beds. The axis of the wards is north and south; the three northern wards are two stories in height and the two southernward blocks are three stories in height, the building being thus accommodated to the great fall of the ground from north to south. The wards are projected from the northern and southern sides of a central hall, the purpose of which intermediate building is not quite apparent. The low corridor surrounding the central open space without the intervening hall would have been better; but, better still, a single corridor with double ward blocks, as at the Herbert Hospital, would have been an improvement. The lowest floor of the southern ward blocks need not then have formed a part of the administrative offices; ample space would have been attainable between the southern block offices and the ward corridor, or wings might have been added to it. As it is, the kitchen offices are situated beneath the sick wards, and not only so, but the basement contains the laundry, the dead-house, and the post-mortem room, all which it is always considered very important to keep as distant from the sick-wards as possible. As there was no lack of land in this case it is the more remarkable that this oversight should have occurred.

The wards themselves are admirably planned. The distance between them is 2½ times their height. The four large ones towards the south contain 32 beds each; the six towards the north contain 28 each. The former are 126 ft. 6 in. in length, the latter 112 ft. All are 27 ft. 6 in. wide; the lower story is 16 ft. 6 in. in height, and the upper 20 ft., which Dr. De Chaumont would consider undesirably large; 107 ft. is the superficial area per bed, and the cubical contents of the lower wards are about 1,760 ft. per bed, while those of the upper wards are 2,136 ft. per bed. The average lineal wall space per bed is 7 ft. 5 in. The sanitary appliances at the canted ends of the wards are well arranged, but are not separately heated, so that the air within them has a tendency to be drawn towards the warmer atmosphere of the wards. There are no day-rooms, but the nurses' rooms and staircases are situated at the entrance of the wards, and since the separate erection of nurses' quarters, a single-bedded separation ward is thus available to each ward.

The heating of these wards by stoves has been found insufficient, and is being supplemented by steam piping. The inlets for fresh air have mostly been closed, owing to the coldness of the wards, and the outlets more often form inlets than extraction-shafts. In this case it is evident that the architectural has dominated over the practical interests, and therefore this otherwise magnificent building can scarcely be deemed a model one.

St. Thomas's Hospital.

This hospital has but few of the defects of the last described building, except such as have resulted from attempting too much on so confined a site. If it had been one story less in height it would have answered all the purposes, for it is too costly in maintenance to keep full, and arrangements have been made to turn a portion of it to the service of private paying patients. The situation of the kitchens and dining-rooms under the wards, and the nurses' rooms in the attic story, is not happy, but was a necessity in this case. The axis of the six ward-blocks is east and west, and they project towards the river from the low range of buildings next Palace-road. The pavilions are six stories in height, including the basement and the attics. The three uppermost of the four remaining stories are the sick-wards, which are well arranged for twenty-eight beds in each, are connected together by staircases and by corridors on the ground and first floors running the whole length of the building. The wards are 120 ft. long by 29 ft. 4 in. wide, and 15 ft. high; the superficial space is 126 ft. per bed, and the cubic contents 1,886 ft. per bed. The lineal wall space per bed is 8 ft. These wards are 3 ft. wider than is necessary.

The wards are heated by three stoves, and supplemented by hot-water pipes. Heated shafts withdraw the vitiated air. The ventilation is fairly successful.

The offices are in a separate block, next the bridge. The mortuary, lavatories, and workshops are in a separate building at the opposite extreme end of the site.

The chapel is in the centre of the main building; and overlooking the space between the pavilions are the matron and nurses, the waiting-rooms and operating-theatres, the officers' apartments and the out-patients' department. The total accommodation is for 573 inmates, and the cost, not far short of 1,000*l.* per bed, including land and furniture and the costly foundations, is much too great. Mr. Snell says,—"The total cost of the buildings, exclusive of the site, was at the rate of 777*l.* per bed, of which 85*l.* per bed was spent in the foundations, the total cost being 969*l.* per bed," or five times the cost of the Marylebone Infirmary, yet with 171 fewer beds in the total accommodation. Yet it has cost one and a half times less than the Hôtel Dieu, which cost 2,500*l.* per bed, half of which was spent in acquiring the site. It is a building of palatial character, and highly creditable, nevertheless, to the skill and practical knowledge of the architect, Mr. Currey.

The Glasgow Western Infirmary.

This charming and picturesque building illustrates a retrograde application of the pavilion theory, and except that cross-ventilation is retained by the opposite windows of the wards, is in no sense a pavilion hospital at all.

The administrative department is mixed up with the sick wards, which are not disconnected from the main blocks or from each other by the usual low cross-ventilated corridors.

In the central block and its wings there are two stories of sick-wards over the entrance-hall and board-room, kitchen and scullery, housemaid's pantries, doctors' dining-rooms, and bed and sitting rooms, &c., in the rear of which is the laundry. The other blocks have three stories of sick-wards, the out-patients' department being under one of them.

The accommodation is for 388 sick inmates. Each ward of the double pavilions contains eighteen beds, and is 70 ft. 6 in. long, 26 ft. wide, and 15 ft. high; the superficial area per bed is 108 ft., and the cubic space, 1,620 ft. The average lineal wall space per bed is 7 ft. 10 in.

The sanitary arrangements at the ends of the wards are not properly cross-ventilated by windows, nor are they heated at all, therefore they cannot be commended. But the heating and ventilation of the wards is on a sound principle. The stoves are assisted by hot-water piping, and the fresh air is warmed on its entrance and the foul air is extracted by four 18-inch square gratings communicating by shafts with a space heated by the hot-water cisterns, by which aspiration is accelerated. The products of the combustion of the gas-lights are not, however, carried away separately. The total cost has been 318*l.* per bed.

The Royal Infirmary, Edinburgh.

This splendid building more nearly represents the ideal of a pavilion hospital than any I have yet quoted, always excepting the mother of them all,—the Herbert Hospital,—and does honour to its architect, Mr. David Bryce.

The old buildings were devoted to the administrative department, with a new entrance-hall and offices, on each side of which is the two-story corridor connecting the surgical ward blocks, six in number, and two operating-theatres. In the rear is another single-story corridor, connecting the four medical blocks, and a corridor at right angles therewith, communicating with the administrative block.

Both medical and surgical ward blocks are three stories in height above the basement, which is used for stores only. Separate blocks are provided for the operating-theatres, surgical and medical, the superintendent's and porters' residences, the lecture-theatre, the infectious wards, the pathological department, the workshops, the engine-room, the laundry, the mortuary, &c., all in addition to the administrative block.

The total accommodation is for 586 beds. The medical wards, for twenty-one beds each, are 115 ft. long, 28 ft. wide, and the height 13 ft. 6 in. and 15 ft. The superficial floor-space is excessive, viz., 149 ft., and the cubic contents of the lowest floor is 2,015 ft.; the next, 2,201 ft.; and the top, 2,238 ft. Why the lowest floors, which seem to need the most, should be least in height is not obvious at first, but is desirable, owing to the tendency of the air of upper wards to be contaminated by that of the lower wards, through the lifts, staircases, and general means of communication in the hospital, but all are high enough,—in general they are too lofty. The lineal wall-space per bed is 9 ft.

The increased area per bed is owing to the position of the fireplaces in the side-walls; there are three in these wards, and the fresh air is warmed in its entrance through them. Openings for fresh air are between each bed, and extract-shafts aspirated by the heat of the hot-water cisterns, on which it is not usually well to depend, especially where, as in this case, the insufficiency of the heating by stoves has necessitated steam-pipes being introduced along each side-wall, some of which could be concentrated in a steam-heated shaft or extraction-chamber.

The sanitary offices are both heated and ventilated. The gas-pendants are also ventilating-lights. The floors are of polished pitch-pine, and the walls are covered with a polished parian cement face.

The surgical wards are similar, but for fourteen beds only. Ample arrangements are made for nurses, duty, day, and bed room; also for a doctor's room and separation ward for two beds, besides the staircase at the entrance of the wards, and in this contrasts strongly with the Blackburn and Leeds Infirmaries. The axis of the wards is east and west, so that the windows face north and south. The cost, including land, was 577*l.* per bed.

The Norfolk and Norwich Hospital

is the last of the hospitals of the United Kingdom that I think it necessary to quote particularly. It consists of a central administrative block, with operating-theatre and wards in the rear of it, and two double pavilions, two stories high, on each side, connected by a corridor of one story, 10 ft. wide and 10 ft. 6 in. high, with ambulatory over. Projected on the south-west are the nurses' dining-hall and the chapel. Separate and distinct blocks are devoted to the isolation-wards, out-patients' department, nurses, museum, and sheds and mortuary. The laundry is at the south-eastern extremity of the site. The axis of the wards is south-east and north-west. The total number of patients is 218. Cost, 300*l.* per bed. The wards contain twenty-four beds in each. Their length is 100 ft. by 26 ft. wide, and 14 ft. high. The superficial area is 108 ft. per bed, and the cubical contents, 1,511 ft. per bed. The average lineal wall-space is 7 ft. 10 in. Dr. De Chaumont and Captain Galton both reported on these hospital plans. I have quoted the opinions of the former, and, at the suggestion of the latter, stoves were used for heating, and Mr. Snell's Thermbydric stoves have been employed.

The ventilation is sensible, and like that at St. Thomas's Hospital. The sanitary offices are heated and ventilated by means of hot coils of water-pipes placed in chambers situated in the louvred turrets of the towers. Fresh air is abundantly admitted and extracted, and two ventilating sun-burners assist materially in extracting the foul air. The sanitary offices are exceptionally good,—cross ventilated by the passage leading to the towers at the angles. Altogether this is a very satisfactory example.

Antwerp Civil Hospital.

I now come to the consideration of one or two of the most remarkable foreign buildings. The year before last I had occasion to visit Belgium in company with two technical schoolmasters to inspect a series of buildings heated by hot-water upon the high-pressure principle adopted by Messrs. A. J. Bacon & Co., of Antwerp, in different parts of the kingdom, notably the hospital at Ath.

On my return to Antwerp I stayed to inspect the new hospital there, which greatly impressed me. I had seen Mr. Snell's design for a workhouse infirmary upon the system of circular wards, as suggested by Professor Marshall, and given in his work on charitable institutions, but the Antwerp Hospital has since been drawn and described in the work which Dr. Mouat and Mr

Snell have recently published,—to which work I shall also be obliged to refer for the plans and description of the now famous German hospitals which I was unable to see on my tour in Germany last January twelvemonth, being entirely absorbed in the inspection of the Great Polytechnic and Science and Art Schools of that country and Austria, Bavaria, and Switzerland, in company with Professors Armstrong and Ayrton, of the City and Guilds Institute for the Advancement of Technical Education.

M. Baeckelmans was the original designer, but the acting architects are MM. Belmeyer & Van Kiel. The hospital is an irregular parallelogram in form, with canted ends, and the separate blocks are united by the connecting corridors, 10 ft. wide, and one story in height.

The circular wards are external to the said corridors, and the administrative offices are within the same, except the blocks at the two ends.

At the southern end is the main entrance; the offices and residences of the chief officers, midway between which and the first pair of circular wards is the operation-room on the west side, and the mortuary on the east side of the connecting corridor. In the space between the first pair of circular wards is the chapel.

In the centre of the building, between the next pair of wards and their offices, is the kitchen, dispensary, and officers' dormitories. In the space between the third pair of circular wards are the nurses' apartments and dining-rooms. Between the last pair of wards are the baths, and beyond all, at the extreme northern end, is the detached laundry. The site is entirely surrounded by public roads, and comprises nearly 10 acres, and the cost will be about 360*l.* per bed. There are 380 beds. There is a basement about 8 ft. high throughout, and except for heating apparatus, and fuel, and for ventilating purposes, it is not as yet appropriated.

The sick wards, circular on plan, are 61 ft. 6 in. in diameter, with an average height of 17 ft. The total floor-space is 149 ft. superficial per bed, and the cubic contents 2,595 ft., including the nurses' room in the centre, formed by low partitions between the circle of supporting columns.

The average lineal wall-space, or rather space at the foot of the beds, is about 7 ft. per bed. The area of light is 28 ft. per bed from the eighteen windows. There are two stories of wards only, and the system of heating and ventilation will alone cost 12,000*l.* The fresh air will be passed over coils of hot-water pipes contained in a chamber situated in the basement under the central portion of each tier of wards; and the air so heated will be forced in by fans, turned by machinery fixed in the laundry building, through the upper parts of the central columns. The removal of the foul air is through the 10 in. by 8 in. gratings near the floor, between each window and each pair of beds, communicating with descending flues and horizontal channels to a central chamber heated by hot-water pipes, from the top of which is carried (right through the centre of the wards) a large iron shaft terminating above the apex of the conical roofs. Thus the fresh air is pushed in by fans, warm or cold as may be desired, at the level of the caps of the columns, and is drawn out by the aspirated central flue through each of the gratings near the floor beneath the heads of the beds. Consequently the ventilation is not dependent on the weather, but can be maintained in all weathers, and the collective areas of inlets and outlets, and the flues connecting the same, are carefully calculated and made of sufficient size to change the air of the ward about three times in the hour without draught, so that it has not time to get foul.

The sanitary offices are a model of good arrangements rarely found abroad; they are entered by cross-ventilated corridors, 12 ft. long and 4 ft. 3 in. wide. They are half the height of the wards, and the space between is left open for the free passage of air. All these offices are specially warmed and ventilated, and they consist here of a duty-room, a bath-room, water-closet, urinals, and lavatories.

The three separation wards for single beds, and the lift and staircases, are situated at the entrance of the wards, but are separated therefrom by a cross-ventilated corridor or bridge.

The Hospital of St. Eloi, Montpelier, France.

From Belgium it is an easy transition to France, and the instance I select is one that illustrates the most advanced phase of French hospital building introduced by M. Tollet. Dr. Mouat has thus distinguished it:—"M. Tollet's system may be briefly described to be based on the sub-division of the sick into small and manageable numbers, lodged in single-storied buildings, distributed over a sufficient area to prevent undue pressure upon space, and yet so connected as to be facile of access and administration. His wards are built upon the plan of the Gothic arch, to avoid all stagnation of air or arrest of organic or other matters floating in it by angles or corners of any kind; are intended to be easy of heating and ventilating in winter and summer, without the adoption of expensive mechanical contrivance; to admit of the provision of ample superficial and cubical space for each patient; to be constructed of materials capable of the most perfect cleansing, and to be as nearly as possible fireproof; to be provided with verandahs, to which the beds can be transferred, with little or no disturbance of the sick, in fine weather; and to have the accessories of baths, water-closets, and dependencies of all kinds so completely cut off as to be unable at any time to impair the purity of the atmosphere of the sick-room."

This hospital is divided into three distinct and quite independent portions. The first is the main building, which occupies the great central oval, and consists of eighteen single-story sick-wards, projected from the sides of the open connecting corridors surrounding a central court within, and at the entrance end of which are the administrative departments, chapel, &c.; also receiving-wards, and officers' and nurses' apartments, &c.

The second is the contagious diseases department, placed at the northern and eastern corners of the site, and enclosed by a belt of trees; the disinfection-rooms, the mortuary, and post-mortem room are to the north. The third is the maternity department, on the southern side, in two distinct buildings, surrounded by trees.

On this plan, M. Tollet has already built a large military hospital at Bourges, consisting of twelve pavilions, and the success has been complete. Dr. Mouat is of opinion that M. Tollet's system fulfils all the conditions of salubrity required in hospitals, more completely than any other form of structure with which he is acquainted; but the natural system of warming has been found deficient in winter.

The General Hospital of Friedrichshain at Berlin

is one of the best of the many admirable examples in Germany of hospital construction, and will be all-sufficient to indicate the advances made in the adaptation of the pavilion system. The military hospitals at Berlin, Düsseldorf, Königsberg, Custrin, &c.; the University hospital at Heidelberg, described by Mr. Gordon Smith; and the Dresden public hospital, are all excellent examples.

The civil hospital of Friedrichshain was completed in 1874, and took six years in building. It was the result of much study, in which all the most eminent German authorities took part, and it has issued in the production of a building which, as Mr. Snell observes, "may be said to mark an important era in the science of hospital construction," adding "the introduction of one-storied pavilions, although limited to the surgical division only, is especially commendable, as being the possible forerunner of a total abandonment of the principle of erecting hospitals, two, three, or more stories in height. The French have already commenced the erection of hospitals, the sick-wards of which are all of them but one story in height, and there can be little doubt that the universal adoption of this principle is but a question of time."

In the general arrangement of the site, the administrative offices are in front, towards the west, and at the extreme east is the kitchen, wash-house, and engine-house block, of three stories above the basement, between which are the chapel and the Roman and vapour baths, both within the central court, 700 ft. by 150 ft. wide, formed by the open paths at first intended to be covered ways, connecting the administrative offices and the kitchen block with the entrance ends of six sick-wards, situated equidistant from each other with their axes due north and south, or exactly opposite to those of Heidelberg, the axes of which are due east and west. I think the former arrangement the right one. The distance between them is seven times their height. The mortuary is to the north of the kitchen and laundry block. These general sick-wards are in two stories above the basement. So also are the two infectious wards at the south-west of the site.

On the north side of the general hospital are the four single-storied surgical wards, with an operating-room between the northernmost of the wards.

This is a pavilion hospital pure and simple, without even the usual connecting corridor either open or closed, but simply paved pathways, with the surgical wards of one story only, and no sick-wards more than two stories in height. What Miss Nightingale said of the Lariboisière sick wards, that "they were as distinct from each other as if miles apart," is much more applicable to these buildings. Separate buildings are provided for the ice-house, married officers' quarters, and nurses' institute.

The total accommodation is for 600 beds,—16 wards for 28 beds each, eight for 8 each, 32 for 2 each, and 24 for 1 patient in each, and the cost was 350*l.* per bed. The large wards for 28 beds are 97 ft. long, 29 ft. 9 in. wide, and 14 ft. 6 in. high, or about 107 superficial feet per bed, with cubical contents of 2,076 ft. per bed, the lineal wall-space per bed being 6 ft. 11 in. The area of light is about 24 ft. per bed, with double sashes. The wards are paved with tiles, and the walls plastered and painted. The sanitary offices are well fitted with English apparatus, but there are no cross-ventilated lobbies, nor anything to prevent the air of these places contaminating the air of the ward, except the general ventilation, which has been carefully thought out.

The advantages and disadvantages of heating by hot air or by hot water were elaborately discussed, and specially reported and experimented on, with the result that all the buildings, except the infectious block, should be treated by hot-water circulation. But an open fire is placed at the end of each ward, and in the day-room beyond, from which entrance is obtained to the verandah, into which patients can be wheeled in fine weather. The fresh air is passed into the ward over the warmed pipes, about 6 ft. from the floor, through the three pedestals enclosing the coils, and passes upwards, and returns to the exhaust gratings situated near the floor, which communicate by flues with the iron flue in the great chimney-shaft, at the base of which a fire is going at all seasons, by which means the air in the brick shaft enclosing the iron smoke-flue is carried forwards and upwards by rarefaction, on the principle described by Professor Tyndall in his speech at the opening of this institution by the Duke of Albany.

Besides the two single separation wards, the single-storied surgical wards have an operating-room. The medical wards have two separation wards of two beds each. Between these wards and the nurses' room and duty-room, which latter overlooks the great ward, there is a cross-ventilated passage. If a similar cross ventilated passage had been added to the conveniences and lavatories by increasing their lateral projection, these wards would have been perfect. I think, if nurses were polled, they would give the preference to narrower windows and a single bed between each window, instead of the usual number of two.

I have little to add to what has now been advanced, but sufficient has been said to show how much has already been done towards the solution of the great problem with which we set out, viz., How can great hospitals, with hundreds of sick congregated within their walls, be kept going with as healthy surroundings as a private residence in the country? and I think we may conclude that few such dwellings could compare with the wards of the great Civil Hospital at Berlin.

I have said little of the defects of the older hospitals. I must refer you to Miss Nightingale's "Notes" for these criticisms,—valuable as warnings,—and will be content to quote one passage, which, by its great contrast with our present practice, will at least show the advances made in the last century.

Miss Nightingale observes,—"By far the most remarkable illustration of the effects produced on the sick and maimed by agglomeration is that afforded by the experience of the Hôtel Dieu at the latter end of the last century, and before its reconstruction after the fire, on the plan which I exhibit, and which cost nearly a million and a half of money. There was direct atmospheric communication

through the entire suite of wards, occupied by above 550 beds on a single floor. The whole hospital contained 1,200 beds, but the beds by no means represented the number of sick, who were sometimes placed together in the beds as close as they could lie. And in this way, from 2,000 to 5,000, or even 7,000, sick were sometimes in the hospital at one time, and *one out of every four patients used to die*. So late as the year 1788, *each of the beds* in the Hôtel Dieu was intended to hold either two or four sick."

M. Husson, in his book entitled "Étude sur les Hôpitaux," shows that in the sixteenth century, and notwithstanding the use of multiple beds, holding, in 1515, from eight to twelve patients in each, the number of sick in the Hôtel Dieu so far exceeded the bed accommodation that the beds in 1530 were occupied by relays of patients, and forms were provided in which the sick whose turn it was to be out of bed could rest in the meantime. "Say not that the former times were better than these, for thou speakest not wisely concerning this thing." But I think we shall all agree with Miss Nightingale that the subject is almost too painful to dwell on, especially as we must take it for granted that the administration of the period acted according to the best of their judgment. Only let us not reproduce, even on a small scale, the same structural defects or mismanagement which led to such terrible loss of life. We may, at least, congratulate ourselves that every patient has long since acquired the right to his own separate bed,—a right, however, which has not yet been fully extended to schools, but is rapidly being so, and in the form of separate cubicles in the one large dormitory.

I have no time to describe details of construction, but this museum contains sanitary materials and appliances and working models of ward windows and hospital apparatus generally, in great plenty, and well worthy of careful study.

NEW FACTS AS TO THE COST OF INLAND TRANSPORT.

THE Select Committee on Canals, which sits every Thursday, is eliciting very valuable evidence as to the cost of transport, both in the United Kingdom and abroad. On the 24th of May, Mr. W. H. Bartholomew, M. Inst. C.E., gave evidence as to the very cheap rate at which a special kind of what we may call a water train, designed by himself, has been now for some years at work on the Aire and Calder navigation. Mr. Allport, of the Midland Railway, gave evidence that the length of sidings on that line was equal to that of the line itself. He also quoted the returns of coal borne by railway into London, which in 1882 came to 6,546,000 tons. According to evidence before the Railway Rates Committee in 1882, the average price of the 5,233,618 tons of coal brought by railway into London in 1877 was 6s. 5d. per ton; the rates falling from 0·55d. per ton per mile for 102 miles lead to 0·39d. per ton per mile for 260 miles lead. The latter is the longest lead of coal on our English railways, there being no competition with the sea from Newcastle. At the same rates, 2,100,000*l.* will have been received by the railway companies for bringing coal into London in 1882. But the aggregate cost of the five lines carrying coal into London,—viz., the Great Western, the London and North-Western, the Midland, the Great Northern, and the Great Eastern,—is more than 219,000*l.* per mile. Nor does this by any means represent the full cost of this part of these lines, as it is the average cost per mile over the whole length of the railways in question, including much single line; while 450 miles of treble and quadruple way have been laid within a mean range of some seventy miles from London. The mineral traffic now forms upwards of 22 per cent. of the average gross receipts of the railways of the United Kingdom. But it occupies the lines for more than half the working time. Thus it is understating the question to say that an outlay of 100,000*l.* per mile has been made by the companies in question to provide for the carriage of minerals into London. But the total gross receipts per mile for the traffic cited comes only to 12,000*l.* per annum, and at a price of ·49d. per ton per mile, no one, however sanguine, could pretend to expect more than 10 per cent. profit. On that showing, taking everything in the most advantageous way for the coal traffic, an outlay of some 100,000*l.* per mile in capital only earns a net income of 1,200*l.* per mile, or 1·2 per cent. on the amount of capital, tending to reduce the general dividends of each line to a commensurate extent.

On the 21st of June, Mr. Conder, M.Inst.C.E., gave evidence as to the cost of transport by railway and by canal in the United Kingdom, in Austria, Belgium, France, Germany, and the United States. It appeared from the tables put in by this witness that canal traffic is effected more cheaply, and that higher charges are in certain cases made for railway transport, in the United Kingdom than in any other part of the world. Mr. Conder stated the length of the canals, navigable rivers, and feeders of river and canal navigation in the United Kingdom at 7,336 miles. The length of the French canals and navigations, open and in course of completion, is, according to this witness, 8,882 miles. The length of the canals of America is not known, but there are more than 84,000 miles of railway in the United States.

THE IMPERIAL PALACE AT STRASBURG.

THE proposal of the German Government to erect a new Imperial Palace in the city of Strasburg led to a lively debate when it was first submitted to the German Parliament; but the plan was ultimately approved, and it is expected that the construction will be commenced in the course of the present year. There was some dissatisfaction with the first design, which had been prepared by an official architect in the employ of the Prussian Ministry of Public Works, Herr Landbauinspector Hermann Eggert. Instead of opening a public competition as had been suggested by Dr. Reichensperger and other members of the Imperial Parliament, the German Government has contented itself with calling upon Herr Eggert to revise and modify some details of his original design. This he has now done to the satisfaction of the Ministry, and he has now been informed that the supervision of the construction of the edifice is entrusted to his care. Herr Eggert had been for several years resident in Strasburg as architect of the new university there. He will remove from Berlin to that city again in order to carry out the new palace. This gentleman has also been entrusted by the Government with the preparation of the special plans and details for the new Great Central Railway Station at Frankfort-on-Main.

MR. W. J. WORTHINGTON, ARCHITECT.

ON the 6th inst. died, at his residence, Fulgarth House, Balham, Mr. W. J. Worthington, of the Adelphi, an architect and surveyor well known to many of the older members of the profession. Originally with Mr. Clutton, he became managing clerk in the office of Messrs. Finden & Lewis, by whose influence he was appointed one of the surveyors of the Union Assurance Office, an appointment he held for a period of twenty-nine years. In architectural practice he was associated with Mr. George Rone Clark and others in some successful competitions, and acted under Professor Lewis as surveyor for the old Panopticon; and one of his last engagements a few days before his death was to visit its ruins, acting in the same capacity for the new Alhambra. His business, which was an extended one, has been transferred to Messrs. Perry & Reed, of the Adelphi, to work for the benefit of his family.

THE DANGERS OF OVERHEAD WIRES.

WE have on more than one occasion of late years called special attention to the great and increasing danger to the public which is caused by the stretching of telegraph and telephone wires above the streets and houses of London and other towns.* From stress of weather no less than from neglect of supervision of erection and maintenance there can be no doubt that these multitudinous wires are likely to become increasingly menacing to the safety of wayfarers in our streets, and it is therefore satisfactory to find that the Government and the local authorities seem to be awakening to a sense of their duty in the matter. Questions have been asked in Parliament on the subject this week, and on Monday last a deputation of representatives from forty vestries of London waited on Sir Charles Dilke at the Local Government Board Office on the question of overhead wires. The deputation having been formally introduced by Mr. Daniel Grant, M.P.,

Sir Arthur Hobhouse said the object of the vestries was twofold,—first, as a body representing the ratepayers they saw the practice of extending overhead wires, which they considered were sure to lead to accidents, and desired to call the attention of the Government to the matter; and secondly, they wished to ascertain who were the responsible parties to control the erection of overhead wires. It was contended by some people that the vestry was answerable, as it was the owner of the soil.

Sir Charles Dilke, in replying, said the view which the Government took on the subject was that the owners of the wires had no greater rights of interfering with the streets than had any member of the public; that they could not, either with or without the consent of the local authority, interfere with the public highway in such a way as to cause obstruction to the public, even though such obstruction was limited to the execution of the work of erection. He said the Government were not prepared to say that in all cases it would be unlawful to carry wires across the street where the permission of the owners of houses had been obtained; but it would be a question of fact in each case whether the wires so suspended were such as to constitute a nuisance, and that would depend on the number of wires, &c., and their length. His view was that the vestries had power to so control the erection of wires, but if after a legal test it was found that they had not such powers, he quite agreed it was necessary that they should obtain them by seeking legislation.

* See "Telegraphy and the Weather," *Builder*, vol. xl. p. 223 (Feb. 19, 1881); and "The Modern Sword of Damocles," vol. xliii., p. 900 (Dec. 23, 1882).

VICTOR EMANUEL COMPETITION.

BY recommendation of the Royal Commission appointed last year to examine the designs of the above, five competitors have been awarded each a gold medal, value 1,000 lire (about 42*l.*), and a diploma of merit. (This, of course, is exclusive of the first prize, taken by M. Nanêt, of Paris, whose design, however, appears not likely to be carried out, a second competition being in progress.) There were over 200 competitors, several submitting more than one design. The names and nationalities of the successful competitors are:—

Mr. Daniel Brade, F.R.I.B.A., Kendal.
Messrs. Trabucco, Ferrario, & Giudini, Italy (*sic*).
Chevalier Eurico Bechetti, Professor of Institute Fine Arts, of Rome.
Sig. Paolo Otto, sculptor, Berlin and Rome.
Sig. Giovanni Monticoli, architect, of Rome.

CHÂLET RESIDENCES: HARROW-ON-THE-HILL.

THIS week we give, as promised, an illustration of the second house now building in the private park of Mr. David Brown.*

The internal arrangements of these houses are Swiss in character, with modern English requirements combined. The architect is Mr. J. T. Walford, of 82, Buckingham Palace-road.

GREAT AYTON CEMETERY LODGE.

THIS lodge is now in course of erection for the Great Ayton-in-Cleveland Burial Board. It is being built in connexion with the new cemetery which has lately been laid out upon property purchased from the executors of the late Mr. John Richardson. The cemetery is inclosed by a dwarf wall of local Ayton Moor stone surmounted by an iron railing, and the lodge is constructed of the same stone in horizontal courses from 6 in. to 3 in. in depth, and lined with slag bricks made by the Cleveland Slag-working Company, Middlesbrough, a cavity being left between the stone facing and brick backing.

The whole of the works in connexion with the cemetery and lodge have been carried out by Mr. Wm. Pearson, builder, Great Ayton, from the designs and under the superintendence of Mr. John W. Alexander, architect, of Stockton-on-Tees and Middlesbrough.

Brewery at Burton-on-Trent.—We may add to the statements given in our last number that the whole of the Dennett concrete arching, of which the principal floors are constructed (as shown by the section), was carried out by Messrs. Dennett & Ingle, of Whitehall.

* See p. 289, *ante*.

THE ARTISANS' ESTATE AT HORNSEY.

WE are enabled this week to give a series of plates illustrating the work now being done towards carrying out the objects of the Artisans', Labourers', and General Dwellings Company, of 34, Great George-street, Westminster, in its endeavours to meet what is probably one of the most pressing and important social questions of the day, viz., How best to provide suitable dwellings for the industrial classes.

The extensive nature of the work which this Company has done, and is still doing, towards carrying out its avowed object, is attested from the fact that on two of its finished estates alone, viz., the Shaftesbury and Queen's Park Estates, there have already been erected over three thousand houses, with a revenue of 80,000*l.* per annum, and a capital employed which exceeds a million sterling,—an amount which will probably be nearly doubled during the development of the new estate at Hornsey, which we this week illustrate.

The avowed object above referred to as now being carried out is to provide bright, cheerful, well-arranged, commodious, and healthy self-contained cottage-homes for the industrial classes in separated houses, each having back and front gardens, as distinguished from dwellings in barrack-like flats, the whole built on estates laid out and arranged on the most approved sanitary principles, which are maintained and managed in a way that is likely best to contribute to the comfort and well-being of the tenants.

These objects are so thoroughly in accord with the views constantly advocated for so many years past in this journal, that we trust a detailed account of the scheme for laying out this Company's new estate at Hornsey may prove of general interest to our readers.

The land proposed thus to be developed has an area of about 100 acres; it fronts upon the Green-lanes at Wood Green, adjoining the Green-lanes railway station, and runs back, with a gentle slope, to Lordship-lane in the direction of Tottenham.

A general plan of the estate, showing the arrangement of the roads and houses, is given as one of the illustrations. The main entrance from the Green-lanes runs parallel with the railway to an enclosed oval garden on which it is hoped to erect a church; it then turns and runs through the centre of the estate. This main avenue is 60 ft. wide, the houses being set back 15 ft., so that there is a width of 90 ft. from house to house. The other avenues are 50 ft. and 40 ft. wide, all paths and roads being paved and made up in a substantial manner and also planted, mostly with plane trees. It is hoped to reserve a large open space of nearly five acres as a recreation or garden ground, and other small pieces of spare ground will also be reserved and ornamentally planted.

The drainage of the estate has to be arranged on the dual system, the rain and surface-water being kept separate from the sewage. No drains run through the houses, back drains, with intercepting manholes, specially ventilated, being provided to all terraces. This system of ventilation of sewers has specially been considered, and, on the recommendation of Mr. W. A. H. De Pape, the engineer and surveyor to the Tottenham Local Board, the usual ventilating openings in the roads have been arranged to act simply as inlet ventilators, the sewers having at short distances apart specially designed valves and upcast ventilation shafts carried above the houses.

In laying out the estate, care has been taken that all houses are set well back from the road, all having front gardens, and the objectionable practice of bringing the corner houses out to pavement line of the return road is in all cases avoided, the corner houses of the terraces being set back, and specially designed and planned so as to form an architectural adornment to the terrace of which it forms a part.

There will be about 2,600 houses and shops built on this estate, mostly of five different classes, as shown in the plans given.

The first-class houses are built on plots, having a frontage of about 16 ft. wide and 85 ft. deep, with a floor area of about 1,065 ft. on both floors, containing eight rooms, including the scullery. Each house is provided with two sitting-rooms, kitchen, wash-house, and four bedrooms, also a back entrance, with coal-cellar, larder, washing-copper, and water-closet entered from the outside, as well as an additional water-closet on the chamber floor. It is proposed to let the houses at a rental of from 11s. to 11s. 6d. per week, including all rates and taxes, which are paid by the company.

Although in the illustration these houses are shown with no water-closet on the first-floor, yet in the greater number they are provided, and in such cases the back rooms are fitted up as kitchens and sculleries complete, so that they may accommodate two families if required.

The second-class houses are built on plots having a frontage of about 15 ft. 6 in. by a depth of 80 ft. The floor area is 936 ft., containing seven rooms, there being only three bedrooms on the first floor. The other accommodation is similar to that last described, except that there is no upstairs water-closet. The weekly rental of these houses will be about 10s. per week.

The third-class houses are built on plots having a frontage of 15 ft. by a depth of about 70 ft., and contain a floor area of about 800 ft., containing six rooms, three being bedrooms. The weekly rental of these houses will be about 9s. per week.

The fourth-class houses are built on plots having frontages of about 14 ft. 6 in. by a depth of about 70 ft., with a floor area of 660 ft., containing five rooms, there being two bedrooms on the first floor. The rentals of these houses will be about 7s. 6d. per week.

The fifth-class houses are built on plots having a frontage of 13 ft., by a depth of 60 ft. The floor area is about 470 ft., containing a front living-room, with kitchen and small wash-house behind, with two bedrooms over. The rental of these houses will be about 6s. per week.

It is proposed that by far the largest number of houses built should be of the smaller class in order to encourage the industrial classes in the effort to avail themselves of houses at a rental which will not make it necessary to take in lodgers.

In the general planning of these houses the company does not, as will be seen from the plates, profess to show any specially new arrangement, the type, with the exception of the fifth-class houses, being that which seems to have been universally adopted in all town and suburban terrace dwellings, as giving the greatest accommodation at the cheapest rate; where, however, any special requirement has to be met, as, for instance, in the case of shallow, corner, and other irregularly-shaped plots, the architect has availed himself of the opportunity to design plans of almost every variety of arrangement; but for the general terrace plans the Board has not found it practicable to adopt a more convenient and economical plan than that shown.

We give a general view of the terraces of the first and second class houses, as will be seen. A feature in the design is made of the corner houses; and with a view of breaking up the monotony of the long lines which terraces in streets produce, specially designed features are introduced at intervals so as to break up and improve the sky-line of the buildings; advantage is also taken of these features to improve the accommodation of the houses, so that a return may be obtained for the extra outlay by an increased rent, which is readily obtained in such cases.

The houses are all built with a layer of concrete over the whole area of the buildings; the walls are of brickwork,—the party-walls being hollow to prevent the passage of sound between the tenements; slate and cement damp-proof courses are used; the walls are faced with red and yellow bricks, with terra-cotta cills and flower-guards; the roofs are mostly slated, but to give variety many are tiled; the whole being built with the best materials and designed to have a bright and cheerful appearance. The space under the ground floor is specially ventilated, as are also all the rooms. There is constant water supply,—there being no cisterns except the water-waste preventers to the water-closets. The sanitary arrangements are of approved yet simple character, all waste and other pipes being discharged over open, trapped, yard gullies.

The general requirements of the tenants, as we are told, will not be lost sight of, for, as before indicated, plots will be reserved for places of worship, schools, &c., and a building for public meetings is about to be built in a convenient position on the estate, besides a large hall to contain about 1,000 people. This will contain sets of committee and club rooms, also a coffee-tavern and other conveniences. In certain parts of the estate, stables, workshops, and laundries will be erected, and a due proportion of shops, sufficient for the requirements of the tenants, will be built.

Although the Board does not think it advisable to interfere directly with the conduct of any of the societies that spring up on such an estate, yet it is always desirous of helping forward any good work doing by the tenants on its properties. With this object it gives prizes to the different horticultural and window-gardening societies on the estates, and claims to be always seeking to help those associations which promote thrift and are calculated to teach its tenants to help themselves. With this object, also, it will not allow any public-houses or pawnbrokers' shops on its estates, and it thus endeavours to induce the most quiet and provident portion of the industrial classes to occupy its houses.

About one-fourth of the roads, &c., are now laid out. Large workshops and drying and store sheds have been erected, and about 400 houses are at the present time being built. The whole of the works and buildings connected with this estate have been designed by the company's architect, Mr. Rowland Plumbe, of No. 13, Fitzroy-square, under whose superintendence, and with the close supervision of the vice-chairman, Mr. R. E. Farrant, and a committee of the Board, the works are being rapidly carried out.

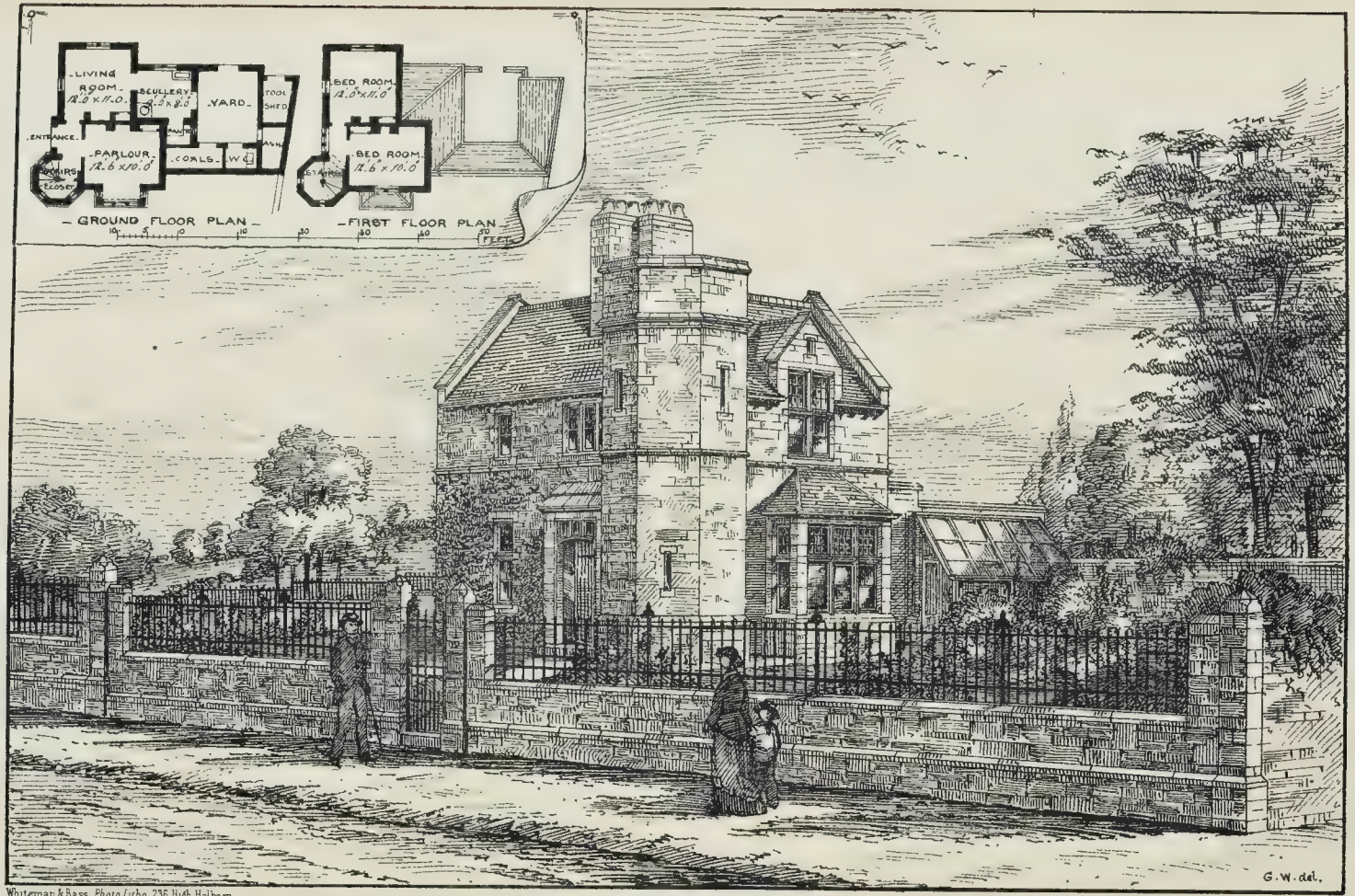
THE ORIENTAL MUSEUM, VIENNA.

SINCE the time when, in the Oriental Section of the Vienna International Exhibition (1873), a vast variety of exquisite and unique objects of Eastern art was brought before the people of Austria, the favour with which its products were regarded has been constantly on the increase. That exhibition is a memory of the past, but its fruits have been preserved. One of its results is the establishment of an Oriental Museum, placed under the superintendence of Herr von Skala. In its rooms the precious art products of the East in its widest sense,—comprising in that term the countries from Bosnia to Japan and China,—have been stored by expert hands, and offer, in their completeness, a rare collection of its kind. Few who pass the buildings of the Vienna Exchange have a conception of the amount of art and taste of two continents which is collected in the Oriental Museum. And yet a visit to the museum would well repay the inquirer. Visitors to the late Trieste Exhibition will remember with pleasure the room exhibited by the Oriental Museum, which was arranged by Herr Charlemont, and caused the admiration of art critics. That exhibition, together with the influence exercised by the new museum, has been of great benefit to Austrian trade and industry, has opened up new channels of commerce, and has favoured production. Lately an arrangement was made, for which the public are indebted to the efforts of the superintendent, by which the collections of the Crown Prince Randolph and an unknown noble patron were liberally placed at the disposal of the museum authorities. Herr Hugo Charlemont has thereby been enabled to fit up and completely furnish four rooms, which have now been thrown open for public inspection. The wonders of Arabian, Caucasian, Indian, Chinese, and Japanese art have been combined in a magnificent *ensemble*, delighting the eye and charming the mind. Our illustration represents the fourth room of the Oriental Museum. In this space, perhaps the most beautiful of the series, the decorative talent of Herr Charlemont has found ample scope for display. At the same time, it must be stated that all the resources of Eastern flora and fauna were placed at the decorator's disposal, and he has made full use of them.

Bristol and Gloucestershire Archæological Society.—At a meeting of the Council of this Society, held at Bath, it was decided to hold the annual meeting of the Society at that place on Tuesday, July 31st, and the two following days. Mr. E. Stafford Howard, M.P., will be the president for the next year. The programme for the annual meeting will include the following excursions:—On the 31st, to Roman Bath; August 1, Sodbury, Dyrham, and Lansdown; 2nd, Thornbury and Iron Acton. It is anticipated that Dr. E. A. Freeman, Professor Earle, and the Rev. Prebendary Scarth will attend the meeting, and will be amongst the readers of papers.




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LODGE TO GREAT AYTON-IN-CLEVELAND CEMETERY

John W. Alexander. A.R.I.B.A.
Architect.



TERRACE OF FIRST-CLASS HOUSES

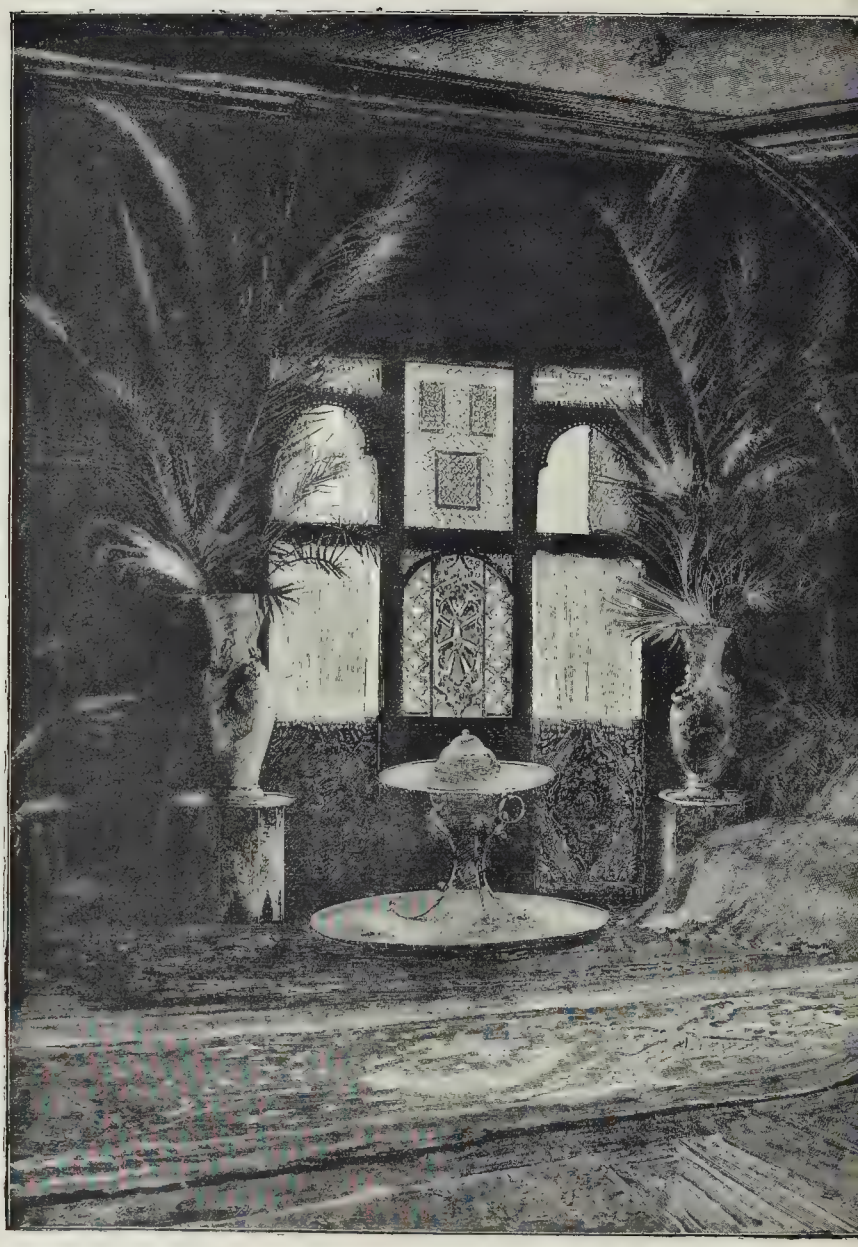


TERRACE OF SECOND-CLASS HOUSES

C. F. Kell, Photo Litho, Castle St Holborn

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ARTISANS', LABOURERS', AND GENERAL DWELLINGS ESTATE AT HORNSEY.—Mr. Rowland Plumbe, Architect.



A ROOM OF THE ORI

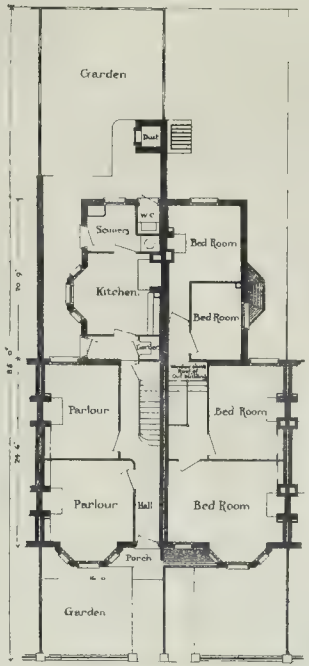


MUSEUM, VIENNA.

The Artizans', Labourers', & General Dwellings Estate at HORNSEY.

MR ROWLAND PLUMBE, ARCHITECT

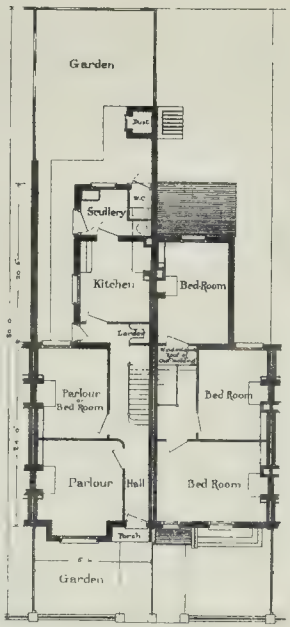
First Class House.





Ground Plan First Floor Plan

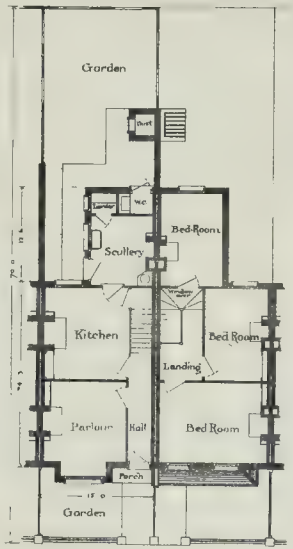
Second Class House.

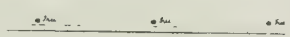




Ground Plan First Floor Plan

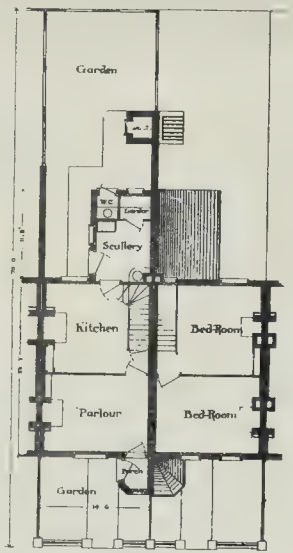
Third Class House.





Ground Plan First Floor Plan

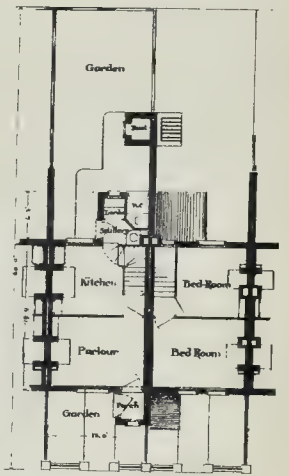
Fourth Class House.





Ground Plan First Floor Plan.

Fifth Class House.





Ground Plan First Floor Plan

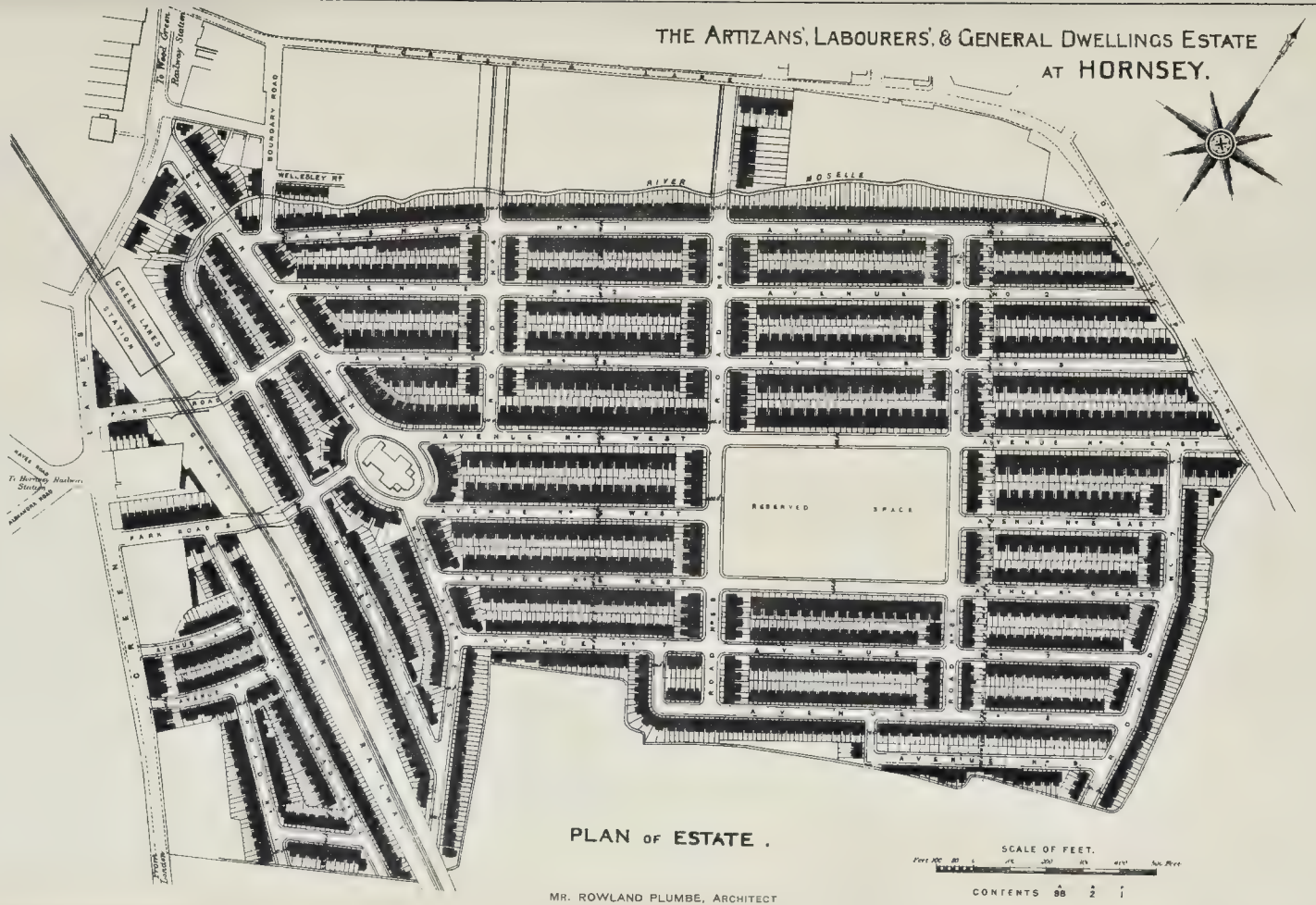


Scale of Feet

F. Kell, Photo-Litho, 3a, Gate St. Holborn

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THE ARTIZANS', LABOURERS', & GENERAL DWELLINGS ESTATE AT HORNSEY.



PLAN OF ESTATE.

SCALE OF FEET.

MR. ROWLAND PLUMBE, ARCHITECT

CONTENTS 88

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THE SITE FOR THE PROPOSED CATHEDRAL FOR LIVERPOOL.

THE following is the report prepared by the special sub-committee giving particulars of the available sites for the proposed new cathedral:—

"The special sub-committee to whom you entrusted the duty of collecting facts bearing on the subject of a site for the proposed cathedral have applied themselves to the task with earnestness, and, they venture to hope, with some measure of success. In their investigation they were materially assisted by Mr. Shelmerdine, the borough surveyor, and by Sir James Picton. They had also the advantage of the knowledge possessed of land and buildings by Colonel Wyatt and Mr. Hale, and a letter of suggestions from Mr. Lyster, of the Dock office. To all these gentlemen, and to others who rendered valuable assistance, they beg to tender their best thanks.

The first point of importance was one in which Sir James Picton and Mr. Shelmerdine thoroughly concurred, viz., that the area sought for should not comprise less than 10,000 yards; and that the length of the edifice from east to west should not be less than 300 ft. Other considerations were not forgotten, *e.g.*, that the situation should be public and central, and that the building should, if possible, be open to view on at least three sides.

But a very important element in the consideration of every site suggested was its probable cost, in case it required to be purchased in whole or in part. It was stated that land covered with buildings could not be procured for less than from 8*l.* to 10*l.* per yard; while in some instances that amount would be nearly doubled. Land which is not covered by buildings is very rare within the city, or of limited extent; so that a sufficient one could only be found at a considerable distance from the present centre. It was hoped that some of the churchyards of the town, now practically disused, might have served the purpose; but it has been found that only one possesses the requisite space.

Whatever may be the site selected, due attention must be paid to its probable condition in the future, for one might be deteriorated by the class of buildings which would rise around it, while another might be improved in an equal or greater degree; so that even when a preference is given to a few sites,—say two or three,—the public must not regard their present condition as a correct indication of what any of them will be, even a few years hence.

The number of situations suggested as suitable have been about twenty in all, but some of them did not require detailed consideration. So many as fourteen, however, have been examined with great care, and a table compiled from Mr. Shelmerdine's plans and private information, contains details respecting each."

As a supplement to the report, further information is given by Mr. Shelmerdine, who remarks upon the various sites named. We quote a few passages from his remarks with reference to some of the most likely sites:—

"*St. John's Churchyard.*—This site has a total area of about 15,300 square yards, and from east to west an extreme length of about 430 ft. The present church was erected under an Act of Parliament obtained in 1762; it was not consecrated, however, until 1783. There are some 2,572 gravestones, and in the event of the cathedral being erected here about one-half of these would have to be interfered with. As regards the area, it would be quite practicable to erect an edifice here with a length from east to west of from 300 ft. to 390 ft. It is to be mentioned, however, that a difficulty might arise with the Corporation as to the advisability of the site being appropriated for the purpose, as it may be considered that it should be reserved in order to leave open the western side of St. George's Hall. There is also the question as to the desirability of erecting a cathedral in such close proximity to buildings in the Classic style of architecture, taking into account that Gothic is the prevailing style for church purposes. It should also be remembered that if erected on this site the edifice would be completely hidden from the most important of the surrounding thoroughfares by St. George's Hall, and also that should the high-level roadway be constructed in William Brown-street, the low-level street between the bridge and the site would be anything but an advantage. The level at the north-eastern corner of the site is about 22 ft. above that at the north-western corner, and the cost of levelling this, should it be considered desirable, would be about 4,500*l.* With regard to the graves, the cost of removing the contents may be set down at about 12*l.* per grave. The subsoil is yellow friable sandstone. The extreme height of St. George's Hall is 115 ft. or thereabout.

St. Luke's Church and Leece-street.—This site would be bounded by Berry-street, Leece-street, Rodney-street, and Bold-place, and have a total area of 9,250 square yards, with a length of about 480 ft. from east to west. To obtain this area it is proposed to utilise the site of St. Luke's Church and yard, containing about 5,450 square yards, and to acquire and add thereto certain properties in Rodney-street and Roscoe-street, covering an area of about 3,800 square yards. It is also proposed to acquire a further plot in Rodney-street, containing about 780 square yards, for the purpose of continuing Bold-place into that street. The property proposed to be acquired consists mainly of valuable dwelling-houses fronting to Rodney-street, and in order to do this it might be necessary to obtain an Act of Parliament. The cost of getting in this property would probably not be less than 20,000*l.* The site would no doubt be a fine one, affording room for a cathedral of imposing dimensions, and the neighbourhood would be all that could be desired. The subsoil is friable sandstone. The difference in the levels is about 27 ft.

George's Dock, &c.—The Corporation have decided not to renew any of the leases of the warehouses in the block fronting what is known as the Goree Piazzas, and as this block will sooner or later be demolished by the filling up of the George's Dock, a magnificent space would be formed. There is, of course, the difficulty as to the loss of accommodation by the Dock Board, but as the exigencies of the traffic must lead shortly to a demand for the filling up of the dock, it is just possible that, in view of this, upon proper representations being made, the Board might consent to anticipate the actual necessity in favour of such an object as that which the committee have in view. Assuming the baths to be removed, and the small basin at present in rear of the stage to be filled up as part of the arrangement, the area available between the buildings at the bottom of Water-street, &c., and the river would be more than sufficient for the cathedral proper, and in every respect suitable, being easy of access from all parts of Liverpool, and from the Cheshire side, and, in fact, situate at the point of the city even now traversed by the great bulk of visitors. For a fine architectural effect probably this site cannot be surpassed, and being situate upon the margin of the river (and at the only point where practically the public have direct access to it), it would be a popular one, and one that in all probability would find favour with the section of the public which may be expected to subscribe towards the erection of the edifice."

SILOS AND ENSILAGE.

THE construction of silos or receptacles for the storage of crops is a subject upon which much has been said of late years, and reference has been made to it in our own columns on more than one occasion. Inasmuch as all circumstances affecting the supply of green fodder are of interest to horse-owners as well as to dairy-farmers, we select from a special account in the *Chester Chronicle* some particulars of filling the new silos at Horseley-lane Dairy Farm, near Peckforton Castle, which have been constructed by Lord Tollemache, by way of experiment, for the benefit of his tenantry. These silos, which are not pits, are four in number, and have been formed out of what was originally a cart-shed and root storage house. The front of this was divided into four bays by five stone pillars. The spaces between the pillars have been built up with a brick wall some 14 in. thick, with a door for each silo. This door is cased inside with tin, painted, and is strengthened outside by means of iron cross-bars and wedges to resist the pressure of the material in the silo. The size of each silo is given as follows:—No. 1 silo, size 1,402 cubic feet; No. 2 silo, size 1,402 cubic feet; No. 3 silo, size 1,402 cubic feet; No. 4 silo, size 2,091 cubic feet; size of all four silos, 6,297 cubic feet, containing, at 42 lb. of ensilage to a cubic foot, 2,361 cwt., or 118 tons 1 cwt. of ensilage. Roughly speaking, for the writer did not measure them, the first three silos appeared to be about 13 ft. square by about 8 ft. high,—at least, as to the part to be used for ensilage. Of course, there was considerable space above that, in which, on stout shelves supported by brackets, were supported in each silo no fewer than forty-two boxes filled with stones, and weighing 1¼ cwt. each, thus giving a total available weight for each silo of 3 tons 3 cwt. "The ensilage, when the silos are filled with it, will be covered with wooden shutters, 6 ft. long and 3 ft. wide. The shutters will then be covered with 6 in. or 8 in. of bran, to exclude the air, and on the bran will be placed the weights. In two months or so the weights, shutters, and bran will be removed to enable the silos to be filled up, owing to the sinking which will have taken place in the ensilage. Afterwards the shutters, weights, and bran will be replaced, and left until the ensilage is required for fodder. The ensilage will then be sufficiently solid to be cut with a hay-stack knife." (The matter quoted is from a circular which Lord Tollemache has had struck off for the information of his tenantry and other inquirers.) The boxes filled with stones above mentioned, being on shelves high up, are in a handy position to be lowered on to the shutters by means of a chain and pulleys running on rails fastened to the roof timbers, access from one side to another being gained by openings made in the upper part of the dividing walls and also in the upper part of the end walls. The interior of each silo is covered with about 1 in. of concrete, and the tile floors are also thinly coated with concrete to make the joints good and keep out the damp. Horizontal lines are painted at intervals on the concrete to mark the level which has been reached, or show the sinkage. They are, besides, serviceable in keeping the work level.

The morning was rather unfavourable for the operation of filling the first silo, as some rain had fallen the previous night, and the weather being damp and hazy the grass had not dried. It is laid down by the authorities that grass ought not to be cut for ensilage when it rains, or when the grass is very wet from rain water, as it is important to preserve as much as possible the sap of the grass from being mixed with rain water; but it is also said "it may be cut or carried two or three hours after it has rained." Accordingly, operations were commenced by mowing the long, rank grass in the Orchard, this grass being advisedly selected for the purpose, as well as some other grass of a rank character, grown on land flooded by sewage in the vicinity of the dairy farm. As fast as it was mown the grass was brought in carts to a very large chaff-cutter,—we believe the largest size made by Messrs. Richmond & Chandler,—the mouth of which is 14½ in. across. This chaff-cutter, driven by steam, cut the grass sufficiently fast to keep one man constantly employed in packing the grass on to a travelling feeder, and two others shovelling the chopped grass away as fast as it was cut, with large wooden toothed shovels. Two carts were kept going as fast as they could, carrying the chopped grass to the silo, two men with each cart shovelling the chopped grass through the openings beneath the long shutters placed just beneath the eaves of the silos. The carts carrying the cut grass are boarded up to prevent the cut grass blowing about. Undoubtedly it would be much more convenient to have the chaff-cutter on the floor above the silos, so as to avoid the cartage of the cut grass, but his lordship has preferred to utilise a spare building as it stood for the first experiment, and not to enter into the construction of a modern silo, his object being, in the first instance, merely to show his tenantry the value of ensilage as food for dairy stock, and to demonstrate it in a way which is within the means of all of them. All of them have barns, whereas he had none at the dairy. His lordship, who was present superintending the operation of filling the silo, stated that when he commenced the management of the estate, at the age of twenty-one, he studiously avoided the creation of what is called a home farm or model farm, as he found that on so many estates such a farm engrossed the whole attention of the landlord. He preferred, therefore, to co-operate with his tenants in the improvement of their farms for their benefit and that of the estate. To resume the account of the work going on in the filling of the silo. The work was begun by wheeling the cut grass in large barrows made for the purpose with boarded sides standing some 4 ft. in height. These were wheeled in through the silo doors on the ground level, as long as that could be conveniently done, a kind of stack being formed inside the silo, but care was taken not to give this stack a regular upright side, as the result would have been the formation of an air space, when the silo was afterwards filled in. On the contrary, an irregular sloping surface was formed, and when the door was at last closed and the cut grass was pitched in from the carts through the shuttered opening below the eaves, the grass coming in was well rammed against this sloping side and made level. Three men were at work in the silo, all wearing smooth-soled wooden clogs, stamping the grass down, two of them also using wooden rammers and the third sprinkling coarse salt out of a tin dredger with half-inch holes. The quantity of salt is 2 lb. to every half cwt., this having been found in Lord Walsingham's silos at Merton to be about the right proportion.

Lord Tollemache stated that he hopes where he has hitherto produced three tons of hay per acre to produce eight tons of ensilage, and he is convinced that the latter is twice as nutritious as an equal quantity of hay, on account of the natural juices of the grass being preserved

His Lordship has made personal inspection of the system pursued at Lord Walsingham's silos, and says that when he went there he expected to find a disagreeable smell of decomposed vegetable matter, instead of which there was a very sweet aroma. As to the cost, he was informed that one gentleman in Essex had maintained the possibility of constructing a silo for 30*l.* by simply digging a hole in the ground of the size of 12 cubic feet, concreting the bottom and sides, and covering it with a sort of dome, with a hole in the middle for a man to get through. The advantage which his lordship expects to derive in his own case he states as follows:—He lives in Suffolk and in London part of the year, but he is in Cheshire three or four months, and during that time some 80 or 90 tons of hay are used for the horses and other stock. That 80 or 90 tons of hay come off two mowing fields of the same size—about 24 or 25 acres,—and he believes that by means of the system of ensilage he shall be able to answer the same purpose with one of these fields, and have the other available for another purpose. Furthermore, his lordship has on his estate some 250 or 260 cottagers, and each one of these cottagers keeps a cow. He looked forward to these cottagers deriving great benefit from the system of ensilage applied in some simple form.

BERKS ARCHÆOLOGICAL AND ARCHITECTURAL SOCIETY.

THIS society had its first excursion for the present season on the 21st inst., when the following places were visited, — Faringdon, Great Coxwell, Coleshill, and Fairford.

Arriving at Faringdon, the ancient parish church was visited, the Rev. W. E. Chapman, the vicar, meeting the members at the entrance. Mr. Chapman read a paper on the church. He said there were few in the diocese of Oxford, and not many in England, that surpassed it in points of interest to the student of Mediæval art. Of Norman work in its purity there was but one specimen left in the church, viz., the north door to the nave (now disused). The most prominent features in the door were the peculiarity of the mouldings on the joints, the various patterns, and the wood moulding; the date of the door was about 1070, the time of William the Conqueror. A large portion of the church was of the semi-Norman style, passing into Early English, about 1180, time of Henry II. The mixture of Norman outline and Early English detail in the nave arches rendered that portion of the building especially valuable to the student of architectural chronology. The most beautiful feature of the church was the lower stage of the tower as seen in the interior; the four great piers supporting the tower were lined with bundles of semi-cylindrical shafts, each finished by a carved capital of elegant and varied form. The chancel, which dated from about 1200, was remarkable for its great length and extreme simplicity, and in the sedilia the sculptor had been lavish of his art. In the Unton Chapel there were several monuments worthy of examination. The Perpendicular portion of the sacred edifice, the west window of the nave, and the Pye Chapel, or north aisle to the chancel, were next dealt with, the latter of which (added since the Reformation) contributed much to the beauty of the general effect.

At Faringdon House, Mr. D. Bennett, the owner, received the visitors, and the Rev. J. M. Guilding read a paper on the Manor of Great Faringdon, in the course of which he said few places in Berkshire could trace their history from so remote a period as the ancient town of Farringdon. During the Saxon period the kings had a palace there, in which Edward the Elder died in 925, and in the stormy reign of Stephen the town seemed to have played an important part in the Civil War between that monarch and the Empress Matilda. In the year 1144 the Queen's half-brother, Robert Earl of Gloucester, built a castle at Faringdon, which he fortified and defended against King Stephen; but, after a close siege of four days, want of provisions compelled him to surrender, and it was taken and razed to the ground. He (Mr. Guilding) was inclined to think that Faringdon Clump was the site of the old Norman castle. In the reign of Henry III. they had the first charter on record relating to the town, the date being 1218; it granted a market on Mondays to the Abbot Beaulieu, but by the charter of 1313 the market day was changed to Wednesday. Mr. Guilding traced several memorable events which occurred in the town (including battles) from the time of King Richard II. down to a recent period, and gave a history of the ancient Manor House of Faringdon and of the various possessors of it, some of whom were distinguished persons.

Carriages being taken, a pleasant drive brought the party to Great Coxwell, where the celebrated Abbot's Barn, situated on the farm of Mr. William Gerring (whose family has in a direct line occupied the land for 325 years), was inspected. Mr. Rutland gave a very concise history of the barn, which measures 152 ft. long and 40 ft. wide, the walls being 4 ft. thick. The mouldings and corbels show it belonged to the Decorated period. The original roof remains, with plain open timbers, carried partly on two rows of massive oak pillars resting on stone plinths. A cursory glance at the building was made, after which Badbury Hill was ascended. The Hon. Sec. gave a brief description of a circular camp, 600 ft. in diameter, with a very wide ditch around it, and in which some years ago human bones were found, it being situated on the turnpike-road leading from Faringdon to Highworth.

Coleshill House, the seat of the Earl of Radnor, was the next point of interest, and as his lordship had kindly thrown open the mansion for the inspection of the party, the permission was taken advantage of, and the principal rooms, the pictures, &c., were hurriedly scanned, the richly-carved staircase, and the beautifully-moulded ceilings being greatly admired.

Mr. C. S. Smith read an able paper in the hall on Inigo Jones (the architect of Coleshill House, which was built in 1650) and his influence on English architecture.

Quitting the mansion, the visitors repaired to Coleshill Church, passing on their way the village cross and steps. The village of Coleshill is marked by the absence of an inn or public-house, the erection of these being prohibited.

The journey was continued through a line of charming country, *vid* Lechlade, to Fairford, some six or seven miles beyond Coleshill, where the last portion of the programme was carried out,—that of visiting the fine old church. The windows of this church are of world-wide celebrity, and have been fully described and commented on in an earlier volume of the *Builder*.

BIRMINGHAM ARCHÆOLOGISTS AT OXFORD.

ON the 19th inst. the members of the archæological section of the Birmingham and Midland Institute had an excursion to Oxford. Leaving Birmingham early, the party breakfasted at the Randolph Hotel in Oxford, after which they were addressed by Mr. James Parker, who described the earliest known condition of Oxford, when it was a mere fortification of a mound upon the banks of the Thames, as Warwick and Tamworth Castles were the origin of other towns upon the banks of the rivers adjacent. The popular fiction respecting the connexion of Alfred the Great with the city of Oxford was shown to be without any foundation, as there was no proof that Alfred was ever in Oxford at all. No mention was made in his will of having had any property there.

The arrangements of the day differed considerably from those generally observed on similar occasions; for, instead of a rapid run through chapels, halls, colleges, and libraries, in which much was seen, but little understood and appreciated, attention was devoted to a similar number of objects, all of which were seen thoroughly, and, by the explanations of Mr. James Parker and Canon Bright, were placed before their audience in a manner seldom possible. Passing southwards, by the Martyrs' Memorial, St. Mary Magdalene's and St. Michael's Churches, and the north gate to Carfax, Merton College and chapel were first visited. Merton is especially interesting as being one of the oldest colleges in Oxford. The ironwork of the door of the hall, of fourteenth-century work, attracted especial attention. The roof of the chapel was painted as a labour of love by one of the Fellows of the College, whom Mr. Parker said he had often seen, some years ago, working away at it in his blouse. At Christ Church a long stay was made, Canon Bright describing the whole history of this magnificent foundation, from the days of St. Frideswide, about 740, to the days of the present buildings by Cardinal Wolsey, in 1525, which, if the Cardinal had been able to carry out his intention, would have been the greatest academic institution England had ever seen. But the Reformation came, and Christ Church was left unfinished, as it is seen to-day, the cloisters having only the bases of the columns formed on one side, and the stones from which the arches were intended to spring on the other. Passing along the Broad-walk to the river, some of the party rowed to Iffley, about a mile and a half down the river, while others walked, to see that most interesting specimen of Norman architecture, the Church of St. Mary Magdalen. On both sides of the church are Norman doorways, ornamented by columns, the shafts as well as the capitals of which are richly carved. The font is very large, and the basin is supported by three twisted stone pillars, each of a different design. The magnificent yew-tree and the churchyard cross commanded attention. Returning to Christ Church Meadows, the route lay to Magdalen, where the fine view from the bridge was seen. The curious old pulpit of stone, from which, on St. John Baptist's Day, the University sermon was wont to be preached, the whole surroundings being strewn with rushes and decked with bows, in commemoration of St. John preaching in the Wilderness, was pointed out, and the many other objects of antiquarian interest there. The new schools and new college were afterwards visited, and dinner at the Randolph Hotel finished the day's proceedings.

The arrangements for the day were made by Mr. J. A. Cossins, the hon. secretary of the archæological section, to whom, as well as to Mr. Parker and Cannon Bright, votes of thanks were passed at the dinner for their kind attentions to the comfort, enjoyment, and instruction of the party.

PROPOSED SAILORS' HOME AT LEITH.

THE plans have now been completed, and tenders received, for the erection of a Sailors' Home near the west entrance to the Albert Dock at Leith. After consideration, the committee appointed to examine the competitive plans sent in selected those of Mr. Charles S. S. Johnston, architect, George-street, Edinburgh. Considerable alterations have (according to the *Scotsman*) been made on the original plans, and a description of the building, the erection of which will be begun immediately, may now be given. The style of architecture is old Scottish Baronial, and the Home will be erected on a site granted by the Dock Commissioners at a nominal rental at the corner of Tower-street and Tower-place.

The principal elevation of the proposed building faces the harbour at Tower-place, where the frontage will be 90 ft. in length. There are four stories and attics. A stone balcony on the level of the first floor runs along the front, while the wall-head and roofs are finished with two rows of dormer windows, with turrets at each corner of the elevation. In the centre is a tower 75 ft. high, with provision for a clock with four illuminated dials, 7 ft. in diameter. The south elevation to Tower-street, which is of the same height, is provided with a balcony and turrets, while the north elevation, facing the docks, consists of a five-storied gable, with two square turrets at the angles, and one side of a covered recreation-court. This court is one story in height, and has an ornamental slated roof, surmounted by an octagonal *flèche* or turret, 25 ft. high. The back elevations are in the same style of masonry as the others. The front entrance, which will be in Tower-place, is flanked on the left by two shops with back saloons, in the rear of which is the seamen's covered recreation-court, 74 ft. by 37 ft., communicating directly with the entrance-hall. On the street floor, the remaining space, both to Tower-place and Tower-street, is laid off as a restaurant or coffee-palace, and behind this the necessary kitchen, scullery, and storage accommodation is provided, together with a wash-house, laundry, coal-house, and a large open kitchen-court. The superintendent's office, and store-room for seamen's effects, are also to be placed on this floor, near the entrance-hall. On the first floor, the superintendent's house and officers' mess-room occupy the space to the left of the tower. A seamen's reading-room, 26 ft. by 19 ft., is beneath the tower, and a recreation-room, 31 ft. by 18 ft., to the right of the tower; while

the remainder of this floor, along Tower-street, is occupied by the seamen's dining-room, 32 ft. by 18 ft., and the kitchen, 22 ft. by 18 ft., with scullery and dinner-service room attached. The recreation-room and dining-room are separated by a folding-door, and can be made into a hall for concerts or other entertainments. On the second floor the officers' recreation-room, 17 ft. by 12 ft., and bed-rooms for the superintendent and servants, are placed to the left of the tower, the corresponding space on the third floor being divided into bed-rooms for nine officers. The remaining space on both flats is divided into two treble, eight double, and thirty-four single-bedded rooms for seamen,—the rooms being separated from each other by plaster partitions extending from floor to ceiling, and all lighted by windows on the outside walls. Altogether there are fifty-six seamen's and nine officers' beds. The attics and upper part of the tower are divided into four large dormitories, which can provide accommodation for upwards of fifty shipwrecked seamen or Naval Reserve men, who may happen to come in large numbers at one time. Separate lavatories are supplied for the various departments on each floor, and bath-rooms, with hot and cold water, on the three upper floors. The principal stair is situated immediately behind the tower, and a private stair is placed near the kitchen, and carried up the whole height of the building, for the use of servants and as a means of escape from the dormitories in case of fire. Both stairs are constructed of stone. The entrance hall and staircase will be heated by hot-water pipes placed in coils, and the remainder of the building, with the exception of the dormitories, will have open fire-places. The ceilings of the street and first floors are each to be 13 ft. high, while those of the second and third floors will be 10 ft., and the attics 9 ft. Owing to there being 26 ft. of sand below the site of the proposed building, the architect has resolved to put a thick layer of concrete, about 7 ft. from the surface of the ground, in order to make a proper foundation. The walls are to be faced with a light brown dressed sandstone and square-dressed white Hailes rubble, while the roofs will be covered with grey-green Elterwater slates and red ridge tiles. Estimates have already been accepted for the structural portion of the work, including pavements to the amount of 7,200*l.*, which, with an allowance of 1,400*l.* for heating, painting, grates, gasfittings, blinds, and other internal fittings, makes a total estimated cost of 8,600*l.*, exclusive of furniture. Provision has been made for extending the building at any future time without interfering with the house now to be erected; accommodation could thus be provided for other sixty-eight seamen, at an estimated extra cost of 1,800*l.*

EXAMINATIONS AT THE SURVEYORS' INSTITUTION.*

THE direct examination (Division V.) for the Fellowship was purposely made almost prohibitory (to discourage evasion of the Associate examination) by requiring of candidates the attainment of the same pass number of marks as in the examinations in Divisions III. and IV. combined. It will be remembered that each of the four classes of technical examination just enumerated had to be subdivided under the three heads of Land Agency, Valuation, and Building. Provision had, therefore, to be made for twelve examinations in all, and there was an obvious advantage in holding the examinations in all similar subjects concurrently in all the divisions.

The system of concurrent examinations may be thus explained:—Taking the four Land-Agency examinations as an example. There will be four sets of Land Agency candidates. The candidates in Division II. get the same papers as those in Division III., and at the same hour, so far as they go, but the latter get an additional paper at the end of their examination. Similarly, the Land Agency candidates in Division V. get the same papers as the Land Agency candidates in Divisions II. and III., so far as they are common, and in addition, and simultaneously with the Land Agency candidates in Division IV., the papers taken by the candidates in the latter division. It is obvious that the examination, in the same papers, of candidates of different ages and different degrees of experience, involves a very careful setting of the papers, both with reference to the number and the difficulty of the questions. Each paper has to be so set as to comprise questions not too difficult to enable the younger candidates to earn sufficient marks in them to pass; and other and more difficult questions (generally involving points of practice), which the students are not required to answer, but are not precluded from answering if they can do so, the two classes of questions being carefully distinguished in a head-note to each paper.

A paper common to the same section in the four examinations carries the same number of marks in each division; but as the pass number to be earned in the same paper rises according to the division in which the candidate is being examined, he is bound to answer a larger number of questions in order to earn the number of marks necessary in his case; and as the maximum marks are distributed among the questions according to relative difficulty, the candidate in any particular class cannot escape attempting to answer those questions which were specially designed for him if he wishes to pass.

Considering that every surveyor is pretty sure to become more or less a specialist in some subject, it is not considered desirable that failure in any one subject should prejudice a candidate's chance of passing, if he can make up the deficiency in other subjects, the only restriction being that candidates for the Associateship are bound to get a certain proportion of marks in the strictly professional subjects as a whole. The subjects of examination in Division IV. (qualifying Associates for the Fellowship), and the same subjects which form a portion of the direct examination for the Fellowship, have been selected as involving the practical experience which cannot be expected of the younger men.

An analysis of the marks awarded in the recent examinations furnishes some instructive results. The maximum attainable marks in Division II. were 1,000; in Division III., 1,200; in Division IV., 1,000; and in Division V., 2,000. Multiplying these maxima by the total number of candidates in the classes to which they respectively apply, and adding the results together, gives a total of 30,000 attainable marks. The proportion of these marks collectively earned by the candidates may, considering the searching character of the examination, fairly be called remarkable. This proportion amounts to 20,216, or more than two-thirds of the marks attainable by all the candidates in all the subjects.

Distributing the 20,216 marks awarded among the several classes of candidates, the following results appear:—

		Earned Marks.	Out of a possible
13	Student candidates for Associateship...	8,762	13,000
5	Non-student " "	3,836	6,000
1	Qualified Associate for the Fellowship	589	1,000
5	Candidates for the Fellowship.....	7,229	10,000
24		20,216	30,000

Confining ourselves to the two classes of candidates for Associateship, and adding together the marks earned by student and non-student candidates in these classes, we get a total of 12,398 marks earned out of a possible 19,000, or an average of 689 marks per candidate out of an average maximum of 1,056 attainable marks per candidate. Out of the gross total of 12,398 marks earned by student and non-student candidates for the Associateship, 10,696 marks were obtained in the compulsory subjects, and 1,702 marks in the special and scientific subjects, showing that the scientific subjects have been made, as they should be, quite ancillary to the strictly professional subject. The highest number of marks earned by any student candidate for the Associateship was 794 out of 1,000, or 79 per cent. of the attainable marks; the lowest 558, or 56 per cent. The highest marks earned by any non-student candidate for the Associateship were 945 out of 1,200, or 79 per cent. of the attainable marks; the lowest by any successful non-student candidate 710, or 59 per cent. The qualified Associate candidate for the Fellowship obtained 589 marks out of 1,000, or 59 per cent. The highest number of marks earned by any candidate in the direct examination for the Fellowship (Division V.) was 1,609 out of 2,000, or 80 per cent.; the lowest 1,299, or 65 per cent. of the attainable marks.

All the foregoing candidates and all future candidates successful in passing the Professional Examinations will be indicated by an asterisk prefixed to their names in the list of members.

It is not desired to attach too much importance to the legal element of the examinations, and with this object these subjects are marked uniformly lower than the professional subjects, and are, as far as possible, grouped together in one or two papers, as will be seen on referring to the time-table.

The relation of the scientific and the legal elements of the examination to what, for want of a better term, has been called the professional subjects, is a matter of the very highest importance, and great care has been taken to preserve a proper proportion between these various components. It will be instructive, therefore, combining the two groups of candidates for the Associateship, to separate the marks awarded in respect of legal subjects from the total of 10,696 marks left after deducting the special and scientific subjects from the gross total of 12,398 marks earned in the two branches of the Associates' examination. These deductions from the gross total leave 6,980 marks earned in respect of the professional subjects; or 388 marks per candidate in the professional subjects, as compared with 594 per candidate in the professional and legal subjects combined. The proportion borne by the legal subjects is somewhat striking, but the comparison is, in point of fact, illusory. That the proportion of marks earned in the legal subjects is high is undeniable, but a comparison of the maximum marks assigned to the legal as distinguished from the professional subjects shows that the disproportion does not arise from any undue importance given to legal subjects in the scheme of examinations, but from another cause.

Thus, of 3,000 maximum marks assigned to the whole of the subjects in the three sub-divisions of Division II., 450 are assigned to the special subjects, 750 to the legal subjects, and 1,800 to the professional subjects. Similarly, out of 3,600 maximum marks assigned to the whole of the subjects in the three sub-divisions of Division III., 750 are assigned to the special subjects, 750 to the legal subjects, and 2,100 to the professional subjects. Or, putting the two sets of figures together, out of 6,600 maximum marks for the two examinations for the Associateship, 1,200 were apportioned on the scientific subjects; 1,500 on the legal subjects; and 3,900 on the professional subjects. These figures are in the proportion of 18 per cent. for the scientific, 23 per cent. for the legal, and 59 per cent. for the professional subjects. The large number of marks gained in legal subjects is not difficult to account for. For some reason (probably the predominance of book subjects in the section) the Valuation Section of the examinations attracted by far the larger number of candidates; and as legal subjects enter largely, and rightly so, into the composition of this branch of the examinations, it follows that a very large number of marks were earned in them. Distributing the 3,716 marks earned in legal subjects among the sub-divisions in which they were earned, it is found that the large proportion of 2,935 were earned by the Valuation candidates, 615 by the Building candidates, and 166 by the Land Agency candidates.

It is probable that the addition of another practical subject to the Valuation Section would, by rendering it less attractive, tend to equalise, if that be desirable, the number of candidates who select it with the number who select other sections, and, as a consequence, bring the total number of marks earned in legal subjects into closer correspondence with the relative importance actually given to these subjects in the scheme of examinations.

The five candidates in the Direct Examination for the Fellowship (one of the candidates retired at the end of the fourth day) obtained, as previously stated, 7,229 marks out of a possible 10,000,—an average of 1,446 marks per candidate, the minimum pass number being 1,200. It is necessary, in considering this result, to bear in mind that the examination was intended to be prohibitory, both as regards its duration and the difficulty and number of the subjects. The examination of the Fellowship candidates lasted thirty and a half working hours in the Land Agency Section, twenty hours in the Valuation Section, and thirty-two hours in the Building Section; the difference in the number of hours in the Valuation, as compared with the other two sections, being due to the absence of drawing work in that section.

* From a Statement as to the Origin, Arrangement, and Results of the System of Professional Examinations. By J. C. Rogers, secretary.

Experience of the recent examinations tends to show that the number of special and scientific subjects is too large, and might with advantage be reduced so as to leave two subjects appropriate to each section. It is also worth considering whether the whole body of scientific and special subjects might not be transferred to Division IV. Divisions II. and III. appearing to be slightly overweighted, while Division IV. is decidedly underweighted. Very few of the younger men exhibit more than a smattering of knowledge in these subjects, whereas a much fuller and more exact acquaintance with them might be reasonably expected of the older men.

A brief description of the method of conducting the examination in some of the more practical subjects may not be without interest. The foremost place among these subjects is given to the land surveying and levelling examination, which all student and non-student candidates for the Associateship are required to undergo. As a preliminary, all the candidates are required to send in, a fortnight before the examination, a carefully-drawn set of plans and sections, prepared in conformity with certain conditions previously announced. The field-books and level-books are also sent in at the same time, the object being to discover whether the candidate has done the work himself, by subsequently calling upon him to re-plot a portion of it for comparison with the plans previously sent in. It is only fair to say that all the work stood this rather trying test. Some of the best of these plans and drawings have been placed on the walls for the inspection of the meeting.

On the first day of the examinations the two classes of candidates (18 in number) for the Associateship were taken to a common, near Willesden, where a level line of about 20 chains, over undulating ground, had been previously staked out in chain lengths to save measuring. The candidates were started at intervals from the same point, and, after levelling along the line staked out, were required to level round through certain outlying points, and close on the starting-point. The candidates were timed, marks being awarded for rapidity as well as exactness. One of the examiners then levelled over the same ground, to test the accuracy of the sections when plotted the next day. A second day was devoted to the indoor examination of the surveying subjects. Each candidate was supplied with a lithographed plan and required to draw on it suitable construction lines for a survey with the chain only, and was also required to compute with the scale only, and with the computing scale and paper, certain enclosures on the same plan. The candidates were further required to furnish written answers to a number of questions, and in conclusion were practically examined in the use and adjustment of instruments. The candidates in the Building section were, of course, exempted from this latter feature of the examination.

A practical examination also took place in connexion with the subject, "Timber Measuring and Valuing," in the Fellowship examination. This examination was conducted by two Fellows of the Institution, one of them a member of the Council. The candidates were taken to an enclosure in Richmond Park, where twenty trees of different varieties had been previously selected and numbered. They were required to name, measure, and value the trees, and to point out any obvious defects, entering their notes upon forms provided for the purpose.

The examination in land drainage was conducted by requiring each candidate to sketch on a plan, specially prepared for the purpose, the best line for a new outfall drain, through a district indicated, to gain the requisite fall for underdraining it effectually, the ordinary level of the water in the brook adjoining the district being, as shown upon the plan, too high for that purpose. Candidates were also required to answer a number of detailed questions and to sketch on one of the fields on the plan the position of the main drain or drains, and the direction of the minor drains. It may be mentioned that the plan used is part of a very much larger plan, different sections of which will be taken year by year, and which may be varied almost indefinitely by altering the figures representing the surface levels.

The examination in the subject, Metropolitan Buildings Acts, was conducted by furnishing each candidate with a tracing of the ground-plan and section of a dwelling-house, into which were crowded a variety of details representing violations or evasions of the Building Act, and which he was required to detect and remedy. The plan was accompanied by a paper of questions bearing on the same subject.

The candidates in the direct examination for the Fellowship were required to write reports, as to a client, on a set of facts placed before them without previous announcement. The subjects of these reports differed, of course, according to the section in which the candidate offered himself for examination. The object of them was to test the candidate's quickness and self-possession, and his ability to explain himself logically and clearly. The candidates in this branch of the examinations being persons of mature years, prominence was given to its most practical features. With this object the comparatively large number of 350 out of the 2,000 maximum marks was put upon the reports.

CHILDREN'S HOSPITAL FOR BIRKENHEAD.

ON the 21st inst. the Duke of Westminster formally opened the new and important building which has been erected on a site in Woodchurch-road, Oxton, to serve as a Children's Hospital for the Hundred of Wirral, which includes Birkenhead and nearly the whole of the peninsula lying between the rivers Mersey and Dee. The present building in Oxton-road being found too small, and otherwise unsuitable for hospital purposes, the committee decided, on the recommendation of their senior medical officer (Dr. P. M. Braidwood), to erect a new building. Having had designs submitted by several local architects (in public competition), they chose those of Mr. J. Clarke, C.E., of 19, Castle-street, Liverpool; and these, after some modification, have now been carried out. The new hospital is situated on about an acre of land in Woodchurch-road, Oxton, and consists of a central block and one wing, it being intended to erect a second wing when funds permit. Accommodation is provided for forty-two in-patients; an administrative department for double that number of in-patients; and a commodious out-patient department. The style adopted is Gothic, of a domestic type. The building is constructed of Ruabon red bricks, with terra-cotta string courses and enrichments, and red stone dressings. The roof is red-tiled, and the gables are filled in with the Cheshire half-timbered black and white work. The basement floor, which is only half below ground (excavated to the depth of about 6 ft. out of sandstone), and laid with asphalte, is occupied by the kitchen, scullery, butler's pantry, two cook's pantries, two larders, lady superintendent's store-room, and coal-cellar. The arrangements for heating apparatus are also situated on this floor. A lift connects the basement with the floors above. On the ground-floor are the main entrance, with vestibule, enriched with tracery work, and an arched ceiling in terra-cotta; the hall, in red brickwork, with panelling of walnut-wood; corridors of fireproof concrete, leading right and left; and the main staircase. On the corridor to the right of the main entrance is the committee-room, 30 ft. by 16 ft. 6 in. by 12 ft., with lavatory, &c., adjoining. On the left corridor are the house-surgeon's living-room, 16 ft. 6 in. by 14 ft. by 12 ft., and his bedroom, 14 ft. by 12 ft., and a large cupboard for splints; opposite these is a large linen-room, heated with hot-water pipes. At the end of this corridor, and situated in the wing of the building, is No. 1 large ward, for fourteen beds, measuring 56 ft. by 20 ft. by 12 ft. Its floors are of narrow pitch-pine boards, 1¼ in. thick, secret-nailed, and wax-polished. The walls inside, up to 4 ft. high, are lined with glazed bricks, while the portions of the wall above this, as well as the ceiling, are coated with cement. This ward is heated by two Galton grates, one at each end, and ventilated by means of Tobin tubes and mica ventilators, communicating with flues leading to a large upcast shaft. The sashes in the windows, and all over the building, are of wrought iron. Speaking-tubes are provided for communication with the officers' rooms. At the further end of the ward are situated the offices, consisting of bath-room, lavatory, sink-room, &c. All through the hospital the ward water-closets have door action, and the sinks and baths are of enamelled earthenware. The ward offices are heated by hot-water pipes, and they are cut off from the ward by a cross lobby. At the nearer end of the ward is the ward kitchen, furnished with a small Leamington range, enamelled sink, and lift from the kitchen, &c. Adjoining this is the out-patient department. The whole of the walls and ceilings are coated with cement. The outer walls of the building are built hollow, in order to secure evenness of temperature. Ascending the main staircase, which is of stone without supports, we come first on the first floor to the nurses' sitting-room, with large bay window, occupying the space above the main doorway and hall. Next to this are the nurses' bedrooms or cubicles over the committee-room, with bathroom, lavatory, &c. Sleeping accommodation is provided for six nurses in separate compartments of one large room. Passing along the corridor to the right, we come to the lady superintendent's sitting and bed rooms, similar in size to, and situate over, the house-surgeon's, with a large cupboard adjoining. These rooms are arranged so that there is only one door in the corridor, which leads into a small lobby, giving access to them, and securing privacy. Over the out-patient department is a ward with eight beds, with bath-room, lavatory, water-closets, &c. Next comes the head nurse's room, ward kitchen, and ward No. 2, similar in size to the ward below (No. 1). The operating-room is also on this floor. On the second or top floor is a separation ward, with four beds, with proper offices adjoining; it is completely isolated from the corridor by its own lobby. There is also a large room not to be used at present, which, with the servants' dormitory, bathroom, &c., completes the accommodation on this floor. Outside is the laundry, it being objectionable to carry on its work in the main building. The whole of the corridors are fireproof, and have been put in by Messrs. Homan & Rodgers. These corridors, together with the nurses' bedrooms, the operating-room, bath-rooms, hall, &c., are heated by hot-water pipes, which, together with all grates, ranges, kitchen appliances, baths, sinks, laundry and gasfittings, bells, speaking-tubes, &c., have been supplied by Messrs. Bennett Bros., of Liverpool; this firm has also made the entrance-gates of wrought iron and bronze, which are presented to the hospital by Mrs. Dowie, of Claughton, in memory of her husband. The painted and stained glass window-panes, illustrating nursery rhymes, which adorn the upper portion of the windows of No. 2 ward, are presented to the hospital by Mr. T. L. Pelling, as were two hall lamps, and the gasfittings of the ground-floor and corridors by other donors. Water-colour paintings have been presented by various members of the Liverpool Society of Water-Colours. Mr. S. Williams, cabinet-maker, Birkenhead, furnishes the wards, bedrooms, &c., with American walnut; and Mr. J. B. Delany, the committee-room, hall, &c., with the like wood. The contractors for the building were Messrs. A. Bleakley & Son, Birkenhead; and the glazed bricks were specially made by Messrs. J. Gilmour & Co. Mr. A. Clarke, brother of the architect, superintended the work. The total cost of the building, including site, has been 10,550*l*.

Proposed National School of Forestry.—A meeting of the committee of the proposed International Forestry Exhibition was held on the 20th inst., in the rooms of the Highland and Agricultural Society, George IV. Bridge, Edinburgh, Dr. Cleghorn presiding. Mr. R. Hutchison, of Carlowrie, reported that, in response to the request forwarded to them, a very large number of noblemen and gentlemen had kindly consented to become patrons of the exhibition. He proceeded to say that the object of the show proposed to be held in Edinburgh next year was to endeavour to make it the starting-point of a national school of forestry, an institution which this country very much required. At present their students intended for work in India had to proceed to schools on the Continent for instruction, whereas there was ample scope for study at home. There could, he thought, be no more fitting occasion than the year in which Edinburgh University celebrated her tercentenary for the holding of a great exhibition, and thus bring before the notice of the public the wealth of our forest products. The authorities of Edinburgh were anxious to have the Arboretum at the Botanic Gardens put in a thoroughly equipped condition, and there was no way in which this could be better advanced than by the holding of such an exhibition. Already a guarantee fund of 700*l*. had been subscribed. The Marquis of Lothian was elected chairman, and a small committee was appointed to select the executive committee.

NEW BUILDINGS IN GEORGE STREET, EDINBURGH.

THE Directors of the Bank of Scotland, consequent on the growing increase of business in the chief branch in the new town, recently acquired the property at the west side of the bank in George-street, and plans having been prepared by Messrs. Kinnear & Peddie, architects, for the erection of more commodious premises, operations are now in progress for the demolition of the old buildings. Designed in the Italian style of architecture, the new buildings will have a frontage to George-street of 66 ft. It is intended that the street floor shall be solely occupied as the bank offices, the cellarage below being set apart for the storage of books, documents, &c., while the two upper flats are to be laid out in suites of chambers. There is also a large building behind, in Meuse-lane, where a two-story erection is to be raised above the basement-floor, and which will be fitted up as chambers of a superior description. The entrance to the bank will be at the west end of the frontage, where there is to be a Doric portico, with coupled columns, carrying an entablature and pediment, on which are carved the bank's arms and supports. Corresponding to these, at the east end of the street-floor will be the entrance to the chambers or offices, and between the two there are three large windows lighting the telling-room and the agent's private room, which measures 18 ft. by 14 ft. These windows are 8 ft. wide and 15 ft. high to the top of the arch, and are divided by Ionic shafts in the centre, with pilasters at the sides, carrying a light entablature at the spring of the arch while the semicircular arch itself is divided by an ornamental carved pilaster. The whole of the street floor is executed externally in rusticated ashlar, and is finished at a height of 27 ft. above the pavement by an enriched cornice. The first-floor has five windows, which are ornamented by three-quarter Corinthian pilasters standing on pedestals, with balusters between and supporting suitable entablature and pediments. The second-floor has smaller windows, finished with moulded architraves. The front of the building is finished with a highly-enriched cornice and carved frieze, the two measuring 6 ft. in height. To the telling-room, as already indicated, the entrance is at the west end, where there is a lobby measuring 15 ft. by 10 ft.; while the telling-room itself measures from back to front 53 ft., its width at the broadest part being 42 ft. and the height 24 ft. Besides the windows to the front, there are five equally large windows at the back. The front portion of the room, however, measures 27 ft. in width, the entrance to the bank and the agent's room projecting somewhat into it, and thus reducing the width. Following the lines of this narrower portion are a row of Corinthian columns continued along the two sides and returning along the back, which, supporting ornamental entablature, brings the ceiling of the central part into a space of 46 ft. by 27 ft. Similar pilasters are placed against the wall, the whole of the pilasters and columns being set upon an ornamental dado. The ceiling of the telling-room will be richly panelled; the floor of the public portion of it will be laid with marble mosaic, the doors, windows, and other woodwork being of wainscot, while the counters and other furnishings will be of mahogany. To the chambers the entrance is by a corridor at the east end of the building, measuring 8 ft. wide, giving access to a staircase 22 ft. by 15 ft. In this section of the building the first floor is laid out in suites of rooms of various sizes, having a corridor 7 ft. wide running down the middle. The upper floor is laid out in a corresponding manner, but the rooms are of smaller dimensions. Above it, looking to the north, is a large house for the bank-porter or office-keeper. Including the Meuse-lane building, which is reached by the corridor above referred to, there are twenty-seven rooms, intended for offices. The cost of the new buildings is estimated at about 13,000*l.*

Some time ago the Scottish Accident Insurance Company (Limited) purchased the tenement, No. 115, George-street, formerly the town residence of the late General Moncreiff, part of which they are about to use as the head offices of the company. The building, which was designed by Robert Adam, the architect of the Register House and University Buildings, was considered one of the best and most highly decorative of the old houses in George-street; and in the alterations necessary to convert it into premises suitable for the new owners, the architects have (according to the *Scotsman*) infused a little of the spirit of the original style of architecture, as far as adaptable to its new uses. The ground-floor was cleared of cross walls, and the partitions of the upper floor having been supported on iron beams, the old front was taken down and a more elaborate one erected in its stead, in keeping with the upper part of the building, which, with the view of making the entire elevation of a more uniform character, has been re-chiselled and restored. The style adopted is Roman Doric, freely treated, and is of such a character as to give individuality to the building. The entrance to the offices is by means of a pedimented portico at the west end, supported by fluted columns with richly-carved capitals. Admission is gained to the upper flats by a similar portico at the east end of the building. Between the porticos are placed the office windows, with fluted three-quarter columns similarly carved. The whole ground front is surmounted by an ornamental balustrade, and the wall head of the building has also received a surmounting balustrade, on which it is intended to place some vases. The cost of the alterations will be about 1,500*l.*, and it is expected that the premises will be ready for occupation towards the end of the present month. The architects for the alterations are Messrs. Knox & Hutton, 63, York-place.

BUILDING PATENT RECORD.*

APPLICATIONS FOR LETTERS PATENT.

3,013. W. Ayres, London. Stench-trap for drains, &c. June 18, 1883.

3,015. G. W. Von Nawrocki, Berlin. Rising hinges. (Com. by H. Haltaufderheide, Cassel, Germany.) June 18, 1883.

3,043. W. R. Lake, London. Door-locks. (Com. by MM. Mayer, Langfelden, & Hammerschlag, Vienna.) June 19, 1883.

3,064. J. D. Sprague, Loudon. Latches, bolts, or fastenings for doors, windows, &c. June 20, 1883.

3,081. J. Moyes, Pollockshields. Ventilating sewer-trap. June 21, 1883.

NOTICE TO PROCEED

has been given by the following applicants on the dates named:—

June 19, 1883.

803. W. Mullett, Brierley Hill. Construction of walls for buildings to prevent damp therein. Feb. 14, 1883.

845. H. Tugby, Woodville. Manufacture of pipes for sanitary purposes, &c. Feb. 15, 1883.

905. J. Dunbar, Coalbrookdale. Fire-grates. Feb. 19, 1883.

2,459. T. Hale, Claydon. Domestic fire-escape. May 16, 1883.

June 22, 1883.

900. W. Carrington, Openshaw, and W. H. Bowers, Gorton. Water-heater used in connexion with circulating hot-water pipes for warming buildings, &c. Feb. 19, 1883.

904. B. C. Cross, Leeds. Waste-preventing cisterns. Feb. 19, 1883.

1,294. G. E. Mineard and T. Crapper, London. Ventilating house-drains and warming houses. March 10, 1883.

ABRIDGMENTS OF SPECIFICATIONS,

Published during the Week ending June 23, 1883.

4,491. W. H. Cooper, London. Drip-course bricks. Sept. 20, 1882. Price 2d.

This consists in the dimensions of a course of bricks forming a weathering to all projecting mouldings, &c. (Protection not allowed.)

5,124. A. W. L. Reddie, London. Alarm bells or gongs for doors, &c. (Com. by E. J. Masseron, Paris.) Oct.) 27, 1882. Price 6d.

A mechanical alarm-bell is attached to the door, and a rotating clapper strikes a succession of blows on the bell on the movement of the lock-bolt, or door-handle, &c.

5,132. S. de la G. Williams, Birmingham. Kilns for burning lime and bricks, &c. Oct. 27, 1882. Price 8d.

Two horizontal flues are placed under the length of the chamber, one for gas and the other for air. To these are fitted transverse horizontal flues, leading into vertical flues, terminating in openings in the floor of the chamber. From the top of each chamber a series of flues descend to the air-flue at the bottom of the next chamber. These flues are governed by a damper. The heat is thus led through all the chambers in succession.

5,301. R. G. Hodgetts, Birmingham. Manufacture and ornamentation of metallic bedsteads, &c. Nov. 6, 1882. Price 8d.

The pillars of the bedsteads are formed of metallic fluted tubing, with metallic mounts and screw-caps, and they are ornamented by pieces of glass, china, &c.

* Compiled by Hart & Co., Patent Agents, 186, Fleet-street.

SURVEYORSHIP ITEMS

Southwark.—At a meeting of the St. Saviour's District Board of Works on the 20th inst., the special committee on the subject of the surveyorship reported that they had received forty-two applications for the appointment. After careful consideration of the same, they selected eleven candidates, with ten of whom (one having withdrawn his application) they had an interview, and after further deliberation have reduced the number to the following six, who appeared to be most eligible, namely: F. W. Barratt, assistant surveyor to the Hackney Board of Works; W. G. Forder, assistant surveyor to the Edmonton Local Board of Health; A. J. Henderson, assistant surveyor to the Islington Vestry; T. L. Johnson, Walthamstow, Essex, engineer; G. R. Norrish, 18, Palace-road, Upper Norwood, architect and surveyor; and F. M. Putley, 5, Southampton Buildings, Chancery-lane, architect and surveyor. They recommended that a special meeting of the Board be held for the purpose of appointing one of the said six candidates. Mr. T. F. Rider moved, and Mr. Couchman seconded, the adoption of the report. Dr. Jones moved, as an amendment, that Mr. Greenstreet be re-appointed surveyor for six months. Mr. Ridley seconded. After considerable discussion the amendment was rejected, and the report adopted by 20 votes to 9.

Warwick.—On the 20th inst. the members of the Warwick Volunteer Fire Brigade entertained Mr. T. Broughton (Borough Surveyor), the captain of the brigade, at a dinner at the Nelson Inn, West-street, upon the occasion of his leaving Warwick for an appointment in Yorkshire. The services which Mr. Broughton had rendered to the brigade during his eight years' connexion with it were warmly eulogised.

Chesterfield.—At the last meeting of the Chesterfield Town Council, the committee appointed to consider the duties and the salaries of the borough officials made the following recommendation:—"That the duties of the Sanitary Inspector and Borough Surveyor be discharged by the same person, at a salary of 125*l.* per annum." Alderman Gee moved an amendment against the amalgamation of the offices of Borough Surveyor and Sanitary Inspector. Councillor Lomas seconded the amendment, and it was supported by Councillors Marriott, Wardle, and Booth. On being put to the vote, eight held up their hands in favour of the amendment, and five for the original motion, and the amendment was therefore declared carried, and after some discussion it was agreed that the 125*l.*, advertised as the salary proposed to be given to the Borough Surveyor and Sanitary Inspector, should be the salary of the Surveyor. Mr. Walter Stanton, surveyor, Chesterfield, was appointed.

STAINED GLASS.

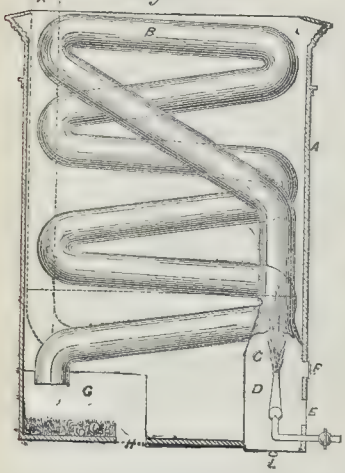
Woodstock.—The rector of Woodstock writes,—"Within the last few years we have been enabled by means of public subscriptions to restore the old historic church of Woodstock, at the cost of between six and seven thousand pounds. We now propose to complete our work by adding a painted east window to the memory of the poet Chaucer, who, in the days when Woodstock was a royal residence, occupied a house (now bearing his name) on the borders of the park." The statement that the poet ever resided at Woodstock is disputed.

Cullingworth.—Two stained-glass windows, to the memory of the late Nancy and John Hartley, of Bent's House, have been erected in the chancel of Cullingworth Church, by Mr. E. H. Hartley, brother of the first and son of the last. The two windows are mainly occupied by the figures, one of the apostle St. Peter and the other of St. John. These figures, painted on a white screen background, stand beneath rich canopies, upon ornamental bases, and with enriched bordures. The firm of Powell Bros., Leeds, executed the work.

IMPROVED AIR-WARMING AND COOLING APPARATUS.*

MESSRS. ROBERT BOYLE & SON, of 64, Holborn Viaduct, have recently effected some important improvements in air-warming and cooling arrangements which we have no doubt will prove of considerable value as a simple, and at the same time economical, means of providing a supply of fresh air at such a temperature as will be both safe and agreeable in all seasons of the year. The air-warmer is intended for warming the fresh-air supply to a building, where hot air, water, or steam pipes are not available. The arrangement consists of a copper or iron pipe, about 1¼ in. diameter, placed in an inlet tube, preferably of the form of a bracket. This pipe is made of zigzag shape, so as to cross and re-cross the tube from top to bottom, causing the incoming air to repeatedly impinge upon it in its passage through the tube. At the bottom of the tube an air-tight chamber, so far as the interior of the tube is concerned, is fixed, in which a "Bunsen" burner is placed, the flame of which plays up into one end of the pipe, which is connected with the top of the chamber. The heat travels through the entire length of the pipe, the other end of which may be made to either dip into a condensation-box in the bottom of the tube, or be continued, as shown by dotted lines in the accompanying diagram, up into a flue or extraction-shaft. If the pipe terminates in the box, the vapour is condensed there, and carried off through the outside wall by means of a small pipe, and any products of combustion which may arise are absorbed and rendered innocuous by passing through a loose bed of charcoal, which covers the bottom of the box. The charcoal should be renewed about once a fortnight or month, according to the extent the tube is used. The diagram below (Fig. 1) shows the arrangement, which is explained as follows:—

Fig. 1



A, air inlet tube or bracket made of galvanised iron, and painted, dimensions 24 in. by 16 in. by 6 in. These tubes can be treated ornamentally to harmonise with the decorations of the room, and where necessary, may be placed in chases in the wall. The top of the tube should stand about 5 ft. 9 in. from the floor. B, copper or iron tube, 1¼ diameter. C, chamber containing the burner. D, Bunsen burner. E, opening covered with perforated zinc inside of the tube communicating with the chamber for the purpose of supplying air to the burner. F, small hole fitted with sliding-shutter through which the gas is lighted. G, condensation-box. H, opening in the bottom of the box to allow of the circulation being maintained in the heating-pipe. J, pipe for carrying off condensed vapour. K, continuation of the pipe into the flue or extraction shaft. L, movable bottom to the flame-chamber for the purposes of cleaning the tube. Where the tubes are placed against the woodwork all chance of fire may be avoided by fitting them with a double casing or jacket, and filling in the space between the asbestos or other non-conducting material. With this arrangement the air-supply can be raised from a temperature of 30° to 130°, and to show that it is one of the most economical methods of heating in existence it is only necessary to mention that the cost of gas consumed to raise the incoming air from a temperature of 40° to 100° is less than one farthing per hour, this being effected with the air passing through the tube at a velocity of 300 ft. per minute, or 18,000 ft. per hour.

At the Reform Club, where these tubes and heaters in combination with Messrs. Boyle's patent air-pump ventilators have been very successfully applied, a series of experiments were carried out by the patentees in conjunction with the Right Hon. Acton Smee Ayrton, ex-Chief Commissioner of Works, to whose suggestions we may mention *en passant* the patentees are indebted for some important improvements in the apparatus. The result of these tests demonstrated that the apparatus was not only useful for warming the air supply for the purposes of ventilation, but that it might be used as the sole means of heating rooms. On testing the tubes with the anemometer the air was found to be passing in at the rate of 16,000 cubic feet per hour, the dimensions of the tube being 24 in. by 16 in. by 6 in., one-third of which was blocked up with the heating-pipes. It is important to note that these figures compare most favourably with the results obtained by elaborate and expensive arrangements for artificially forcing air into a room by means of water-fans, sprays, &c., which are not only expensive and troublesome to maintain, but, owing to their bulk, constitute an obstruction and eyesore in a room.

The tubes are fitted with regulating-valves and deflecting shields to prevent the air from discolouring the walls. They can also be fitted with an arrangement for filtering, and freeing the incoming air from blacks and dust. They are not expensive, the price of them ranging from 45s. to 100s., according to size and material used.

They are applied to a number of buildings, including the Guildhall, and Lloyd's, Royal Exchange, and have been found to answer exceedingly well.

The great objection to nearly all methods of admitting fresh air is the disagreeable cold draughts they create. The appliance we have described effectually overcomes this, and should therefore be welcomed as a really valuable addition to the list of useful sanitary inventions which are now in use.

Fig. 2

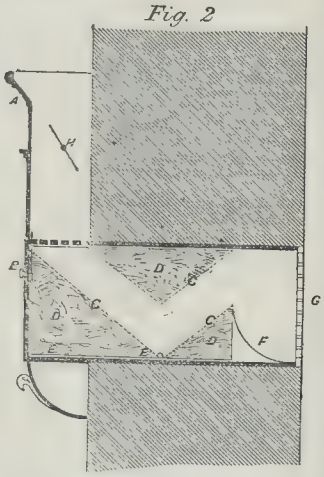


Figure 2 shows the arrangement for cooling the air in hot weather. It consists of an air inlet tube, of bracket form, made of iron. The part which penetrates the hole in the wall has an outer casing, so that a space of about ½ in. is left between, which is packed with a non-conducting substance for the purpose of preventing the heat from the wall penetrating into the interior of the opening and acting upon the blocks of ice which are placed in a movable drawer, and kept in position by means of open galvanised iron or copper wire netting. The front of the drawer is also double, and packed the same as the casing. The outer air entering through the grating is deflected by a metal shield on to the suspended block of ice, and thence on to the ice at the bottom of the drawer, and thence up the tube into the room, it being not only cooled, but purified thoroughly from blacks, dust, &c.

This arrangement, we should say, would prove very acceptable in our fashionable London drawing-rooms during the season.

A, in the diagram, denotes the inlet-tube; B, movable drawer; C C C, wire netting; D D D, ice; E E E, non-conducting packing; F, deflecting plate; G, grating in wall; H, regulating valve.

* This was unavoidably postponed last week.

Crathie.—A monument of Aberdeen granite, to be placed over the grave of the late Mr. John Brown in the parish churchyard of Crathie, is being executed by Messrs. MacDonald, Field, & Co., of Aberdeen, by command of the Queen. It is of simple design, the chief ornamentation being the Scottish thistle on the cornice, which is carved in relief, and a border of oak and ivy.

AWARDS AT THE NATIONAL HEALTH SOCIETY'S EXHIBITION.

AMONG the awards to exhibitors in this exhibition, recently held at Knightsbridge, and noticed by us at some length,* we may name the following:—

In Class II. silver medals were awarded to the Sanitas Company, for Sanitas oil and emulsion; Mr. P. A. Maignen, for "filtre rapide"; F. C. Calvert & Co., for preparations of sulpho-carbolates; and a bronze medal to Jeyes's Sanitary Compounds Company, for sanitary compounds.

In Class III. a silver medal was awarded to Moule's Patent Earth-closet Company, for their earth-closet apparatus; a bronze medal to Messrs. John Bolding & Sons, for their valve closet, with flushing-rim and supply of water to trap of overflow; for their wash-out closets a second bronze medal was given. Mr. O. D. Ward receives a bronze medal for his household hopper closet, and hon. mention for Bean's patent direct-acting valveless waste-preventer. Mr. George Jennings receives a bronze medal for his housemaid's slop-sink, and a second bronze medal for his automatic flushing-cistern; while his patent ball-trap and tip-up lift-out lavatory basins each receive hon. mention. A bronze medal goes to Messrs. Hayward Tyler &Co. for their full-flush valveless closet. The same firm receive hon. mention for shower and douche valves. Mr. D. T. Bostel, of Brighton, obtains hon. mention for his Brighton Excelsior closet. Robert Houghton & Co. receive a bronze medal for their improved gully, with movable side inlet. Mr. Henry Conolly receives a bronze medal for his valve closet with supply of water to trap of overflow. The same exhibitor receives hon. mention for Bellman's patent gully and his noiseless water-waste preventer. Messrs. J. Furuell & Son obtain a bronze medal for a syphon water-waste preventer, and hon. mention for an air-tight manhole door. Mr. A. T. Angell receives hon. mention for his air-tight manhole door, and a second award of like honour for his lip syphon trap. Messrs. Robert Boyle & Son obtain a bronze medal for their air-pump ventilator. Messrs. C. Kite & Co. obtain two bronze medals, one for their improved inlet ventilator, and the second for their chimney-breast outlet ventilator. Messrs. H. W. Cooper & Co. obtain hon. mention for their circular revolving and sliding ventilators in glass. Messrs. Hayward Brothers & Eckstein take a silver medal for Hayward's patent semi-prism reflecting lens pavement lights. Mr. Robert Adams receives a bronze medal for his anti-accident reversible window; and a bronze medal for his fan-light opener. The Albissima Paint Company receive a bronze medal for the Albissima non-poisonous paint. Messrs. Jeffrey & Co. receive a silver medal for cheap artistic wall papers free from arsenic, and a silver medal for wall papers painted in oil colours on lacquered gold ground. Messrs. Morris & Co. obtain a silver medal for their exhibit of washable printed cotton and other cheap and artistic fabrics. Messrs. Woollams & Co. get a silver medal for wall papers free from arsenic; and Messrs. Scott, Cuthbertson, & Co. a bronze medal for goods of the same description. Mr. Henry Carr receives a bronze medal for diagrams showing that wall papers can be produced with as good effect without arsenical colours; and Messrs. Howard & Sons a bronze medal for parquet flooring.

In class IV. the North of England School Furnishing Company obtain a bronze medal for Roth's school seats. Mr. Newton H. Nixon receives a silver medal for his bed-pan cage.

In Class V. the Victoria Stone Co. get a bronze medal for patent stone flooring.

In Class VI. Messrs. Brown & Green obtain a silver medal for their under-feed smoke-consuming apparatus, as applied to kitcheners and register grates. Messrs. W. & S. Deards receive a bronze medal for their Princess Louise stove for heating by hot-water. The Eagle Range and Foundry Co. get a silver medal for their Eagle range. To Messrs. Potter & Sons a bronze medal is awarded for their thermhydric ventilating hot-water open fire-grate. Messrs. H. & C. Davis & Co. receive a bronze medal for their Eclipse griller, and Messrs. Beynon & Cox receive two silver medals and a bronze medal for gas stoves. The Coalbrookdale Co. (Limited) get a bronze medal for the Kyrle grate. Messrs. Richards & Barton's circular-fronted range is awarded hon. mention. The Bischop gas engine gets a bronze medal, and the General Gas Heating and Lighting Apparatus Company (Limited) for their exhibit of gas cooking stoves, receive a silver medal, and for their artisan gas griller a bronze medal.

* See *Builder*, p. 787, *ante*.

COMPETITIONS.

Brisbane Town-hall Competition.—We wish to direct the attention of our readers to the advertisement of this work which is occasionally appearing in our columns. The premiums offered are 250*l.* and 100*l.*

The Leeman Memorial, York.—A committee meeting was held on the 18th inst. in the Victoria Hall, to examine the models sent in by the four invited competitors, and to decide which should be selected. The chair was taken by the Lord Mayor, and the method of procedure having been discussed and settled, the committee adjourned to the hall, spending a considerable time in comparing notes and in inspecting the models. The method of voting adopted was to cast out the less likely models until the competition was reduced to small dimensions. Ultimately, it came to a vote of 11 for Mr. Milburn and 8 for Mr. Halse. Mr. Alderman Agar then moved, and Mr. C. Sellers seconded, as a substantive resolution, that Mr. Milburn be entrusted with the execution of the work at his tendered price of 700*l.* for a marble figure and a polished granite pedestal. It was carried by 11 votes to 3. On the motion of Mr. Hargrove, it was agreed to vote 10*l.* each to the three unsuccessful competitors towards the expenditure they had incurred.

METROPOLITAN BUILDING ACT.—WHAT IS A BUILDING?

A SUMMONS was taken out under Sec. 41 by the District Surveyor of Clerkenwell, and Part of Islington, against Mr. W. Iron, for neglecting to give notice, in accordance with Sec. 38, of the addition to a workmen's shed next Clerkenwell Vestry-hall. A shed had originally stood on a portion of the site of the present erection; this had been raised 6 in. and re-roofed, and a new extension carried to a fence wall abutting on Garnault-road, the fence wall being raised 2 ft. 6 in. to enclose the end of the building. The whole shed as enlarged was 26 ft. 6 in. in length, 13 ft. 6 in. in width, and about 8 ft. in height. It was built against a brick wall which separated it from a one-story addition to the adjoining building. The roof was of corrugated iron upon ⊤ rafters, and carried upon 2½ in. iron columns. The shed was used by the parish as a place of stowage for stones and workmen's tools.

The defendant, who was represented by Mr. Bulton, solicitor, contended that the shed was not a building within the meaning of the Act.

The District Surveyor having called the Magistrate's attention to the various clauses of the Act upon which he relied, the Magistrate asked if he could quote any superior court cases in which the meaning of the term "building" had been defined. After having referred him to the cases of Stephens *v.* Gourley and Knight *v.* Pursell, the summons was adjourned to enable the Magistrate to view the building, which he did on the 7th inst.

The District Surveyor, considering the case of some importance, directed his solicitors to instruct counsel; and accordingly on the 21st of May,—the day to which the summons stood adjourned,—Mr. Redwar, barrister, appeared to support the summons.

The defendant's solicitor objected to this as being irregular, the prosecution having been already heard, and the Magistrate having only adjourned the summons for the purpose of forming his own opinion after viewing the building.

The Magistrate, however, consented to hear counsel on the points of law involved.

Mr. Redwar pointed out that in the definition of area as given in Section 3 the words "attached building," the height of which does not exceed the height of the ground-story, clearly point to smaller erections, such as sheds, being included in the category of buildings, and argued that, as in Section 51, which regulates the procedure for recovery of fees, the period from which fees in respect of buildings become due is the covering in of the roof. Any structure which can be entered and has a roof must be deemed to be a building. He further argued that if a shed be not a building a dangerous or noxious business might be carried on in a shed within the distances from other buildings prescribed by Statute 7 and 8 Vic., c. 84, sections 51-5, also that the provisions by Statute 14 Geo. III., c. 78, section 83, as to the application of insurance moneys in reinstating buildings destroyed or damaged by fire would become inoperative as regards sheds, which, he contended, from the wording of Sections of the latter Act, could not have been contemplated by the Legislature, as in that section it is enacted that no action shall lie against any person in whose house, chambers, stable, barn, or other building, a fire shall accidentally begin. The word "barn" occurring, he submitted that "other building" would include "shed" as being *ejusdem generis* as barn. Both the above Acts were incorporated in the Metropolitan Building Act, and must, therefore, be read with it. Moreover, if a shed be not a building it might be built of a greater height than the width of a street without the consent of the Metropolitan Board of Works, contrary to Section 83 of the Metropolis Management Amendment Act, 1862. He then referred to the case of Stephens *v.* Gourley, in which the Court held that the Metropolitan Building Act prohibited the erection of structures inclosed with walls constructed of combustible substances.

The Magistrate here said that what the defendant had erected was an extension of an existing structure: he had not erected a shed, so that the question whether the shed was a building did not really arise.

Mr. Redwar said that the original structure constituted a building, and that by Section 9 any alteration or addition to a building is to the extent of such alteration or addition subject to the rules of the Act. Now, by Section 38 notice is to be given by the builder to the District Surveyor, and by Section 39 the latter is required to cause the rules of the Act to be observed in the case of work of which no notice has been given. He referred to the case of Powell *v.* Farmer, in which a shed was held a building within the meaning of the Reform Act, 1832, in which, like the Building Act, there was no definition of a building; and also referred to the case of Watson *v.* Cotton, in which the Court expressed an opinion that a structure inclosed on two sides with masonry, and used for the stowage of goods, would be deemed to be a building, and he contended that as the extension in this case was inclosed on two sides with brick walls, it must be a building. If a shed was a building for the purpose of giving a vote, *à fortiori* it ought to be a building within the meaning of an Act designed to protect the public from danger of fire. Although the present summons was not for irregularity of construction, as a matter of fact the building as constructed was not in conformity with the Act. By Section 3, a party-wall is defined as a wall used or built in order to be used as a separation of any building from any other building, with a view to the same being occupied by different persons. Now, the wall which separated the sheds in question from the adjoining building was clearly a party-wall within this definition, and by Section 17 ought to be carried 1 ft. 3 in. above the roof of the highest building adjoining, which had not been done. He referred to the case of Knight *v.* Pursell, in which a wall separating sheds and closets on either side, in different occupations, was held to be a party-wall, and the structures to be buildings within the meaning of the Act; and submitted that the shed in the present case came within the principle of this decision, and, being a building, notice of the addition should have been given to the District Surveyor, whose duty it was to cause the rules of the Act to be observed. In conclusion, if this shed was not held to be a building it would be quite allowable to erect a shed in a similar position with a roof composed of wood and pitch, which would clearly be against the spirit of the Act.

The Magistrate remarked that the roof of this shed was not composed of combustible materials.

Mr. Redwar said if the shed was a building the incombustible nature of the roof did not matter as the building in other respects did not conform to the Act.

The Magistrate said that he thought justice would be done by his availing himself of the discretion afforded him by the 16th Section of the Summary Jurisdiction Act, 1879, and he would accordingly inflict a nominal fine of 1s. on the defendant.

GOOLE SEWERAGE WORKS.

GOOLE is situated on the river Ouse. Considerable difficulties have been experienced in this flat district in obtaining a proper fall for the sewers. The engineer and surveyor to the Local Board (Mr. E. C. Buchanan Tudor, C.E.) has designed a flushing-tank, into which water is pumped for the purpose of cleansing the sewers as required at low water. The tank is 18 ft. in height above the discharge-pipe, and is capable of holding 5,000 gallons (or about 21 tons), which flushes two separate lines, one at a time, of 12 in. and 15 in. main sewer connected with a 4 ft. 6 in. by 3 ft. tank sewer fitted with penstock and tidal valves. It was intended, in the first instance, to flush from automatic tanks with water supplied by the water company, but as water costs 9*d.* per



1,000 gallons it was considered more economical, useful, and quite as efficient,—the sewers being tide-locked twice a day,—to get one of Bailey's hot-air engines, with simply a 3-in. pump, at a cost of 36*l.*, and to sink a well with Tudor's fire-clay well tubes and a bore-hole at a cost of 18*l.* There is an abundant supply of pure water. The total cost of the tank engine and building was about 135*l.* It will be seen from the illustration that the engine is fixed not far from the well, say 12 ft. The engine pumps 1,000 gallons per hour and fills the tank of 21 tons in five hours, as we are informed by Mr. Tudor, at a cost only of 3½*d.* for the day's work. The engine can, when not in use for pumping, be applied to other purposes with additional gearing, &c. The tank is filled as often as required, and is emptied into the sewers to be flushed in the river below low-water mark. The time taken to discharge the 21 tons of water through one discharge-pipe is 120 seconds. The engine gives satisfaction, and can be managed by a labouring man or boy.

City of London College.—The Prince of Wales has fixed Saturday next, the 7th of July, for the inauguration of the new building of the City of London College, White-street, Moorfields.

THE ROYAL COURTS OF JUSTICE.

CONTRACTORS' CLAIM FOR "RETENTION-MONEYS."

THE case of Lefeuvre and Another (Assignees of Bull) *v.* The Commissioners of Works and Public Buildings, came before the Queen's Bench Division on Tuesday last, Lord Coleridge, Mr. Justice Denman, and Mr. Justice Manisty on the bench. It was an action by the assignees of the contractors for the erection of the Royal Courts of Justice against the Commissioners of Works to recover the sum of 10,000*l.* alleged to be due and payable, and so clearly so as to justify a summary proceeding to recover it, provided under the Judicature Act, for the recovery of claims undoubtedly due and against which there can be no available defence. Such a proceeding had accordingly been taken, and the sole question at this stage of the case was not whether there is a valid defence to it, but whether the Commissioners ought to be allowed to defend.

The Attorney-General and the Hon. Alfred Hardy were for the Board of Works; Mr. Philbrick, Q.C., and Mr. Moulton were for the plaintiffs.

On the case being called on and its nature shortly stated by the plaintiffs' junior counsel,

The Court referred to and read the affidavits.

The plaintiffs' counsel pointed out that the claim was not for work done, but for "retention moneys," as they were called, that is, moneys certificated due, but retained under the contract until its ultimate completion.

Lord Coleridge pointed out, however, that, upon Mr. Mitford's affidavit, it appeared that sums of money had already been paid to the contractors "largely in excess" of the sums due to them under the contract, and that sums were owing for penalties; so that it was insane, if that were so, to set up that sums were due for "retention moneys."

The plaintiffs' counsel urged that this was yet to be decided.

Lord Coleridge observed that this showed that there was a question to be decided, and, therefore, that the Commissioners should be let in to defend. It did not appear to be disputed that sums were due for "retention moneys," but counter-claims were set up, payments in excess, and also claims for penalties.

Mr. Moulton (for the plaintiffs) said the "final balance of account" was to be referred to arbitration. The sums paid were specific sums to be paid upon certificates. The present was in itself a separate and specific sum, due and payable now, leaving the "final balance" to be determined hereafter. There were enormous claims for extras which would have to be gone into on the general account. The present claim was for a specific sum now due. The other would be a claim on a general balance of the accounts, left to be determined on arbitration. As to the claim for penalties, there was nothing in it, as

it had never been set up before, and was not real or substantial. The affidavit of Mr. Mitford, the secretary, was, he submitted, entirely answered by the affidavit of Mr. Buil, the contractor, in reply. The sum claimed was now due and payable; the counterclaim was future and contingent, and afforded, therefore, no answer to the action.

Mr. Hardy said notice had been given of recourse to arbitration as to the general balance, and he pointed out that the contract provided for it.

Lord Coleridge said it was not necessary to hear counsel further for the Commissioners. It was clear there was a question to be decided and a defence to be raised, and therefore the Judge's order was quite right, and this appeal must be dismissed, with costs.

A DIRTY SLAUGHTER-HOUSE.

PUBLIC ABATTOIR WANTED.

AT the Coventry City Police Court, on June 21st, Mr. John Young, butcher, of Smithfield-street, was fined 20s. and costs for neglecting to have the manure, garbage, filth, &c., collected into proper tight-fitting tubs after the slaughtering, in accordance with the by-laws.

Mr. Frederick Booker, the sanitary inspector, in his evidence, stated that he had several times called the defendant's attention to this neglect, and to the offensive nuisance arising therefrom. He also said that on the defendant's premises, and adjoining the fasting-pen, there was a very deep ashpit, from which he had had a considerable quantity of decomposed animal matter recently removed.

Mr. H. N. Wackrill, of 2, Broadgate (the premises adjoining), said that when the nightsoil men began their work the stench was like that from a filthy pigsty, but later on increased to what seemed the smell of putrid animal matter; the sickening effluvia kept him up all night long, and permeated his entire house.

The Bench, in convicting the defendant, said that it was evident that a terrible nuisance existed, and if he was brought before the Court again on a similar charge he would be more severely dealt with.

THE SUNDERLAND CATASTROPHE.

SIR,—My first impulse on hearing of this catastrophe was to attribute it to the doors not opening outwards, for I had never taken the trouble to observe particularly how the doors did open, though I had frequently attended meetings and entertainments at the hall.

I observed that your contemporary the *Daily News*, yielding doubtless to a similar impulse, published a leader on the sin and enormity of public-hall doors not being made to open outwards, as though that were indeed the ascertained cause of this dreadful accident.

But, on going to the hall and examining for myself, I found that the *Daily News* had written by the inspiration of imagination rather than by the force of fact. On trying the door I was pleased to find it yielded readily to the touch, and swung freely outwards.

It has been said that the door had no business there, and I understand that Mr. Hoskins, the architect of the hall, disclaims the responsibility of placing it there.

A gentleman possessing large interest in the hall is reported to have said this door was placed there by the Hall Company "for the protection of the public."

I have carefully studied the matter, and fail to see how this door can be any protection to the public. Neither can I see, on the other hand, that the arrangement as it stands is a menace to the public.

One gentleman remarked to me, "The bolt was on the wrong side of the door"; and this impression or opinion prevails widely. But reflection must convince any person that this opinion is incorrect. Had the children liked, they could themselves in the first instance have lifted the bolt and pushed open the door and let themselves out, *had no one been standing outside or at the door to prevent them.* But had the bolt been on the outside of the door, instead of where it was, the children could not so readily have lifted it to liberate themselves.

The crush, instead of being one of children, might have been one of adults leaving the gallery, which is no doubt a frequent occurrence at this hall. If by mishap the door were left bolted ajar, as in the present case, the men next the door, being the first to feel the crush, would be able at once to raise the bolt and let themselves out.

I should not myself have placed the door where it is. I do not consider it in the best position to check a rush and assist in taking tickets or money, the object for which it was obviously intended). A better arrangement was practicable. But for all that, I think the present arrangement is not *per se* the origin or cause of the catastrophe, seeing that but for the presence of the man at the door the children could have lifted the bolt half an inch (that is all the hold it has in the floor), and let themselves out, had the door been by neglect bolted against them instead of being bolted back against the wall wide open, as it ought to have been, and (to judge by statements of witnesses) as it undoubtedly was, immediately before the exit of the children began.

Having formed my own conclusions about the fatal door, I then examined in a special manner the staircases and passages generally, and feel bound to say that, with the exception of a few doors opening the wrong way, which could be and ought to be remedied, I found the means of egress and ingress unusually ample and well provided; and I am sure few buildings have been better planned in this respect.

It is easy to swell the current of a popular cry, and denounce arrangements in themselves excellent. But it is not by so doing that such fatalities can be avoided.

One fault of the Victoria Hall is that it has never been finished; so that some arrangements for exit originally designed by the architect have not yet been carried out. But, notwithstanding this, the exits are so ample that few halls in that respect could claim such immunity from liability to accident.

The structural lesson taught by this disaster is a new one, viz., the danger of very long landings occurring on stairs. These give children and other impatient persons room to start a run or rush, which enormously increases the pressure on the stairs below, causing stumbling and crushing and wholesale death.

FRANK CAWS, Architect.

SLIDING DOORS FOR BUILDINGS AND RAILWAYS.

SOME M.P. has brought in a Bill to provide that all doors in public buildings shall open outwards. This is, I suppose, based on the assumption that the door at the Sunderland Music-hall opened inwards; but on referring to the report of the calamity, I find that it states that the door opened either way, but was bolted so as to be only opened wide enough for only one person to pass at a time. This was in order to ensure that every one paid on entrance, and the bolt had not been withdrawn.

It is, I think, an open question whether to have doors in public buildings opened by sliding, rather than outwards or inwards, is not the best plan. It prevents the door being in the way when the people are coming in or going out, and this especially applies to doors opening into corridors, like those of the boxes in a theatre. They are used very much on board ship, and it might be worth while to consider their applicability to buildings.

I have seen sliding-doors in private houses, between two rooms, and I wonder they are not more used; they would, I think, be useful. In bedrooms it is very often difficult to know how to hang the door. If it opens as from the wall it is awkward, and if it opens the other way it prevents a table or chair, or any thing being placed against the wall. In either case it is often inconvenient. If made to slide it would be out of the way, and if bolted into the floor could not be opened from the outside. In hotels, and in private houses also, we all know keys are easily turned without the sleeper's knowledge. Such a door could be left open a little if wished, as it could be bolted or wedged so that it could not be opened any farther. The door need not slide in the partition, so as to cause extra expense in building, but could be slid inside the room against the partition.

I have often thought that if sliding doors were made to railway carriages many accidents would be avoided. They could not fly open on account of not being fastened, and so let unsuspecting passengers out on to the line when the train was going at full speed, and they would not knock down people waiting on a platform when the train arrives at a station.

J. R.

THE COST OF GETTING YOUR OWN.

SIR,—It is devoutly to be wished that charges and expenses, as made in the annexed statement of the estate of one of our customers, who stopped payment, owing us a good sum of money, may be considerably modified by the new Bankruptcy Bill.

W. L.

In Bankruptcy.—Estate of E. B.

RECEIPTS.

From	£.	s.	d.
Property	1,208	4	0
Debts	63	3	5
Takings	1	7	5
Rents, &c.....	481	8	8
	£1,754	3	6

PAYMENTS.

For	£	s.	d.
Solicitors' bills ..	825	6	7
Messengers	20	1	0
Auctioneers	66	7	2
Surveyors.....	59	3	0
Creditors' assignee's expenses	30	9	1
Fees for the Chief Registrar account for services rendered by Official Assignee	14	15	7
Advertising dividends	0	10	0
Bonding proceedings	1	6	0
Wages, rent, taxes, rates, &c., payable in full..	570	6	3
Petty expenses..	4	17	11
First dividend of 8½d. in the £ on 4,370*l.* 6s. 2d....	161	0	11
	£1,754	3	6

MASTERS AND MEN.

Wrexham Lime-burners.—A strike at the Minerva Lime Company's works, about six miles from Wrexham, against a reduction of five per cent. in wages, has terminated, the men agreeing to return to work at the decrease.

Sunderland Engineers.—A meeting took place at Sunderland on the 20th inst. between master engineers and operatives, the latter claiming an advance of 2s. per week on the present rate of wages, and a limitation of the number of apprentices. Mr. John Burnett, the general secretary of the Amalgamated Engineers' Society, was present. The masters consented to give an advance, but refused the other demand. On the 21st inst. about 1,400 men came out on strike.

Tadcaster Masons.—The whole of the stonemasons recently employed on the new brewery in course of erection here by Mr. W. Smith have struck work for a small increase of wages, which the contractors refuse to give.

Jedburgh Masons.—The wages of the journeymen masons at Jedburgh were last week raised from 6d. to 6½d. per hour. One of the masters refused to give the rise at first, and his men went out on strike, but on the evening of the same day he came to their terms, and they resumed work next morning.

Greenock Engineers.—In reply to a demand by the operative engineers of Greenock and Port-Glasgow for an advance of ½d. per hour on their rate of wages, the employers have signified their intention to grant ½d. per hour increase, and the men have accepted the compromise.

PROVINCIAL NEWS.

Ovingham.—A bridge across the Tyne between Ovingham and Prudhoe has long been a pressing need, and on the 21st inst. the foundation-stone of a bridge was formally laid by Mrs. J. H. Ridley, of Welburn House. The bridge is being erected by a limited liability company, according to plans prepared by and under the supervision of Mr. H. Laws, M.Inst.C.E., Newcastle. It will be an iron lattice-girder bridge of eight spans, and its total length will be 530 ft. At the ends it will be supported by masonry abutments, while the piers in the river will be composed of wrought-iron piles. It will be wide enough for a single carriage, and have a passing way in the centre. It will stand 25 ft. above the bed of the river, and be constructed of a strength to resist the heavy floods which occasionally in the early spring sweep down the course of the stream. On the south, there will be an ascent to the bridge of 1 in 20. It will be necessary to cut 15 ft. through a mound on the other side, and then there will be an ascent of 1 in 12 to the road near the churchyard. Although the foundation-stone on the north side is only just laid, considerable progress has been made with the masonry on the south side. The ironwork is in course of manufacture, and will be delivered in a few days. With favourable weather, there is every prospect of the bridge being completed by September. The contractor for the masonry is Mr. W. Wilson, of Gilsland; and the contractors for the ironwork are the proprietors of the Alliance Works, Gateshead.

Burton-on-Trent.—On the 17th inst. the new hall which has been erected in Princess-street, for the services of the Town Mission Band, was opened by Mr. G. Norrish, of the Evangelical Society. Provision has been made, at a cost of between 400*l.* and 500*l.*, for nearly 500 people. As will be inferred from the cost, the building is a plain one, both externally and internally, but it is comfortably fitted. Land has been secured for the extension of the building when necessary. Mr. Loomes and Mr. Wheilden have carried out the work from designs by Mr. Woolley.

Crigglestone.—The new cemetery at Crigglestone, near Wakefield, has been consecrated. The buildings comprise two chapels, each having a vestry. The chapels are connected by an archway of half-timbered work, the gable of which is surmounted by a bell-turret. There is also a curator's house and board-room. The buildings are built of brick, with stone dressings, and the chapels are lined internally with light buff pressed bricks relieved with red brick strings. The architects are Messrs. Dixon & Moxon, Barnsley, and the work has been carried out, at a cost of about 2,000*l.*, by local contractors.

Derby.—The Derby Town Council are about to erect a new borough lunatic asylum. It is

intended to appropriate about fifty acres of the Rowditch Estate, and obtain about twenty-six acres of land in the vicinity. The estimated cost of the land, building, and furniture is, in round figures, 47,000*l.* The asylum is to accommodate 300 patients.

Holywell.—The work of clearing the *débris* of the old Upper Mill, belonging to the Welsh Flannel Manufacturing Company (Limited), which was destroyed by fire last February, has commenced, and will be pushed forward in order that the site may be obtained for the new mill which the company propose to erect. A meeting of the directors was held at Chester on the 16th inst., when tenders were received for the building of the mill, the plans of which have been prepared by Mr. Lockwood, of Chester. The work has been entrusted to Messrs. Thomas Hughes & Son, of Aldford, near Chester.

CHURCH-BUILDING NEWS.

Barrow (*Cheshire*).—Barrow Church, Cheshire, has been re-opened, after restoration. The principal structural work at the church has been the rebuilding of the south wall of the nave, and also the porch, necessitated, it is said, by the unsound state of the masonry in both cases, with the addition of a vestry and an organ-chamber, and the construction under the latter of a cell for the accommodation of a heating-apparatus. The whole building has also been re-roofed, and in place of the much-dilapidated slates with which the former roof-timbers were covered there have been used tiles of the warm and pleasant colour manufactured at Ruabon. Internally these roofs are "open-timbered," and have been substantially executed in oak. The roof of the chancel it was also found necessary to renew with the exception of the old and curious principal, whose state of preservation was such as to admit of its being refixed. The new work to this roof in the interior consists of its division into wooden panels by moulded ribs. As the nave of the church was but some twelve years ago reseated there is little to chronicle in the way of additions to this part of the structure after the roof has been mentioned. The floors under the existing seats have been removed, and have been laid in wooden blocks. The principal new work in the chancel consists of the seats for the choir and the prayer-desk, all carried out in oak, the latter having in its front traceried panels of an interesting and varied character. The floors of the chancel and sacrarium are laid with encaustic tiles, after an ancient design. The heating of the church has been secured by an arrangement of hot-water pipes on the high-pressure system, carried out by Messrs. H. King & Co., of Liverpool. The contract for the whole work was undertaken by Messrs. Reece Brothers, of Tarporley. The architect is Mr. John Douglas, of Chester.

Southport.—On the 23rd inst. the memorial-stone of a new church, now in course of erection at Crossens, a rapidly-increasing suburb of Southport, was laid by Mr. John Atkinson, J.P. The church is being erected from the designs of Mr. J. W. Connon, architect, Leeds, and will be of a simple type, suitable to its position in a quiet village. The style will be that prevailing in the early part of the fourteenth century, effect being sought by careful grouping rather than by elaborate ornament. The principal elevation will be the west one, facing the road from Southport. The centre of this front will be occupied by a group of two-light traceried windows, to be ultimately surmounted by a figure of St. John, placed under a canopy in the gable. On one side will be a porch and on the other a tower and spire rising to a considerable height. The sides of the building will be relieved by double-gabled transepts and vestries, and the east end will be apsidal, and will have a two-light window on each of the three faces. A pleasing contrast will be produced by the colour of the wall stones and stone dressings, the one being of light-coloured Bradford parpoints, and the other of red Runcorn stone. Internally, the church will consist of nave, with double transepts on each side, and a spacious chancel. The organ-chamber, on one side, will be lofty, and will be balanced by the choir and priests' vestries on the other. The roof will be partially open, and will be plastered between the main timbers. The chief effect internally will be produced by the arches of chancel, transepts, vestry, and organ-chamber, which will give the appearance of nave arcade. The contracts are let to Mr. John Schofield, of Dewsbury, for the sum of 2,500*l.* This is exclusive of the seating, heating, fencing, and general fitting of the edifice, so that the ultimate cost will probably be over 3,000*l.*

Walworth.—In consequence of the immensely increasing population on the site of the Surrey-gardens, the Rev. E. F. Alexander, vicar of St. Paul's, Lorrimore-square, Walworth, and chaplain to the Bishop of Rochester, with the aid of a committee, have determined to build a mission-room to accommodate 600 adults, at an estimated cost of 2,200*l.* At a meeting held on the 18th inst. Messrs. Romaine, Walker, & Tanner, of 19, Buckingham-street, Adelphi, were appointed architects.

Incorporated Church Building Society.—The Incorporated Society for Promoting the Enlargement, Building, and Repairing of Churches and Chapels held its usual monthly meeting, the last but one for the present session, on the 21st inst., Archdeacon Harrison in the chair. Grants of money were made in aid of the following objects: Building new churches at Hunslet St. Cuthbert, Yorkshire, 75*l.*; Stockton-on-Tees, St. Paul, 200*l.*; Trainglas, in the parish of Llywel, near Irecastle, Brecon, 80*l.*; and Tudhoe Grange, near Spennymoor, Durham, 200*l.* Rebuilding the churches at Marshwood St. Mary, near Crewkerne, Dorset, 40*l.*; and Southampton St. Mary, 200*l.* Enlarging or otherwise improving the accommodation in the churches at Churt St. John, near Farnham, Surrey, 25*l.*; Copford St. Michael, near Colchester, 50*l.*; Gosbeck St. Mary, near Needham Market, 30*l.*; Harlaston St. Matthew, near Tamworth, 60*l.*; Harpford St. Nicholas, near Ottery St. Mary, Devon, 40*l.*; Great Ilford St. Mary, Essex, 40*l.*; Ipswich, St. Mary at the Elms, 50*l.*; Littleham St. Margaret and St. Andrew, near Exmouth, Devon, 80*l.*; Marston St. Nicholas, near Oxford, 20*l.*; Plymouth, St. Saviour, 100*l*; Wickhampton St. Andrew, near Acle, Norfolk, 40*l.*; and Great Yarmouth St. Andrew, 20*l.*

Sale.—St. Paul's new church, Sale, near Manchester, will be opened at the end of the present week. The structure will, in the first instance, be opened as a licensed church, the ceremony of consecration being deferred to a later period. The cost of erection up to the present will be about 7,000*l.*, and 2,000*l.* more will be required to complete the work. The church will contain 700 sittings. Mr. H. R. Price is the architect.

DISSENTING CHURCH-BUILDING NEWS.

Chester.—A new Welsh Wesleyan Chapel is to be erected in Queen-street, to seat about 350 persons, at a total outlay of about 2,700*l.*, including cost of site, &c. The architect is Mr. Richard Davies, Bangor, and Mr. G. Morris, builder, of King-street, is the contractor.

Bromsgrove.—The Wesleyan Chapel in Kidderminster-road having become very dilapidated and unsafe to use, and being incapable of repair, the question of providing another place of worship was raised, and Messrs. E. & W. Hunt, of Wednesbury, having contributed 1,000*l.* towards the cost of a new building, the site upon the New-road was secured, and on the 20th inst. the foundation stones were laid by Mrs. Allcock, Mr. E. Hunt, Miss A. Hunt, and Mr. J. J. Haines, and guinea and half-guinea memorial bricks were also laid. The new chapel has been designed by Mr. F. J. Yates, architect, Birmingham. Mr. Joseph Tilt is the builder, Mr. W. Griffin being employed to carry out the stonework. The chapel is to accommodate 450 persons. There will be a school-room and class-room to accommodate 300 children. The style is modern Gothic.

Burton-on-Trent.—On the 20th inst. the new chapel which has been erected by the Wesleyans in Byrkley-street to replace a smaller structure was opened for public worship. The foundation stones of the new building were laid in October last, and the building has been completed under the superintendence of the architect, Mr. C. F. Underhill. Accommodation is provided for 750 persons, and the chapel is seated with open benches of red deal lightly stained and varnished. The chapel is built of brick with Bath stone dressings. The contractor was Mr. H. C. Mellors, who sub-let the brickwork to Mr. G. W. Wildman and the stonework to Mr. D. Bassett. The tiles for the floors were supplied by Messrs. Mansfield & Whittaker, and the heating apparatus is by Truswell, of Sheffield. With the schoolroom, the opening of which was reported some time ago, the cost has amounted to 2,200*l.*

Books.

Hints to House-hunters and House-holders. By ERNEST TURNER. London: B. T. Batsford. 1883.

As the author of this little book says, of the making of innumerable books on the subject of sanitation there has been no end lately, and he does not intend this to be regarded as an attempt to swell the list, but only as a collection of memoranda or suggestions to persons who are already inhabiting houses or who are looking out for houses, as to what to look for and what to avoid. The first chapter goes through a brief statement of what is required in the various rooms in an ordinary dwelling-house. In the next chapter, upon the situation and aspect of a house, a great many very useful and some shrewd suggestions are brought together into a small compass; some of the suggestions dealing with special conditions peculiar to London. Among the more general suggestions is one that is often forgotten. "Should it be summer-time when you are viewing a proposed residence, try to realise what its appearance will be in the winter, and *vice versâ*." Many a disappointment might have been avoided by bearing in mind this very simple and natural consideration.

In treating of soil, the author puts clearly, and in a way to be easily remembered, the leading facts to be borne in mind in regard to the effect of various soils on the healthfulness of a building site, and does so in a way calculated to make the reader think, who has never thought before, as to the reason and meaning of this or that result of the conditions of a site. The chapter about drainage is a very useful one, and it is satisfactory to observe that the author is not the slave of all sanitary beliefs merely because they are the creed of advanced reformers; for instance, he ventures to say that a trap under a closet basin is at least an additional safeguard, and that the belief in the "trapless closet" is open to question. "So long as the water-supply and plunger which closes the outlet from the basin are in perfect working order these closets may be very good. But if by any accident the water be off, the air from the soil-pipe will enter the house through the overflow pipe, and when the plunger is raised. The ordinary valve-closet is also used without a trap under it. This is recommended by some who have given some attention to the subject, but my own experience is decidedly against it. In practice it is found that the advantage of a properly-constructed water-trap under a closet basin outweighs all the objections that can be raised to it"; and we agree with Mr. Turner there. It would have been as well if, in repeating the condemnation of the D and bell traps, the author had mentioned, for the benefit of general readers, the reasons for the special condemnation of those traps. We imagine that numbers of householders have taken up the cry against them who could not give a reason for it if they were asked. Service-pipes, Mr. Turner points out, are generally kept out of sight, "an excellent arrangement for the plumber, who is thus enabled to conceal any amount of scamped work." "No pipes above ground should be hidden behind anything but a *hinged* casing."

The chapters on warming and ventilation, which the author rightly considers in connexion with one another, are about the best in the book in substance, though somewhat unnecessarily wordy (in relation to the general dimensions of the book). The author adopts the principle that the chimney is the natural outlet ventilator, to be utilised as such in old houses, where alterations are difficult, by an opening directly into the flue from the upper part of the room (properly guarded by an Arnott or Boyle or some similar back-draught preventer), and in new houses by an opening into the ceiling, and thence to the chimney. For inlet, he stands by the entrance and warm-air chamber behind the fireplace; but this also can by no means always be done except when contrived from the first. In fact, it is scarcely possible to warm and ventilate any house in a really satisfactory manner, unless the scheme is planned and provided for in the first instance with the planning of the house.

The cautions in regard to house-choosing, and also the brief comprehensive statement as to the legal relations of landlord and tenant, in the final chapter, are very useful; the latter

pretty nearly bearing out the summing up of the subject which we heard once from a candid solicitor,—"The law is always on the side of landlords." A much-needed hint is given to the thoughtless purchaser against accepting mere general statements by the agent, such as that this or that "has been carefully seen to," and something else has been "thoroughly overhauled." The author's advice is, always insist on a specific statement as to *what* has been done, and if possible get it in writing. A very general statement as to the good condition of a house usually means, in reality, that the agent or vendor wishes to avoid details.

From a note prefixed to the advertisement pages, we learn that the author has exercised a personal supervision over the advertisements admitted, not allowing any which advertise things that are at variance with sanitary principles, or which have not something to recommend them. This is a precedent which might well be followed in books on practical subjects. Business is business in these matters, of course; but it seems rather absurd to find, in the advertisement sheets appended to a book intended to show the right way of doing something, proclamations entirely at variance with the recommendations in the bulk of the volume. The only special criticism we have to make on Mr. Turner's little book is that it is rather too much pervaded by a desire to be humorous and funny in the way of putting things. People do not need a book of this kind as a jest-book; and though this way of writing may seem piquant at first, it ends by being rather wearisome and out of place.

VARIORUM.

MESSRS. F. S. NICHOLS & Co. (Borough High-street), have published an etching by Mr. Percy Thomas, of the Old White Hart Inn-yard, Southwark, which is valuable as a memorial and satisfactory as a work of art. Few of our readers need to be reminded that this Inn dates back some five centuries. Mr. W. Rendle (no one is better suited) has contributed a fly-leaf of descriptive matter.——A third edition has been published of "The Standard of Value," by Wm. Leighton Jordan (London, David Bogue), 1883. It deserves consideration on the part of those who are interested in the subject. ——"Babies: How to Rear them in Health and Happiness," by F. A. Fawkes (W. Swan Sonnenschein, & Co., London) is a very valuable *brochure*, full of good advice. If this advice were enforced throughout the United Kingdom thousands of lives would be annually saved. Mr. Fawkes published a clever book on "Horticultural Buildings" some short time ago.—The July number of Mr. Walford's *Antiquarian Magazine* contains, *inter alia*, an article on a Cromwellian Museum at Hackney, the contents of which will be exhibited and lectured upon by the Rev. J. De Kewer Williams, in the course of July, at Houghton, near Huntingdon, not far from the birth-place of Oliver Cromwell.

Miscellanea.

The Ventilation of the District Railway. At the sitting, on the 22nd inst., of the Select Committee of the House of Commons appointed to inquire into the merits of the Bills promoted by the City Commissioners of Sewers and the Metropolitan Board of Works, which propose to abolish the District Railway ventilators. Mr. Hawksley, C.E., called as a witness on behalf of the Corporation, said that in his judgment there were other modes of ventilating the railway.—Cross-examined by Mr. Bidder, he said that amongst the alternative modes of ventilating the railway he would suggest that a tunnel should be constructed up Peter's-hill near Benet's-hill, to a vacant piece of land near Knightrider-street, where a shaft 100 ft. high could be erected to carry off the foul air, which would be warmed and driven out by means of a fan. This would give a velocity to the air in the tunnel of about 2 ft. per second. Other means of ventilating the railway have been suggested by subsequent witnesses.

New Clock at Langport.—A turret-clock has recently been fixed in Langport Town-hall by Mr. J. W. Benson. The time is shown on two dials, 4 ft. diameter on drum in the front of the building. The whole of the wheels are of hard brass. It strikes the hours on a bell of 2 cwt.

Fever by Despatch: Danger of Circulating Libraries.—An alarming piece of news comes from Paris. It is stated that an official at the Ministry of Foreign Affairs there has been attacked with yellow fever, communicated to him through a despatch from Brazil. This, if true, is a startling occurrence. We have repeatedly warned our readers against the danger of disseminating disease by means of books and toys. We believe circulating libraries are common sources of peril, and that many grave and even fatal illnesses may be traced to their agency. Books, especially of the "entertaining" class, are read by sick persons, either in bed when recovering from fevers and communicable diseases generally, or during convalescence, when perhaps some chest affection with a cough infects the atmosphere. It is, probably, impossible to guard against this, because the organic particles which carry the infection or contagion may lie for weeks, months, or perhaps years, between the pages of a bound book, to be dislodged at some unpropitious moment when the volume chances to be handled by a susceptible person. It would be difficult to imagine a more powerful apparatus for the conveyance of disease than a book. Among the maladies most easily communicable by this agency may be mentioned measles, scarlet fever, diphtheria, ordinary "sore" throat, whooping-cough, bronchitis (perhaps phthisis), and other chest affections in the course of which the lungs may be giving off poisonous breath and expectoration, and disorders in which the skin is the seat of abnormal changes, or may be throwing out infective material. In short, all that can be communicated is more likely to be communicated by a book than in almost any other way. It is obviously impracticable to disinfect books without injuring them, and the plain inference must be that circulating libraries are to be regarded as possible centres for the dissemination of disease, and that all books used by the sick should be destroyed immediately after use. Disease may be communicated by despatches, letters, or books. It is well that this should be more generally recognised.—*The Lancet.*

York Architectural Association.—On the 6th inst. a large number of the members of this society visited the Gas Works, Monk Bridge. They were met by Mr. Charles Sellers, who conducted the party over the works, and spoke at length on the history and the great questions of the day in reference to the manufacture and the consumption of gas, and he impressed upon the members the importance of providing efficient ventilation to gas-lighting in private houses and other enclosed situations. The retorts, purifiers, &c., were in due course visited and explained, and an inspection made of the new works. Mr. Walter G. Penty, president of the society, proposed a hearty vote of thanks to Mr. Sellers. Mr. William Brown, vice-president, seconded the motion, which was carried unanimously.

The Goldsmiths' Company.—The accounts of plate assayed and marked by the Goldsmiths' Company have, in accordance with the usual practice, been made up to May 28, and the result shows a very large increase in the work of the office for the year just ended. The number of ounces of silver plate assayed and marked by the company during the past year was 938,153 ounces against 893,880 ounces for the preceding year, showing an increase for the year of 44,273 ounces. The plate duty received by the company for the Government during the same period also shows a substantial increase, the figures being 46,889*l.* for the year 1882, against 46,233*l.* for the year 1881, and 42,995*l.* for the year 1880. The number of assays made by the company's officers during the past year was 79,227.—*City Press.*

The President of the Royal Institute of British Architects, and Mrs. Horace Jones, received the members of the Institute, and a large number of other guests, at a *conversazione* in the South Kensington Museum on Thursday evening last, by permission of the Lords of the Committee of Council on Education. Between 900 and 1,000 ladies and gentlemen were present. The arrangements were excellent. During the evening the band of the Grenadier Guards, under the direction of Mr. Dan Godfrey, performed a selection of music. As we were going to press at the time the gathering was drawing to a close we are unable to say more than that it was a large and brilliant assemblage.

Industrial Progress.—Sir Thomas Brassey, M.P., speaking on Saturday last, at the twenty-first annual meeting of the Working Men's Club and Institute Union, held in Westminster College Hall, said the interest of Parliament in regard to the social, moral, and material improvement of the masses of the people was undiminished. While it was admitted that sanitary matters ought properly to engage the attention of Parliament, yet too much ought not to be expected from the action of the State, for while the State could insure obedience to sanitary laws, it could not raise the standard of living of a nation. The total loans advanced under the Artisans and Labourers' Dwellings Improvement Act of 1857 could not be compared with the amount expended by the building societies of England and Wales. Between the returns of July, 1880, and those of May, 1881, the aggregate income of those societies had increased from 16,417,000*l.* to 18,694,000*l.*, and the aggregate assets from 31,864,000*l.* to 37,000,000*l.*, and those statistics represented a most gratifying amelioration in the homes of the people compared with which the exertions of the State must have produced an insignificant result. As regarded the condition of the working classes he said that, taking into view the rate of wages, the hours of work, the cost of living, and the general abundance of employment, the position of the British workman at the present time compared favourably with that of working people even in the United States. There was no reason to apprehend a reduction of wages in this country, and he would be sorry to see anything which could lead to a retrograde movement. On the contrary, he cherished the hope that the increase and the improved application of capital might admit of additions to the reward of labour, but, at the same time, it was his duty to point out that the industrial position of this country was threatened in many quarters by those who were formidable rivals in skill and energy.

University Honours to Archæologists.—At Oxford, during Commemoration week, the honorary degree of D.C.L. was conferred upon Dr. Schliemann, who met with a perfect ovation. Professor Bryce referred to Dr. Schliemann's early enthusiam for Homer and investigations into Homeric localities by excavation, characterising him "the first hero of spade and pickaxe." He also alluded to the Doctor's discoveries in the Troad, and to the discovery of the tombs at Mycenæ and their contents. ——At Cambridge "Commencement," honorary degrees were conferred upon Professor Emil Hübner, of Berlin (well known for his "Inscriptiones Britanniæ Latinæ"); Professor Adolf Michaelis (Professor of Classical Archæology in the University of Strasburg); Sir John Lubbock; and Mr. Reginald Stuart Poole, Keeper of Coins and Medals at the British Museum.

Proposed Bridge across the Humber.—After an inquiry, which has occupied nineteen days, a Select Committee of the House of Commons on the 22nd inst. threw out the Hull and Lincoln Railway Bill, which was a scheme for the construction of a direct railway from Hull to Lincoln by means of a high-level steel bridge across the Humber over a mile and a quarter in length. This bridge, had it been sanctioned, would have had a central span of 600 ft., which is the largest span of any existing bridge, not including either the Britannia or Menai bridges. The bridge would also have been greater in length than either of the proposed bridges across the Firth of Forth or the Firth of Tay. The rejection of the Bill was mainly due to the alleged hindrances which the bridge would cause to navigation.

The Somerset Drainage Commissioners. The tender of Mr. Richard Pickthall, of Birmingham, was accepted at the meeting of the Somerset Drainage Commissioners, held on Wednesday in last week at Bridgwater, for the reconstruction of the Baltmoor Wall, at a cost of 1,920*l.* Another tender, by Mr. Pickthall, was likewise accepted for the widening and deepening of a portion of the River Tone from Stanmoor Bridge upwards, the amount of the tender being 1,100*l.* The Commissioners also resolved that the Stanmoor Bridge should be reconstructed at a cost of 800*l.*, and that application be made to the Taunton Highway Board for the construction, a second sum of 100*l.* An order was made for the payment of 300*l.* for lands taken for the purpose of widening the River Parrett.

Honour to an Engineer.—At a meeting of the Senate of the University of Dublin on the 21st inst., the degree of *magisteria artis ingeniaria honoris causa* was conferred on Mr. Robert Crawford, A.M., Professor of Civil Engineering. The Senior Proctor, in referring to Mr. Crawford's career, said,—I now beg leave to bring forward the name of our Professor of Engineering, Mr. Robert Crawford. Mr. Crawford, I am happy to say, is one of our own men in every sense of the word, having received his education in arts as well as in engineering within these precincts. He obtained his degree of Bachelor of Engineering in 1851, and at his final examination was awarded special certificates in practical engineering and in chemistry and geology After leaving our school he studied in Paris, in the Government School of Engineering and Mines. Since that time, and up to the period of his election to the Professorship of Engineering, he has practised his profession in all parts of the world,—in England, Canada, South America, and Germany. I shall not trouble you with details, but I can assure you that Mr. Crawford has carried out works of the greatest magnitude on both sides of the Atlantic, on the Grand Trank Railway of Canada, the Buenos Ayres Great Southern Railway, the Central Uruguay Railway, the Empress Elizabeth Railway of Austria. Any of you who may travel from Frankfort-on-the-Maine to that delightful resort for health, Homburg, will please remember that you are running over Professor Crawford's work. There is no name better known than his in the Institution of Civil Engineers. I may add that the Institution awarded him the Telford Medal in 1863,—a very distinguished honour,—for his beautiful essay on the railway systems of Germany. We, in the college, feel happy in having such a man for our Professor.

A Nice State of Things.—At the meeting of the St. Saviour's (Southwark) District Board of Works, on the 20th inst., Dr. Bianchi (the medical officer of health) reported that he had seen Mr. Grant, at Spring-gardens, with reference to a serious nuisance caused by the escape of sewer gases in Southwark Bridge-road and Union-street. The nuisance had arisen thus:—A 6-ft. low-level sewer had been constricted in Southwark Bridge-road, and it was intended to carry it through the Mint into the Borough. But this intention had been frustrated by the South-Eastern Railway upsetting the Bill of the Metropolitan Board of Works in Parliament. Unfortunately the houses in Southwark Bridge-road had been connected with the sewer, which was now filled with sewage, for which there was no escape. As a matter of fact, the sewer was now a vast cesspool. The only remedy was to cut off the drainage connected with the sewer, re-connect the houses with the old high-level sewer, and pump out the sewage at present in the new sewer. This Mr. Grant was in process of completing. He (Dr. Bianchi) feared, however, that Union-street sewer would still prove a source of trouble, and to obviate this he would suggest that the Metropolitan Board be requested to erect a number of ventilating-shafts. On the motion of Mr. Hunt, the report was adopted. We quote this from a report in the *South London Press*. No doubt the railway company's powers have hindered the Metropolitan Board in making the new street; but surely this fact is no justification for allowing occupied houses in a thickly-populated district to be connected with an unfinished sewer.

National Association for the Promotion of Social Science.—A Conference on the Administration of Hospitals is to be held on Tuesday and Wednesday, July 3rd and 4th, 1883, at the House of the Society of Arts, John-street, Adelphi, London. The proceedings will be opened with a Statement by Mr. Francis S. Powell, a past President of the Health Department, describing the steps already taken by the Association, with a view to promote the appointment of a Royal Commission of Inquiry, for the purpose of obtaining reliable data upon which to base such reforms as may be necessary, and to make such recommendations as may appear desirable.

Rolled Iron Sections.—Messrs. Measures Bros. & Co., of Southwark-street, have issued a new sheet of sections, which will be found of great use. They have many more sections, longer lengths, &c., and, with their largely increased premises, are now in a position to execute orders for almost any quantity from stock. This saves time.

Hygiene of Armies in the Field.—At the Parkes Museum on the 21st inst. an instructive paper was read by Mr. Robert Rawlinson, C.B., on the "Hygiene of Armies in the Field." In it the author described some of his experience gained during the time he acted as the engineer member of a Sanitary Commission sent out to the army in the Crimea in the spring of 1855. The instructions issued to this committee directed them to investigate the condition of every hospital, infirmary, or receptacle for the sick, both as to interior ventilation and cleanliness and external surroundings, the Commission being empowered to obtain labour and other assistance for the carrying out of their recommendations. The Royal Commission, which, under the presidency of Lord Herbert of Lea, inquired into the sanitary state of the army after the Crimean War, resulted in Lord Herbert's Regulations, one of which provided that a sanitary officer should be attached to the quartermaster-general's staff; to this officer was committed the duty of examining into the sanitary condition of buildings selected for occupation by troops, and into the sanitary condition of towns or villages about to be occupied; he was also to make recommendations for organising a proper sanitary police to preserve cleanliness, and for the removal of nuisances. Where an army for a time becomes stationary, a sanitary corps will find ample work to do in improving roads, in surface-draining, in scavenging, and in ventilating any permanent buildings used as hospitals; and if the service will permit of a use of working parties, enormous benefits may be secured to the entire force in the field. In future wars it is admitted that picks and spades may require to be used as much, if not even more, than rifles. All officers will, therefore, have to learn something of engineering. If soldiers can use pick and spade to provide earthwork shelter from rifle bullets they may also use those implements for sanitary purposes.

Baron Tauchnitz.—Though we spoke in very strong terms of the good done by Baron Tauchnitz, in our short notice of M. Tolhausen's "Dictionnaire Technologique" (see p. 726, *ante*), we happened to speak of him at the same time as the bugbear of English authors, having some indistinct belief that he still at times made use of an English writer's works without sufficiently compensating him. All the good we said goes for nought with the excellent Baron, and he calls upon us to make clear to our readers that he never publishes piratically the works of English authors; but that, on the contrary, for forty years he has been in the most friendly relations with them, publishing their books in legitimate editions with copyright for the Continent, and paying them for such rights adequate sums. It gives us the greatest possible pleasure to set Baron Tauchnitz right with our readers.

The following Tenders were received by the Ilkeston Local Board, on Tuesday, for the carrying out of the sewage scheme:—

Lewis Russell, Ilkeston	£9,980	0	0
Hill Bros., High Wycombe	6,380	0	0
Killett & Bentley, London	6,282	0	0
S. & W. Pattinson, Ruskington, Lincolnshire	6,188	0	0
Dobb & Gummer, Rotherham	6,153	0	0
J. Palmer, Birmingham	5,998	0	0
C. Baker & Son, Barlborough, Chesterfield	5,950	0	0
John Jevons, Dudley	5,763	0	0
G. J. Raynor, Bootle, Liverpool	5,625	0	0
J. & G. Tomlinson, Derby	5,590	0	0
H. Lovett, Wolverhampton	5,400	0	0
T. Smart, Nottingham	5,323	0	0
J. Waterfield, Wirksworth	5,323	0	0
Beardsley & Pounder, Ilkeston	5,300	0	0
J. Hawley, Ilkeston	4,879	0	0
W. Cunliffe, Leigh, Lancashire	4,580	0	0
G. Smith, Newcastle-on-Tyne	3,942	0	0

The four lowest tenders were ordered to be submitted to the engineer for examination into the details, and report thereon.

Fire at a Concrete Factory.—On Saturday last a destructive fire occurred at Belvedere Wharf, Belvedere, Kent, upon the premises of Messrs. Lester & Co., patent concrete manufacturers. From an unknown cause a building of one floor, about 100 ft. by 50 ft., used as a store, became ignited. The fire spread to a second building of two floors, about 100 ft. by 50 ft., used as boiler and engine houses, manufactory, and store, and both were eventually destroyed.

The Committee of Christ Church, East Greenwich, have appointed Messrs. Romaine, Walker, & Tanner, of 19, Buckingham-street, Adelphi, architects to their new mission-room, accommodating 390 adults, about to be built in Farmdale-road, Westcombe Park.

TENDERS.

For rebuilding Nos. 30, 31, and 32, Fleet-street, and Nos. 1, 2, and 3, Falcon-court. Mr. T. E. Knightley, architect. Quantities by Messrs. Batterbury & Huxley:—

Mowlem & Co.	£11,083	0	0
Patman & Fotheringham	10,873	0	0
Conder	10,793	0	0
J. & J. Greenwood	10,674	0	0
Ashby Bros.	10,414	0	0
Chappell	10,348	0	0
C. Wall (accepted)	10,290	0	0

For erecting mission-house, S. George's-street, London Docks, for the Rev. C. H. Turner, M.A. Mr. Keith D. Young, architect. Quantities by Mr. Morgan Young:—

Lathey Bros.	£3,280	0	0
Hall, Beddall, & Co.	3,132	0	0
Dove Bros.	2,995	0	0
Hearle & Son	2,982	0	0
J. Grover	2,938	0	0
C. Cox (accepted)	2,880	0	0

For the erection of new residence in Southwood-lane, Highgate, for the Governors of the Cholmeley School. Mr. H. Winstanley, architect. Quantities by Mr. W. H. Brayshaw, architect:—

Southcott	£1,798	0	0
Patman & Fotheringham	1,773	0	0
Boyce	1,743	0	0
Larter	1,700	0	0
Roberts	1,667	0	0
McCormick & Sons (accepted)	1,569	0	0

For erection of a boot and shoe manufactory and stabling at High-street, Chesham, for Mr. Charles Long. Messrs. Higgs & Rudkin, 68, Lincoln's Inn-fields, architects. Quantities supplied:—

Rance & Gomm	£1,104	5	0
Wm. Boughton	905	0	0
Wm. Harding (accepted)	844	10	0

For erection of four shops and dwelling-houses at Kentish Town-road, for Major-General Eliot. Messrs. Higgs & Rudkin, 68, Lincoln's Inn-fields, architects. Quantities supplied:—

Jerrard	£2,674	0	0
Hooper	2,631	0	0
Evans	2,495	0	0
Gregar	2,269	0	0
Good Bros.	2,265	0	0
Allen & Sons (accepted)	2,200	0	0

For re-decorating the Hackney-road Wesleyan Chapel. Mr. William Nicoll, architect

J. Jarvis & Sons (accepted).

For restoring and re-decorating S. John's Vicarage, S. John's, Lewisham. Mr. G. M. Hills, architect:—

J. Jarvis & Sons (accepted) £291 10 0

For erection of cottage at Billington, for Mr. John Olney. Mr. Frederick Gotto, architect, Leighton Buzzard:—

J. Bird, Pilstone, Bucks	£375	0	0
W. Groom, Leighton Buzzard	346	13	0
T. P. Webb, Leighton Buzzard	335	0	0
G. Roberts, Leighton Buzzard	316	0	0
C. Hart, Leighton Buzzard	269	0	0
J. Tutt & Sons, Leighton Buzzard	269	0	0
G. Garside, Leighton Buzzard*	250	0	0

* Accepted.

For constructing road and sewers on the Honor Oak Estate, Forest Hill, for Mr. Edward Penny Trenchard. Mr. Herbert D. Appleton, surveyor:—

G. Felton, 4, Kilburn Bridge* £1,464 0 0

* Accepted.

For repairs and decorations at the Dyers' Hall, for the Worshipful Company of Dyers. Mr. W. M. Waymouth, architect:—

W. Shurmur (accepted).

For two houses, High Barnet. Mr. W. Graves, architect:—

Ward & Lamble	£1,350	0	0
W. Shurmur	1,289	0	0
Richardson	1,251	0	0

For new schools at Betts-street, St. George's-in-the-East, for the School Board for London. Mr. E. R. Robson, architect:—

W. Shurmur (accepted) £9,990 0 0

For villa residence, Park-road, Hornsey. Mr. Farrar, architect:—

E. Lawrence	£1,335	0	0
Southgate	1,227	0	0
Kerry & Son	1,196	0	0
R. Conder	1,190	0	0
McCormick & Son	1,187	0	0
Enuor, Julian, & Co.	1,170	0	0
J. Smith & Son	1,133	0	0
W. Shurmur	1,125	0	0
Mattock Bros.	1,063	0	0

For erection of villa residences at Streatham. Mr. W. Smith, architect:—

J. Johnson	£1,245	0	0
Dunford & Langham	1,178	0	0
Steel Bros.	1,176	0	0
Stevens Bros.	1,165	0	0
Mattock Bros.	1,147	0	0
Lark & Son	1,088	0	0
W. Shurmur	1,086	0	0
J. Harper	1,026	0	0
Richardson	887	0	0

For additions, 15, Queen-square, Wycombe. Mr. A. Vernon, architect, 26, Great George-street, Westminster, and High Wycombe:—

Hunt	£635	0	0
Loosby	530	0	0
Nash	523	10	0
Gibson (accepted)	514	0	0

For improving the road in Gresty-lane, Crewe, leading to the abattoir and cattle market, for the Audlem Highway Board:—

G. H. Minney, Crewe	£152	10	6
Goodall, Wrenbury	145	0	0
Wm. Pitton, Cheerwell (accepted)	132	10	0
John Kellett, Hightown, Crewe	129	15	0

For carrying out additions and alterations to the Union Workhouse at Kidderminster. Quantities supplied by the architects. Messrs. Watkins & Scorer, St. Edmond's-chambers, Lincoln, architects:—

Horsman & Co., Wolverhampton	£16,000	0	0
Kellet & Bentley, London	15,900	0	0
Edmund Gabbutt, Liverpool	15,747	0	0
Dixon Bros., Worcester	15,716	0	0
John Garlick, Birmingham	15,555	0	0
H. Smith, Wolverley	15,400	0	0
C. A. Horton, Brierley-hill	15,189	0	0
Thos. Vale, Kidderminster	15,000	0	0
Vernon, Ewens, & Co., London	14,997	15	7
R. Thompson, Kidderminster	14,995	10	0
John Guest, Stourbridge	14,653	0	0
W. T. Bennett, Birmingham*	14,197	0	0

* Accepted.

For the erection of new Board schools, Connaught-road, Hove. Mr. Thomas Simpson, architect. Quantities by Messrs. George Lansdown & Harriss:—

J. Bruton, Brighton	£11,200	0	0
Scutt, Brighton	11,094	0	0
Dean, Brighton	10,480	0	0
Parson & Son, Hove	10,200	0	0
Barnes, Brighton	10,110	0	0
Peters, Horsham	10,100	0	0
Beard & Forster, East Grinstead	10,095	0	0
Stenning, Brighton	9,950	0	0
Bedford & Co., Horsham	9,930	0	0
Humphrey & Son, Hove	9,899	0	0
Morris, Ashurst Wood	9,875	0	0
Stimpson & C., London	9,760	0	0
W. & G. Davey, Brighton	9,743	0	0
W. Taylor, Brighton	9,741	0	0
J. T. Chappell, London and Hove	9,680	0	0

For four houses at Hendon, for Mr. W. Crane. Messrs. J. Saville & Son, architects, 1, Argyle-square:—

Jackson & Todd	£1,680	0	0
Shurmur	1,649	0	0
Hearne	1,643	0	0
Killingback	1,635	0	0
Drew	1,635	0	0
Dixon	1,627	0	0
Lamble	1,612	0	0
Spencer & Co.	1,590	0	0
Stud Bros.	1,589	0	0
Smith	1,584	0	0
Royal	1,570	0	0
Martin	1,155	0	0
Jones	1,092	0	0

For the erection of the Boulevard Hotel, Radford Boulevard, Nottingham, for Mr John Robinson. Mr. Herbert Walker, architect. Quantities by the architect:—

Greenwood	£4,020	0	0
Lynam & Kidd	3,829	0	0
Dennett & Ingle	3,758	0	0
Morrison	3,740	0	0
Bell & Son	3,688	0	0
Messon	3,677	0	0
Baus & Turton	3,600	0	0
Fisher Bros.	3,600	0	0
Vickers	3,595	0	0
Hopewell & Son	3,490	0	0
Wheatley & Maule	3,488	0	0
Scott (accepted)	3,430	0	0

For alterations and repairs to the Strand Union Offices, 6, Bow-street, for the Board of Guardians. Mr. C. J. Phipps, architect. Quantities by Mr. Tasker:—

Toms	£1,346	0	0
McLachlan	1,345	0	0
Wall	1,285	0	0
Patman & Fotheringham	1,135	0	0
Howard & Dorrell	1,081	0	0
Sykes	1,056	0	0
Wright	1,034	16	0
Macey	953	0	0

For works in alterations of premises in John-street, Bristol, for Mr. Albert Pole, printer. Mr. Herbert J. Jones, architect:—

		Allowed for Old Materials.
Walters & Son	£935 0 0	—
Bastow	585 0 0	£10 0 0
E. & T. Hatherly	537 0 0	—
Enstabrook & Son	486 0 0	—
Humphreys	450 0 0	15 10 0
Saise & Son	410 0 0	—
Lewis & Edbrooke	425 0 0	18 0 0
Green	401 10 0	10 0 0

For new cowhouse, at the Leslie Park Dairy, Croydon, for the Metropolitan and Suburban Milk Supply Association (Limited). Mr. Hawkins, architect:—

Maides & Harper (accepted)	£383 0 0

For making the Beeches-road, on the Beeches Estate, at West Bromwich, for Mr. G. B. Nichols, C.E.:—

Currall & Lewis	£2,550	0	0
Jones & Fitzmaurice	1,535	0	0
White	1,505	0	0
Hughes	1,464	0	0
Palmer	1,451	0	0

Accepted for new grain warehouse, Walmgate, York, for Messrs. Agar & Chadwick. Mr. W. Brown, architect. Quantities by the architect:—

G. Scaife (excavator and bricklayer).
J. Plows (mason).
H. Bowman (carpenter and joiner).
B. Baynes (slater).
J. Birch (plumber and glazier).
W. T. Walker (ironfounder).
W. Bellerby (painter).

For new schoolroom, Shrubbery-road, Lewisham, for Mr. John Roberts:—

Staines & Son (accepted)	£617 0 0

For alterations to the Spread Eagle, Stockwell-street, for Mr. R. Salter. Mr. Jas. Buckland, architect:—

G. W. Sly (accepted).

For two hydraulic lifts at the Grand Hotel, Manchester. Messrs. Mills & Murgatroyd, architects:—

Clark, Bunnett, & Co. (Limited) (accepted).

For four hydraulic lifts at the North-Western Arcade, Birmingham. Mr. W. Jenkins, architect:—

Clark, Bunnett, & Co. (Limited) (accepted).

For removing present hydraulic lift and fixing one of Bunnett's patent hydraulic lifts, for the Governors of the Bank of England. Mr. A. W. Blomfield, architect:—

Clark, Bunnett, & Co. (Limited) (accepted).

For new buildings, Sayer-street, New Kent-road (2nd block), for Mr. G. R. Le Pays. Mr. C. Barnard, architect:—

J. H. Tarrant & Son (accepted).

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